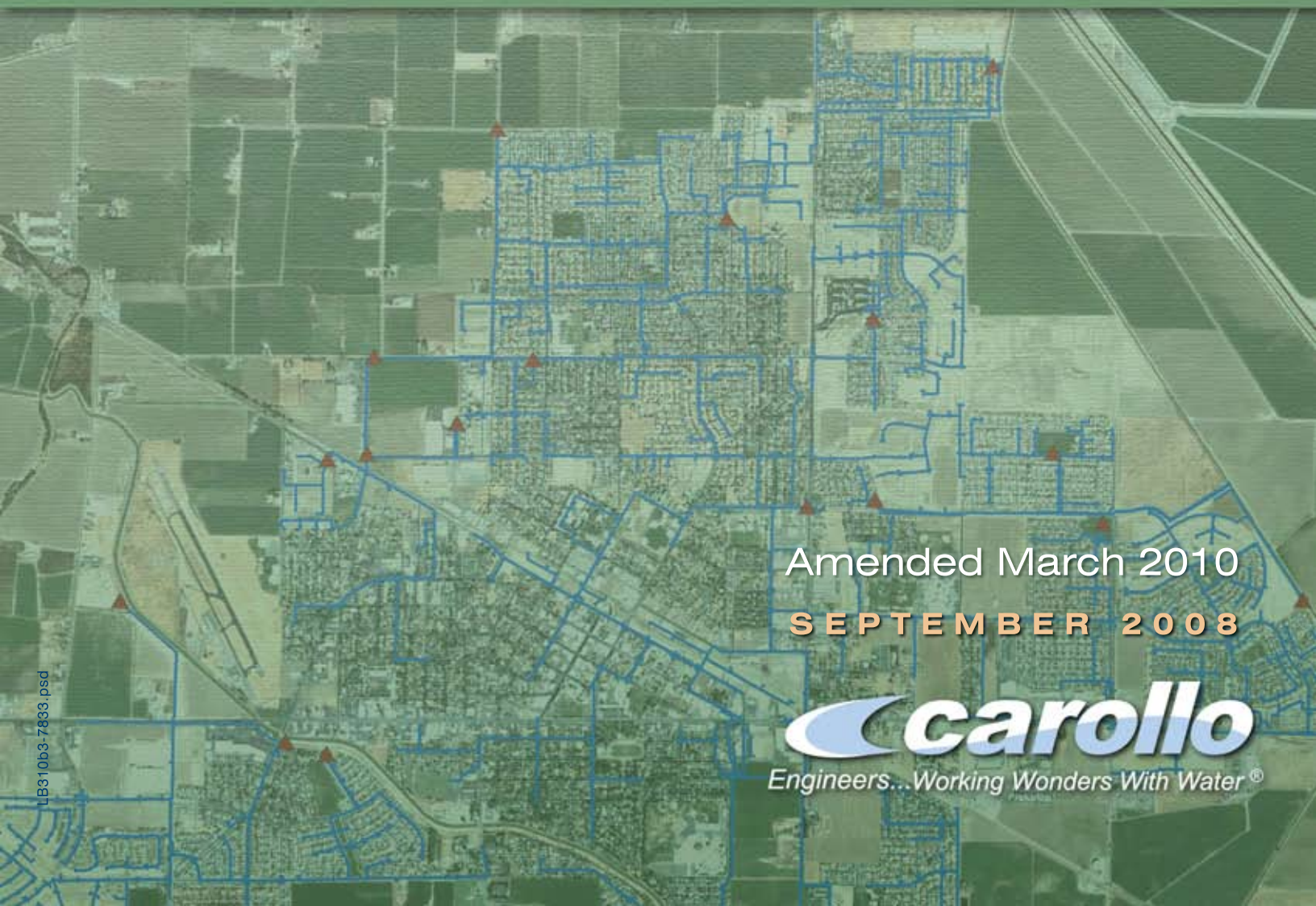
# Final Report

MASTER PLAN FOR

City of Los Banos
At the Crossroads of California

# Storm Drainage System



Amended March 2010

SEPTEMBER 2008

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March 31, 2010
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City of Los Banos
411 Madison Avenue
Los Banos, California 93635

Attention: Mr. Mark Fachin, P.E.

Subject: City of Los Banos Final Storm Drainage System Master Plan
Amended March 2010

Dear Mr. Fachin:

We are pleased to submit 10 copies of the amended final report for the City of Los Banos (City) Storm Drainage System Master Plan (Master Plan). The Master Plan includes: planning assumptions, the drainage system evaluation, and recommended improvements to correct existing deficiencies and to serve future customers. This amended report incorporates the recent changes to land use assumptions and planning boundaries described in the City's 2030 General Plan Update.

Adjustments to the phasing of recommended improvements have also been included to account for the recent slowdown in development and current economic conditions. If economic, development and/or funding conditions change, then the City should revisit the phasing assumptions and consider implementing the recommended improvements at an earlier date, in particular, those that mitigate existing deficiencies.

We would like to extend our thanks to you, Mr. Gary Hutsell, Assistant Public Works Director; and other City staff whose courtesy and cooperation were valuable components in ensuring that this document will assist the City in planning infrastructure improvements to serve its customers.

Sincerely,

CAROLLO ENGINEERS, P.C.

David L. Stringfield, P.E.

Jose L. Gutierrez, P.E.

DLS:JLG:asw

Enclosures: Amended Final Storm Drainage System Master Plan (10)



7580 North Ingram Avenue, Suite 112, Fresno, California 93711
P. 559.436.6616 F. 559.436.1191
carollo.com

City of Los Banos

# STORM DRAINAGE SYSTEM MASTER PLAN

Amended March 2010
September 2008

7580 NORTH INGRAM AVENUE • SUITE 112 • FRESNO, CALIFORNIA 93711 • (559) 436-6616 • FAX (559) 436-1191

City of Los Banos

STORM DRAINAGE SYSTEM MASTER PLAN

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# STORM DRAINAGE SYSTEM MASTER PLAN

## ES.1 INTRODUCTION

The City of Los Banos (City) is located in western Merced County (County), in the northern portion of the San Joaquin Valley. The City is located near the junction of California State Route (SR)-152 and Interstate 5. Los Banos is the second largest city in the County.

The City owns, maintains, and operates 21 storm water pump stations, detention basins, and over 79 miles of storm drains spanning 6- to 66-inches in diameter. The City provides storm drainage services to its residential, commercial, institutional, and industrial customers within its service area.

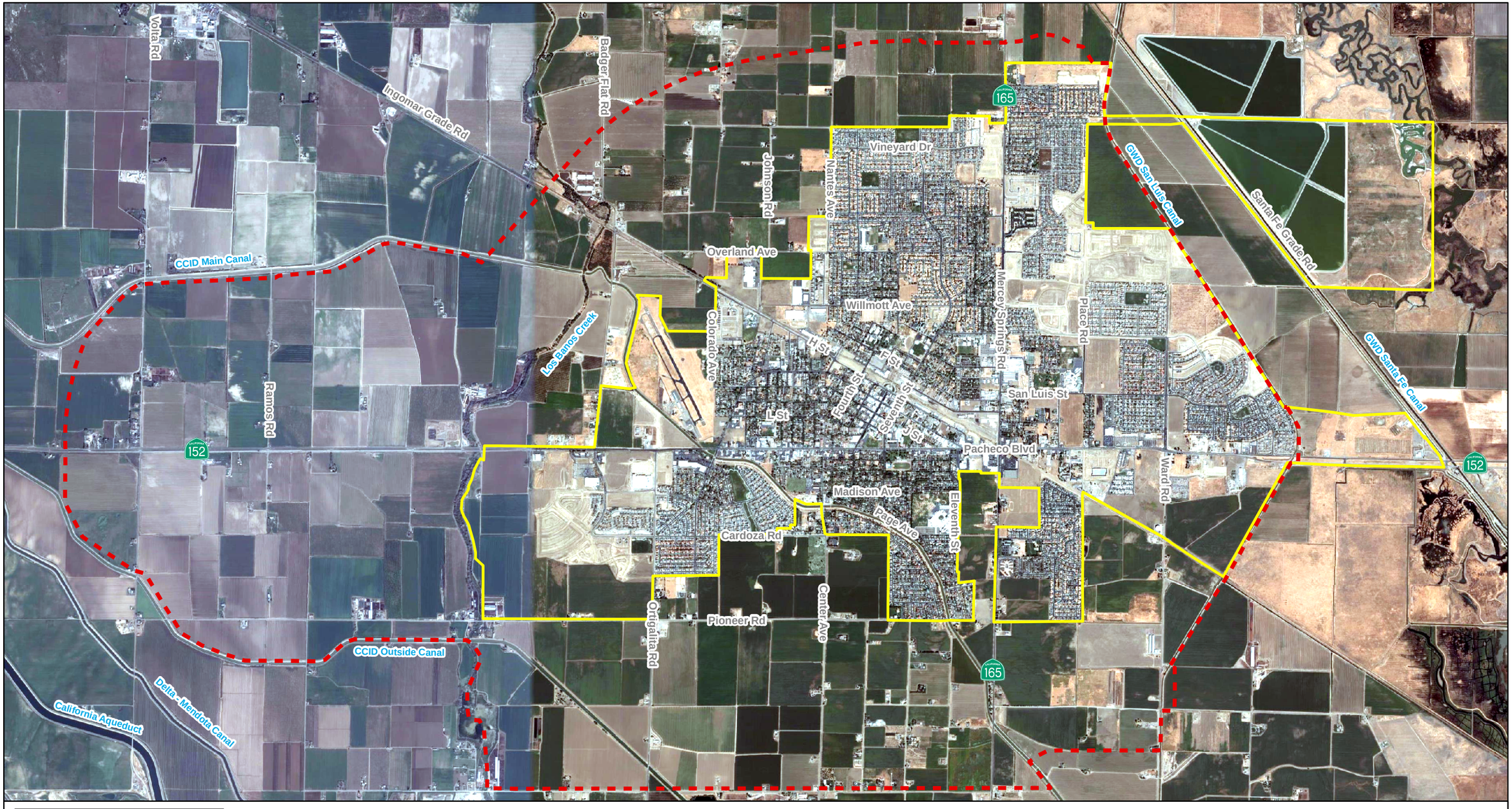
## ES.2 STUDY AREA

The City's 2030 General Plan Update (2030 General Plan) sphere of influence (SOI) is the study area boundary for this storm drainage master plan (Master Plan). The Master Plan study area boundary and SOI are synonymous and will be used interchangeably throughout this report. The SOI boundary extends far beyond the current storm drainage service area and is approximately 14,382 acres (22.5 square miles). The Master Plan contains a forecast of storm drainage system improvements in a large study area beyond the City limits. Figure ES.1 shows the study area boundary and the City's limits. Evaluating infrastructure needs beyond the City limits is important because: there are conceptual development plans that are beyond the City limits; and recent rapid growth in the San Joaquin Valley indicates that significant development into the study area could occur within a short planning period.

## ES.3 EXISTING AND FUTURE SERVICE AREA

The land use designations (residential, commercial, etc.) used in this Master Plan are consistent with the City's 2030 General Plan. The type of land use in an area will affect the amount of runoff that needs to be collected and conveyed by the storm drainage system.

The City currently provides storm drainage service to approximately 4,582 acres (includes developed and undeveloped land) or 7.2 square miles. Note that the acreage total does not include land occupied by the WWTP because the treatment plant is located outside of the SOI. The largest land use category is residential (low, medium, and high), which accounts for approximately 2,279 acres, or approximately 50 percent of the total acreage. Commercial, office/professional, and industrial make up approximately 925 acres, or 20 percent of the total. Civic/Institutional makes up approximately 181 acres, or 4 percent.




**Legend**

Sphere of Influence[1]

City Limits

N

Feet

0 2,500 5,000

**Figure ES.1**
**Study Area**
Storm Drainage System
Master Plan
City of Los Banos

1. Sphere of Influence from City of Los Banos 2030 General Plan Update, Dyett & Bhatia, July 2009

Land uses like parks, streets, and open space account for 1,197 acres, or 26 percent of the total service area.

At build-out of the SOI boundary, the City will serve approximately 14,382 acres or 22.5 square miles, which is about three times the current service area. Build-out is defined as complete development of all lands. Residential will continue to represent the largest land use category in the City and will make up approximately 47 percent of the total acreage.

## ES.4 HISTORICAL AND FUTURE POPULATION

The City's population began to grow quickly after World War II owing to returning veterans and highway construction. A series of irrigation and dam projects in the 1960s brought more people to the City, however, growth slowed from 1970 to 1985. In 1990, the City's population began to grow rapidly and continued through year 2007. From 1990 through the present, the population grew from approximately 14,500 to 35,200. Over the last 20 years, the City has grown at an annual rate of about 5.1 percent.

The 2030 General Plan states that the build-out population will reach approximately 90,400 people. This build-out population reflects an annual growth rate that ranges between 4.1 to 4.6 percent. Table ES.1 summarizes the existing and projected year 2030 population.

**Table ES.1 Existing and Projected Year 2030 Population**
**Storm Drainage System Master Plan**
**City of Los Banos**

| Year | Population |
|---|---|
| 2007 | 35,200 |
| 2030 | 90,400 |

Note:
1. Source of historical data: City of Los Banos 2030 General Plan Administrative Draft, June 2007, Dyett & Bhatia

## ES.5 HYDROLOGIC AND HYDRAULIC ANALYSIS

The existing storm drainage system collects and conveys surface water runoff throughout the City and discharges the runoff into canals operated and maintained by the Grassland Water District (GWD) or the Central California Irrigation District (CCID). The majority of storm runoff is captured in storm detention basins and later discharged into water conveyance systems, although a few existing neighborhoods have direct discharge to canals. The existing storm drainage system is composed of neighborhood collection systems, detention basins, pump stations, and large diameter storm drains. In addition, there are several major water features in the region. The major features include but are not

limited to Los Banos Creek, CCID Main Canal, GWD San Luis Canal, and GWD Santa Fe Canal.

The storm drainage system was evaluated using $H_2$OMAP SWMM modeling software. $H_2$OMAP SWMM is a commercial version of EPA SWMM 5.0 software. The SWMM Runoff Block, which is included in $H_2$OMAP SWMM, was used to perform the hydrologic analysis. This analysis conducted rainfall-runoff simulations that accounted for climate, soil, land use, and topographic conditions of the watershed. Once runoff quantity was simulated, and loads at receiving nodes were determined, the routing portion of the software transported the flow through the City's conveyance system of storm drains, detention basins, and pump stations to evaluate the capacity of these facilities.

The following hydraulic analysis scenarios were used to determine the storm drainage system deficiencies under the existing and build-out conditions. All model runs consisted of 24-hour extended period simulations.

- 10-year, 24-hour storm - existing system
- 50-year, 24-hour storm - existing system
- 10-year, 24-hour storm - future system with recommended improvements
- 50-year, 24-hour storm - future system with recommended improvements

## ES.6 CAPACITY EVALUATION AND PROPOSED IMPROVEMENTS

The City's 2001 Master Storm Drainage Plan Phase I Storm Drainage Disposal (Phase I Plan) selected and recommended the future disposal points for drainage into the CCID Main Canal and the GWD San Luis Canal. The Phase I Plan established the strategy for controlling and discharging storm water runoff within the City, and instituting a disposal plan for the City. This Master Plan followed the strategy established in the Phase I Plan.

This Master Plan is the next phase of a master storm drainage plan and sets forth the improvements necessary to implement the Phase I Plan recommended disposal plan. Appendix E contains excerpts from the Phase I Plan that summarize the disposal points and the maximum disposal rates for future drainage into the CCID Main Canal and the GWD San Luis Canal.

The capacity analysis entailed identifying areas in the storm drainage system where excessive street flooding occurred. Storm drains that lack sufficient capacity to convey runoff generated from the design storm could produce backwater effects in the drainage system and potentially cause flooding. The lack of adequate storm detention facilities could also cause localized flooding.

Storm drains are designed to surcharge under normal operation. When evaluating the adequacy of the existing conveyance facilities serving existing developments, City streets were allowed to flood and provide flow attenuation and storage capacity. Floodwaters were

permitted to accumulate in streets to one foot above the gutter flow line. For the future system, the goal was to contain storm flows within the drainage pipelines, with minimal ponding in City streets during the 10-year design storm event. The storm drainage criteria allowed City streets to flood up to one foot above the gutter flow line in the 50-year future design storm event.

In general, the existing storm drainage system has sufficient capacity to convey runoff generated during the design storm. In some locations, such as the area west of downtown around K Street, storm drains either lack the capacity or are connected to the wastewater collection system. These areas are susceptible to flooding or they cause sudden increases is the wastewater flow because storm runoff is routed directly into the sewer collection system.

The proposed improvements that will serve future users are sized for build-out conditions. As the City continues to grow beyond its current limits, it is recommended that the pipeline diameters and pump station capacities proposed in this Master Plan be constructed so that the facilities have sufficient capacity for build-out conditions. Building a smaller interim project with the plans of upsizing in the future to account for further growth is not recommended. In this Master Plan, the proposed pipe diameter represents the ultimate diameter for build-out conditions.

Figure ES.2 (three pages) illustrates the proposed improvements necessary to correct the existing deficiencies and to serve future users. Figure ES.2 shows the proposed improvements in different categories (colors). The different colors identify the implementation timeframe of the improvements and differentiate between near-term and long-term improvements.

Table ES.2 summarizes the improvements illustrated in Figure ES.2 with a cross-referenced number system. The figure number in the first column of Table ES.3 matches the improvement identification shown in Figure ES.2. For example ‘A1-1’ in the first row of Table ES.2 is the Airport No. 1 subbasin storm drain project that mitigates existing downtown flooding and removes storm runoff from the wastewater collection system. The table also contains a street location for the improvement, approximate size (length, diameter, volume, etc.), cost, and implementation timeframe.

### ES.6.1 Existing Versus Future Improvements

An existing deficiency is one where the existing facility’s capacity is insufficient to meet the planning criteria (e.g. storm drain improvements that reduce street flooding to less than one foot above the gutter flow line). If a project was proposed to correct an existing deficiency, then existing users were assigned 100 percent of the project’s benefit, and therefore, 100 percent of the costs.

**Table ES.2 Capital Improvement Projects**

**Storm Drainage System Master Plan**

**City of Los Banos**

| Figure No. | Type of Improvement | Description/ Street | Description / Limits | Project Length/Size and Cost: Ex. Size/ Diam. (in) | New Size/ Diam. (in) | Replace/ New | Length (ft) | Capital Improvement Cost[2,3] ($) | Capital Improvement Program: Phase 1 2010-15 ($) | Phase 2 2016-20 ($) | Phase 3 2021-2025 ($) | Phase 4 2026-2030 ($) | Phase 5 2031+ ($) | Future Users Benefit (%) | Improvement Reimbursement Category: Existing User Improvements ($) | Future Improvements Users: Developer ($) | Regional ($) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Existing System Improvements** | | | | | | | | | | | | | | | | | |
| **Airport No. 1 Subbasin** | | | | | | | | | | | | | | | | | |
| A1-1 | Pipe | K Street, California Avenue | California Avenue to Iowa Avenue, and s/o L Street to K Street | - | 18 | New | 2,300 | Note 6 | | | | | | 0% | $ - | $ - | $ - |
| A1-2 | Pipe | Idaho Avenue, I Street, Texas Avenue | L Street to I Street, west to Texas Avenue, then northeast to H Street | 15 | 36 | New/Replace | 4,050 | Note 6 | | | | | | 0% | $ - | $ - | $ - |
| A1-3 | Pipe | L Street | Delaware Avenue to Idaho Avenue | - | 18 | New | 300 | Note 6 | | | | | | 0% | $ - | $ - | $ - |
| **Central City Subbasin** | | | | | | | | | | | | | | | | | |
| CC-1 | Pipe | San Luis Street | Talbot Park to Place Road | 24,30 | 48 | Replace | 1,500 | $ 1,074,000 | $ 1,074,000 | | | | | 20% | $ 859,200 | $ 214,800 | $ - |
| CC-2 | Pipe | Place Road | Pacheco Blvd to San Luis Street | 15 | 48 | Replace | 1,750 | $ 1,253,000 | $ 1,253,000 | | | | | 20% | $ 1,002,400 | $ 250,600 | $ - |
| CC-3 | Pipe | Place Road | s/o Pacheco Blvd (includes jack and bore across Hwy 152) | - | 36 | New | 2,700 | $ 1,646,000 | $ 1,646,000 | | | | | 0% | $ 1,646,000 | $ - | $ - |
| CC-4 | Pipe | Pacheco Blvd | Nickel Street to Place Road | - | 24 | New | 150 | $ 54,000 | $ 54,000 | | | | | 0% | $ 54,000 | $ - | $ - |
| CC-5 | Pipe | E Street, 7th Street | 5th Street to 7th Street, then E Street to D Street | - | 24 | New | 1,300 | $ 465,000 | $ 465,000 | | | | | 0% | $ 465,000 | $ - | $ - |
| CC-6 | Pipe | 6th Street, K Street | sw/o M Street to K Street, then 6th Street to 7th Street | - | 18 | New | 1,150 | Note 6 | | | | | | 0% | $ - | $ - | $ - |
| CC-7 | Pipe | Center Avenue, Jefferson Avenue | Madison Avenue to Jefferson Avenue, then to 6th Street | - | 18 | New | 1,850 | Note 6 | | | | | | 0% | $ - | $ - | $ - |
| CC-8 | Pipe | Pacheco Blvd, Paradise Lane | I Street to Paradise Lane, then south to Adams Avenue | - | 12 | New | 2,300 | Note 6 | | | | | | 0% | $ - | $ - | $ - |
| CC-9 | Pipe | Murietta Street | Page Street to Monro Street, then east to 7th Street | - | 18 | New | 600 | Note 6 | | | | | | 0% | $ - | $ - | $ - |
| CC-10 | Pipe | H Street | West of 2nd Street | - | 12 | New | 300 | $ 59,000 | | $ 59,000 | | | | 0% | $ 59,000 | $ - | $ - |
| CC-B1 | Detention Basin | San Luis Street | Talbot Park | - | 20 Acre-Ft | New | | $ 632,000 | $ 632,000 | | | | | 20% | $ 505,600 | $ 126,400 | $ - |
| CC-B2 | Detention Basin | Central City Subbasin | Central City Subbasin | - | 25 Acre-Ft | New | | $ 798,000 | | | $ 798,000 | | | 10% | $ 718,200 | $ 79,800 | $ - |
| | Land Acquisition | | | | 5 acres | New | | $ 1,500,000 | | | $ 1,500,000 | | | 10% | $ 1,350,000 | $ 150,000 | $ - |
| CC-11 | Pipe | B Street and Mercey Springs Road | B Street Lift Station to New Detention Basin | - | 66 | New | 1,250 | $ 1,230,000 | | | $ 1,230,000 | | | 10% | $ 1,107,000 | $ 123,000 | $ - |
| **Citrus Terrace Subbasin** | | | | | | | | | | | | | | | | | |
| CT-1 | Pipe | Citrus Avenue, 2nd Street | 1st Street to 2nd Street, then to Orange Avenue | 18 | 24 | Replace | 800 | $ 286,000 | | $ 286,000 | | | | 0% | $ 286,000 | $ - | $ - |
| **Johnson Field Subbasin** | | | | | | | | | | | | | | | | | |
| JF-B1 | Storm Basin | Nantes Avenue | Near intersection with Capri Avenue | - | 17 Acre-Ft | New | | $ 595,000 | | $ 595,000 | | | | 50% | $ 297,500 | $ 297,500 | $ - |
| | Land Acquisition | | | | 3 acres | New | | $ 1,200,000 | | $ 1,200,000 | | | | 50% | $ 600,000 | $ 600,000 | $ - |
| **Existing System Rehabilitation and Replacement** | | | | | | | | | | | | | | | | | |
| | Pipe | Various Locations | Storm drain replacement program. Average size is 24-inch diameter | 24 | 24 | Replace | 25,000 | $ 8,947,000 | | $ 2,237,000 | $ 2,237,000 | $ 2,237,000 | $ 2,236,000 | 0% | $ 8,947,000 | $ - | $ - |
| | Manhole | Various Locations | Manhole replacement program | | | Replace | | $ 600,000 | | $ 200,000 | $ 200,000 | $ 100,000 | $ 100,000 | 0% | $ 600,000 | $ - | $ - |
| | Pump Station | Various Locations | Pump station rehabilitation or replacement | | | Replace/Rehab | | $ 3,120,000 | | $ 780,000 | $ 780,000 | $ 780,000 | $ 780,000 | 0% | $ 3,120,000 | $ - | $ - |
| JL-PS | Pump Station | Jo Lin Park Manor Pump Station | Jo Lin Park | | | Replace/Rehab | | $ 312,000 | | | $ 312,000 | | | 0% | $ 312,000 | $ - | $ - |
| | | | | | | **Existing Improvements Subtotal:** | | **$ 23,771,000** | **$ 5,124,000** | **$ 5,357,000** | **$ 7,057,000** | **$ 3,117,000** | **$ 3,116,000** | | **$ 21,928,900** | **$ 1,842,100** | **$ -** |
| **Future System Improvements** | | | | | | | | | | | | | | | | | |
| **Airport No. 1 Subbasin** | | | | | | | | | | | | | | | | | |
| A1-4 | Pipe | H Street | Johnson Road to nw/o Johnson Road | - | 36 | New | 1,450 | $ 778,000 | | $ 778,000 | | | | 100% | $ - | $ 778,000 | $ - |
| **Airport No. 2 Subbasin** | | | | | | | | | | | | | | | | | |
| A2-1 | Pipe | H Street | nw/o Johnson Road to Ortigalita Road to the northwest | - | 36 | New | 2,000 | $ 1,074,000 | | $ 1,074,000 | | | | 100% | $ - | $ 1,074,000 | $ - |
| A2-2 | Pipe | Ortigalita Road | H Street to the south following Ortigalita Road and the airport | - | 42 | New | 3,850 | $ 2,411,000 | | $ 2,411,000 | | | | 100% | $ - | $ 2,411,000 | $ - |
| A2-3 | Pipe | s/o H Street | se/o intersection of H Street and Badger Flat Road | - | 24 | New | 1,350 | $ 483,000 | | $ 483,000 | | | | 100% | $ - | $ 483,000 | $ - |
| **Citrus Terrace Subbasin** | | | | | | | | | | | | | | | | | |
| CT-2 | Pipe | Overland Avenue | Honeybell Street to Overland Avenue | - | 30 | New | 150 | $ 67,000 | | $ 67,000 | | | | 100% | $ - | $ 67,000 | $ - |
| **College Greens No. 1 Subbasin** | | | | | | | | | | | | | | | | | |
| CG1-1 | Pipe | Pioneer Road, e/o Place Road | Mercey Springs to former railroad right of way | - | 36 | New | 6,600 | $ 3,543,000 | | $ 3,543,000 | | | | 100% | $ - | $ 3,543,000 | $ - |
| CG1-2 | Pipe | e/o CCID Main Canal | Phillips Road to n/o Phillips Road | - | 30 | New | 1,050 | $ 470,000 | | | | $ 470,000 | | 100% | $ - | $ 470,000 | $ - |
| CG1-3 | Pipe | e/o CCID Main Canal, s/o Pioneer Road | Proposed basin to n/o Phillips Road | - | 30 | New | 2,150 | $ 962,000 | | | $ 962,000 | | | 100% | $ - | $ 962,000 | $ - |
| CG1-4 | Pipe | e/o CCID Main Canal, s/o Pioneer Road | s/o Pioneer Road to n/o Phillips Road | - | 30 | New | 1,400 | $ 626,000 | | | | $ 626,000 | | 100% | $ - | $ 626,000 | $ - |
| CG1-5 | Pipe | e/o CCID Main Canal, s/o Pioneer Road | Pioneer Road to s/o Pioneer Road | - | 36 | New | 750 | $ 403,000 | | | $ 403,000 | | | 100% | $ - | $ 403,000 | $ - |
| CG1-6 | Pipe | Pioneer Road | e/o Place Road to proposed basin | - | 42 | New | 1,900 | $ 1,190,000 | | $ 1,190,000 | | | | 100% | $ - | $ 1,190,000 | $ - |
| CG1-7 | Pipe | Parallel to San Luis Canal | Proposed basin to proposed lift station | - | 36 | New | 1,750 | $ 939,000 | | $ 939,000 | | | | 100% | $ - | $ 939,000 | $ - |

**Table ES.2 Capital Improvement Projects**

**Storm Drainage System Master Plan**

**City of Los Banos**

| Figure No. | Type of Improvement | Description/ Street | Description / Limits | Project Length/Size and Cost: Ex. Size/ Diam. (in) | New Size/ Diam. (in) | Replace/ New | Length (ft) | Capital Improvement Cost[2,3] ($) | Capital Improvement Program: Phase 1 2010-15 ($) | Phase 2 2016-20 ($) | Phase 3 2021-2025 ($) | Phase 4 2026-2030 ($) | Phase 5 2031+ ($) | Future Users Benefit (%) | Improvement Reimbursement Category: Existing User Improvements ($) | Future Improvements Users: Developer ($) | Regional ($) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CG1-PS | Pump Station | New College Greens PS | Railroad ROW near intersection with San Luis Canal | - | 20.5 cfs | New | | $ 1,855,000 | | $ 1,855,000 | | | | 100% | $ - | $ 1,855,000 | $ - |
| | Land Acquisition | | | | 0.5 acres | New | | $ 120,000 | | $ 120,000 | | | | 100% | $ - | $ 120,000 | $ - |
| CG1-B1 | Detention Basin | e/o Place Road | ne/o intersection of Place Road and Pioneer Road | - | 9 Acre-Ft | New | | $ 373,000 | | $ 373,000 | | | | 100% | $ - | $ 373,000 | $ - |
| | Land Acquisition | | | | 1.5 acres | New | | $ 360,000 | | $ 360,000 | | | | 100% | $ - | $ 360,000 | $ - |
| CG1-B2 | Detention Basin | e/o Mercey Springs Avenue | s/o Pioneer Road | - | 5 Acre-Ft | New | | $ 235,000 | | | $ 235,000 | | | 100% | $ - | $ 235,000 | $ - |
| | Land Acquisition | | | | 1.0 acres | New | | $ 240,000 | | | $ 240,000 | | | 100% | $ - | $ 240,000 | $ - |
| CG1-B3 | Detention Basin | Ward Avenue | n/o Willmott Avenue | - | 13 Acre-Ft | New | | $ 485,000 | | $ 485,000 | | | | 100% | $ - | $ 485,000 | $ - |
| | Land Acquisition | | | | 2.5 acres | New | | $ 600,000 | | $ 600,000 | | | | 100% | $ - | $ 600,000 | $ - |
| **College Greens No. 2 Subbasin** | | | | | | | | | | | | | | | | | |
| CG2-1 | Pipe | Future Industrial Park street alignment | Los Banos Industrial Area Storm Drain Plan Improvement | - | 42 | New | 1,200 | $ 752,000 | | $ 752,000 | | | | 100% | $ - | $ 752,000 | $ - |
| CG2-2 | Pipe | Future Industrial Park street alignment | Los Banos Industrial Area Storm Drain Plan Improvement | - | 48 | New | 1,100 | $ 787,000 | | $ 787,000 | | | | 100% | $ - | $ 787,000 | $ - |
| CG2-3 | Pipe | Future Industrial Park street alignment | Los Banos Industrial Area Storm Drain Plan Improvement | - | 36 | New | 2,600 | $ 1,396,000 | | $ 1,396,000 | | | | 100% | $ - | $ 1,396,000 | $ - |
| CG2-4 | Pipe | Future Industrial Park street alignment | Los Banos Industrial Area Storm Drain Plan Improvement | - | 18 | New | 1,000 | $ 268,000 | | $ 268,000 | | | | 100% | $ - | $ 268,000 | $ - |
| CG2-5 | Pipe | Future Industrial Park street alignment | Los Banos Industrial Area Storm Drain Plan Improvement | - | 18 | New | 1,050 | $ 282,000 | | $ 282,000 | | | | 100% | $ - | $ 282,000 | $ - |
| CG2-FM | Force Main | Future Industrial Park street alignment | Los Banos Industrial Area Storm Drain Plan Improvement | - | 12 | New | 750 | $ 148,000 | | $ 148,000 | | | | 100% | $ - | $ 148,000 | $ - |
| CG2-PS | Pump Station | New College Greens 2 PS | Los Banos Industrial Area Storm Drain Plan Improvement | - | 6 | New | | $ 543,000 | | $ 543,000 | | | | 100% | $ - | $ 543,000 | $ - |
| | Land Acquisition | | | | 0.5 acres | New | | $ 120,000 | | $ 120,000 | | | | 100% | $ - | $ 120,000 | $ - |
| CG2-B1 | Detention Basin | New College Greens 2 Basin | Los Banos Industrial Area Storm Drain Plan Improvement | - | 24 Acre-Ft | New | | $ 773,000 | | $ 773,000 | | | | 100% | $ - | $ 773,000 | $ - |
| | Land Acquisition | | | | 4.0 acres | New | | $ 960,000 | | $ 960,000 | | | | 100% | $ - | $ 960,000 | $ - |
| **Creekside No. 1 Subbasin** | | | | | | | | | | | | | | | | | |
| CK1-1 | Pipe | w/o Los Banos Creek | Parallel to fugure Highway 152 Bypass | - | 60 | New | 4,450 | $ 3,981,000 | | | $ 3,981,000 | | | 100% | $ - | $ 3,981,000 | $ - |
| CK1-2 | Pipe | w/o Los Banos Creek | n/o Pacheco Blvd to connection to 60-inch diameter storm drain | - | 54 | New | 2,350 | $ 1,892,000 | | | | $ 1,892,000 | | 100% | $ - | $ 1,892,000 | $ - |
| CK1-3 | Pipe | n/o Pacheco Blvd | Los Banos Creek to the west | - | 42 | New | 1,850 | $ 1,159,000 | | | | $ 1,159,000 | | 100% | $ - | $ 1,159,000 | $ - |
| CK1-4 | Force Main | CCID Main Canal | Near intersection with Los Banos Creek | - | 12 | New | 200 | $ 39,000 | | | $ 39,000 | | | 100% | $ - | $ 39,000 | $ - |
| CK1-PS | Pump Station | Los Banos Creek | Near intersection with CCID Main Canal | - | 8.6 cfs | New | | $ 778,000 | | | $ 778,000 | | | 100% | $ - | $ 778,000 | $ - |
| | Land Acquisition | | | | 0.5 acres | New | | $ 120,000 | | | $ 120,000 | | | 100% | $ - | $ 120,000 | $ - |
| CK1-B1 | Detention Basin | Los Banos Creek | Near intersection with CCID Main Canal | - | 30 Acre-Ft | New | | $ 916,000 | | | $ 916,000 | | | 100% | $ - | $ 916,000 | $ - |
| | Land Acquisition | | | | 5 acres | New | | $ 1,200,000 | | | $ 1,200,000 | | | 100% | $ - | $ 1,200,000 | $ - |
| **Creekside No. 2 Subbasin** | | | | | | | | | | | | | | | | | |
| CK2-1 | Pipe | Ramos Road | n/o Highway 152 to s/o CCID Main Canal | - | 60 | New | 1,800 | $ 1,610,000 | | | | $ 1,610,000 | | 100% | $ - | $ - | $ 1,610,000 |
| CK2-2 | Pipe | Ramos Road | n/o Highway 152 | - | 54 | New | 1,600 | $ 1,288,000 | | | | $ 1,288,000 | | 100% | $ - | $ - | $ 1,288,000 |
| CK2-3 | Pipe | Breunig Road | n/o Highway 152 | - | 42 | New | 2,550 | $ 1,597,000 | | | | $ 1,597,000 | | 100% | $ - | $ 1,597,000 | $ - |
| CK2-3B | Casing[1] | Breunig Road | Highway 152 | - | 42/60 | New | 500 | $ 1,740,000 | | | | $ 1,740,000 | | 100% | $ - | $ 1,740,000 | $ - |
| CK2-4 | Pipe | s/o CCID Main Canal | e/o Volta Road to Ramos Road | - | 48 | New | 1,800 | $ 1,288,000 | | | | | $ 1,288,000 | 100% | $ - | $ 1,288,000 | $ - |
| CK2-5 | Pipe | s/o CCID Main Canal | Volta Road to e/o Volta Road | - | 42 | New | 2,000 | $ 1,253,000 | | | | | $ 1,253,000 | 100% | $ - | $ 1,253,000 | $ - |
| CK2-6 | Pipe | s/o CCID Main Canal | Ramos Road to e/o Ramos Road | - | 54 | New | 2,000 | $ 1,610,000 | | | | $ 1,610,000 | | 100% | $ - | $ 1,610,000 | $ - |
| CK2-7 | Pipe | s/o CCID Main Canal | e/o Ramos Road to s/o CCID Main Canal | - | 48 | New | 2,000 | $ 1,431,000 | | | | $ 1,431,000 | | 100% | $ - | $ 1,431,000 | $ - |
| CK2-8 | Pipe | n/o Pacheco Blvd | Runs east and west between proposed detention basins | - | 42 | New | 8,200 | $ 5,135,000 | | | | $ 2,568,000 | $ 2,567,000 | 100% | $ - | $ 5,135,000 | $ - |
| CK2-9 | Pipe | Breunig Road, s/o Pacheco Blvd | Breunig Road near study boundary | - | 42 | New | 3,300 | $ 2,067,000 | | | | | $ 2,067,000 | 100% | $ - | $ 2,067,000 | $ - |
| CK2-10 | Pipe | Breunig Road | Runs south to north in Breunig Road | - | 60 | New | 1,650 | $ 1,476,000 | | | | | $ 1,476,000 | 100% | $ - | $ 1,476,000 | $ - |
| CK2-11 | Pipe | s/o Highway 152 | Runs east to west to Breunig Road | - | 42 | New | 2,250 | $ 1,409,000 | | | | | $ 1,409,000 | 100% | $ - | $ 1,409,000 | $ - |
| CK2-12 | Pipe | Breunig Road | Runs south to north in Breunig Road to Highway 152 | - | 66 | New | 1,250 | $ 1,230,000 | | | | | $ 1,230,000 | 100% | $ - | $ 1,230,000 | $ - |
| CK2-13 | Pipe | s/o Highway 152 | Along SOI boundary | - | 30 | New | 1,950 | $ 872,000 | | | | | $ 872,000 | 100% | $ - | $ 872,000 | $ - |
| CK2-14 | Pipe | s/o Highway 152 | Runs east to west to Volta Road | - | 36 | New | 1,350 | $ 725,000 | | | | | $ 725,000 | 100% | $ - | $ 725,000 | $ - |
| CK2-15 | Pipe | Volta Road, s/o Highway 152 | Runs south to north in Volta Road | - | 42 | New | 1,700 | $ 1,065,000 | | | | | $ 1,065,000 | 100% | $ - | $ 1,065,000 | $ - |
| CK2-16 | Pipe | s/o Highway 152 | Runs west to east from Volta Road | - | 36 | New | 3,400 | $ 1,825,000 | | | | | $ 1,825,000 | 100% | $ - | $ 1,825,000 | $ - |
| CK2-17 | Pipe | s/o Highway 152 | Near SOI boundary | - | 36 | New | 2,300 | $ 1,235,000 | | | | | $ 1,235,000 | 100% | $ - | $ 1,235,000 | $ - |
| CK2-18 | Pipe | s/o Highway 152 | Runs south to north, e/o Volta Road | - | 48 | New | 1,650 | $ 1,181,000 | | | | | $ 1,181,000 | 100% | $ - | $ 1,181,000 | $ - |
| CK2-19 | Pipe | s/o Highway 152 | Runs east to west | - | 36 | New | 1,000 | $ 537,000 | | | | | $ 537,000 | 100% | $ - | $ 537,000 | $ - |
| CK2-20 | Pipe | s/o Highway 152 | Runs south to north, e/o Volta Road | - | 54 | New | 1,300 | $ 1,047,000 | | | | | $ 1,047,000 | 100% | $ - | $ 1,047,000 | $ - |
| CK2-21 | Pipe | s/o Highway 152 | Runs east to west to Breunig Road | - | 60 | New | 4,300 | $ 3,847,000 | | | | $ 3,847,000 | | 100% | $ - | $ 3,847,000 | $ - |
| CK2-22 | Pipe | s/o Highway 152 | Near Los Banos Creek | - | 36 | New | 5,550 | $ 2,979,000 | | | | $ 2,979,000 | | 100% | $ - | $ 2,979,000 | $ - |
| CK2-23 | Pipe | s/o Highway 152 | Runs south to north, w/o Los Banos Creek | - | 60 | New | 850 | $ 760,000 | | | | $ 760,000 | | 100% | $ - | $ 760,000 | $ - |
| CK2-24 | Pipe | s/o Highway 152 | Near SOI boundary and Los Banos Creek | - | 42 | New | 2,800 | $ 1,754,000 | | | | $ 1,754,000 | | 100% | $ - | $ 1,754,000 | $ - |
| CK2-25 | Force Main | Ramos Road | At CCID Main Canal; point of discharge | - | 36 | New | 200 | $ 107,000 | | | | $ 107,000 | | 100% | $ - | $ - | $ 107,000 |

**Table ES.2 Capital Improvement Projects**

**Storm Drainage System Master Plan**

**City of Los Banos**

| Figure No. | Type of Improvement | Description/ Street | Description / Limits | Project Length/Size and Cost: Ex. Size/ Diam. (in) | New Size/ Diam. (in) | Replace/ New | Length (ft) | Capital Improvement Cost[2,3] ($) | Capital Improvement Program: Phase 1 2010-15 ($) | Phase 2 2016-20 ($) | Phase 3 2021-2025 ($) | Phase 4 2026-2030 ($) | Phase 5 2031+ ($) | Future Users Benefit (%) | Improvement Reimbursement Category: Existing User Improvements ($) | Future Improvements Users: Developer ($) | Regional ($) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CK2-PS | Pump Station | Ramos Road | Near CCID Main Canal | - | 80 cfs | New | | $ 7,238,000 | | | | $ 7,238,000 | | 100% | $ - | $ - | $ 7,238,000 |
| | Land Acquisition | | | | 0.5 acres | New | | $ 120,000 | | | | $ 120,000 | | 100% | $ - | $ - | $ 120,000 |
| CK2-B1 | Detention Basin | Ramos Road | s/o CCID Canal | - | 53 Acre-Ft | New | | $ 1,412,000 | | | | $ 1,412,000 | | 100% | $ - | $ 1,412,000 | $ - |
| | Land Acquisition | | | | 9 acres | New | | $ 2,160,000 | | | | $ 2,160,000 | | 100% | $ - | $ 2,160,000 | $ - |
| CK2-B2 | Detention Basin | Volta Road | n/o intersection with Pacheco Blvd | - | 21 Acre-Ft | New | | $ 699,000 | | | | | $ 699,000 | 100% | $ - | $ 699,000 | $ - |
| | Land Acquisition | | | | 3.5 acres | New | | $ 840,000 | | | | | $ 840,000 | 100% | $ - | $ 840,000 | $ - |
| CK2-B3 | Detention Basin | n/o Highway 152 | ne/o intersection of Breunig Road and Pacheco Blvd | - | 8 Acre-Ft | New | | $ 336,000 | | | | $ 336,000 | | 100% | $ - | $ 336,000 | $ - |
| | Land Acquisition | | | | 1 acre | New | | $ 240,000 | | | | $ 240,000 | | 100% | $ - | $ 240,000 | $ - |
| CK2-B4 | Detention Basin | Breunig Road | s/o intersection with Pacheco Blvd | - | 71 Acre-Ft | New | | $ 1,763,000 | | | | $ 1,763,000 | | 100% | $ - | $ 1,763,000 | $ - |
| | Land Acquisition | | | | 12 acres | New | | $ 2,880,000 | | | | $ 2,880,000 | | 100% | $ - | $ 2,880,000 | $ - |
| CK2-B5 | Detention Basin | s/o Highway 152 | sw/o intersection of Pacheco Blvd and Breunig Road | - | 14 Acre-Ft | New | | $ 508,000 | | | | | $ 508,000 | 100% | $ - | $ 508,000 | $ - |
| | Land Acquisition | | | | 2 acres | New | | $ 480,000 | | | | | $ 480,000 | 100% | $ - | $ 480,000 | $ - |
| CK2-B6 | Detention Basin | s/o Highway 152 | se/o intersection of Pacheco Blvd and Volta Road | - | 35 Acre-Ft | New | | $ 1,030,000 | | | | | $ 1,030,000 | 100% | $ - | $ 1,030,000 | $ - |
| | Land Acquisition | | | | 6 acres | New | | $ 1,440,000 | | | | | $ 1,440,000 | 100% | $ - | $ 1,440,000 | $ - |
| CK2-B7 | Detention Basin | s/o Highway 153 | w/o Los Banos Creek | - | 23 Acre-Ft | New | | $ 749,000 | | | | | $ 749,000 | 100% | $ - | $ 749,000 | $ - |
| | Land Acquisition | | | | 4 acres | New | | $ 960,000 | | | | | $ 960,000 | 100% | $ - | $ 960,000 | $ - |
| **Crest Hills Subbasin** | | | | | | | | | | | | | | | | | |
| CH-1 | Pipe | Holland Avenue | Middle Road to near Pioneer Road | - | 30 | New | 1,250 | $ 559,000 | | $ 280,000 | $ 279,000 | | | 100% | $ - | $ 559,000 | $ - |
| CH-2 | Pipe | n/o Phillips Road | Future Basin to w/o CCID Main Canal | - | 27 | New | 1,350 | $ 544,000 | | | | $ 544,000 | | 100% | $ - | $ 544,000 | $ - |
| CH-3 | Pipe | s/o Pioneer Road | Plow Camp Road to Holland Avenue | - | 24 | New | 1,150 | $ 412,000 | | $ 412,000 | | | | 100% | $ - | $ 412,000 | $ - |
| CH-PS | Pump Station | Pioneer Road Pump Station | Holland Avenue and Pioneer Road | - | 10 cfs | New/Upgrade | | $ 905,000 | | $ 905,000 | | | | 100% | $ - | $ 905,000 | $ - |
| | Land Acquisition | | | | 0.5 acres | New | | $ 120,000 | | $ 120,000 | | | | 100% | $ - | $ 120,000 | $ - |
| CH-B1 | Detention Basin | Holland Avenue | Near intersection with Middle Road | - | 5 Acre-Ft | New | | $ 235,000 | | | | $ 235,000 | | 100% | $ - | $ 235,000 | $ - |
| | Land Acquisition | | | | 1 acres | New | | $ 240,000 | | | | $ 240,000 | | 100% | $ - | $ 240,000 | $ - |
| **Gardens No. 1 and Gardens No. 2 Subbasin** | | | | | | | | | | | | | | | | | |
| G12-1 | Pipe | s/o Cardoza Road | Pioneer Road to Cardoza Road | - | 54 | New | 2,800 | $ 2,255,000 | | $ 2,255,000 | | | | 100% | $ - | $ 2,255,000 | $ - |
| G12-2 | Pipe | e/o Ortigalita Road | Sandra Street to Pioneer Road | - | 24 | New | 1,500 | $ 537,000 | | $ 537,000 | | | | 100% | $ - | $ 537,000 | $ - |
| G12-3 | Pipe | Pioneer Road | e/o Ortigalita Road | - | 36 | New | 2,250 | $ 1,208,000 | | | $ 1,208,000 | | | 100% | $ - | $ 1,208,000 | $ - |
| G12-4 | Pipe | e/o Ortigalita Road | Pioneer Road to n/o Phillips Road | - | 36 | New | 1,350 | $ 725,000 | | | $ 725,000 | | | 100% | $ - | $ 725,000 | $ - |
| G12-5 | Pipe | n/o Phillips Road | e/o Ortigalita Road | - | 30 | New | 2,200 | $ 984,000 | | | | $ 984,000 | | 100% | $ - | $ 984,000 | $ - |
| G12-6 | Pipe | Hawthorne Drive | I Street to detention basin | - | 24 | New | 1,000 | $ 358,000 | | $ 358,000 | | | | 50% | $ 179,000 | $ 179,000 | $ - |
| G12-B1 | Detention Basin | Cardoza Road | Near intersection with Eucalyptus Court | - | 20 Acre-Ft | New | | $ 673,000 | | $ 673,000 | | | | 100% | $ - | $ 673,000 | $ - |
| | Land Acquisition | | | | 3.5 acres | New | | $ 840,000 | | $ 840,000 | | | | 100% | $ - | $ 840,000 | $ - |
| **Gardens No. 3 Subbasin** | | | | | | | | | | | | | | | | | |
| G3-1 | Pipe | Cardoza Road | Center Avenue to proposed lift station | - | 66 | New | 1,650 | $ 1,624,000 | | $ 1,624,000 | | | | 100% | $ - | $ 1,624,000 | $ - |
| G3-2 | Pipe | Center Avenue | Cardoza Road to Pioneer Road | | 60 | New | 2,500 | $ 2,237,000 | | $ 2,237,000 | | | | 100% | $ - | $ 2,237,000 | $ - |
| G3-3 | Pipe | Center Avenue | Pioneer Road to s/o Pioneer Road | | 54 | New | 1,400 | $ 1,127,000 | | | $ 1,127,000 | | | 100% | $ - | $ 1,127,000 | $ - |
| G3-4 | Pipe | Pioneer Road | w/o Diana Road to w/o Center Avenue | - | 36 | New | 3,200 | $ 1,718,000 | | $ 1,718,000 | | | | 100% | $ - | $ 1,718,000 | $ - |
| G3-5 | Pipe | n/o Phillips Road | w/o Center Avenue to e/o Center Avenue | - | 36 | New | 3,150 | $ 1,691,000 | | | | | $ 1,691,000 | 100% | $ - | $ 1,691,000 | $ - |
| G3-6 | Force Main | Cardoza Road | Proposed lift station to discharge into CCID Canal to the northeast | - | 12 | New | 50 | $ 10,000 | | $ 10,000 | | | | 100% | $ - | $ 10,000 | $ - |
| G3-PS | Pump Station | Cardoza Road | Near intersection of Pike Street and Bluff Avenue | - | 9.4 cfs | New | | $ 851,000 | | $ 851,000 | | | | 100% | $ - | $ 851,000 | $ - |
| | Land Acquisition | | | | 0.5 acres | New | | $ 120,000 | | $ 120,000 | | | | 100% | $ - | $ 120,000 | $ - |
| G3-B1 | Detention Basin | Cardoza Road | Near intersection of Pike Street and Bluff Avenue | - | 35 Acre-Ft | New | | $ 1,019,000 | | $ 1,019,000 | | | | 100% | $ - | $ 1,019,000 | $ - |
| | Land Acquisition | | | | 5 acres | New | | $ 1,200,000 | | $ 1,200,000 | | | | 100% | $ - | $ 1,200,000 | $ - |
| **Johnson Field Subbasin** | | | | | | | | | | | | | | | | | |
| JF-1 | Pipe | Ortigalita Road | H Street to Capri Avenue | - | 54 | New | 4,200 | $ 3,382,000 | | | | $ 3,382,000 | | 100% | $ - | $ 3,382,000 | $ - |
| JF-2 | Pipe | s/o Capri Avenue | Badger Flat Road to Ortigalita Road | - | 36 | New | 1,850 | $ 993,000 | | | | $ 993,000 | | 100% | $ - | $ 993,000 | $ - |
| JF-3 | Pipe | Johnson Road | Overland Avenue to n/o Overland Avenue | - | 60 | New | 1,650 | $ 1,476,000 | | | $ 1,476,000 | | | 100% | $ - | $ 1,476,000 | $ - |
| JF-4 | Pipe | Johnson Road | n/o Overland Avenue to Capri Avenue | - | 36 | New | 2,250 | $ 1,208,000 | | | | $ 1,208,000 | | 100% | $ - | $ 1,208,000 | $ - |
| JF-5 | Pipe | Capri Avenue | Ortigalita Road to Johnson Road | - | 36 | New | 1,750 | $ 939,000 | | | | $ 939,000 | | 100% | $ - | $ 939,000 | $ - |
| JF-6 | Pipe | Capri Avenue | Johnson Road to Nantes Avenue | - | 66 | New | 3,350 | $ 3,297,000 | | | $ 3,297,000 | | | 100% | $ - | $ 3,297,000 | $ - |
| JF-7 | Pipe | Johnson Road | Capri Avenue to n/o Capri Avenue | - | 42 | New | 1,700 | $ 1,065,000 | | | $ 1,065,000 | | | 100% | $ - | $ 1,065,000 | $ - |
| JF-PS | Pump Station | Nantes Avenue | Near intersection with Capri Avenue | 3.56 cfs | 55 cfs | New/Upgrade | | $ 4,976,000 | | | $ 4,976,000 | | | 100% | $ - | $ 4,976,000 | $ - |
| | Land Acquisition | | | | 0.5 acres | New | | $ 120,000 | | | $ 120,000 | | | 100% | $ - | $ 120,000 | $ - |

**Table ES.2 Capital Improvement Projects**

**Storm Drainage System Master Plan**

**City of Los Banos**

| Figure No. | Type of Improvement | Description/ Street | Description / Limits | Project Length/Size and Cost: Ex. Size/ Diam. (in) | New Size/ Diam. (in) | Replace/ New | Length (ft) | Capital Improvement Cost[2,3] ($) | Capital Improvement Program: Phase 1 2010-15 ($) | Phase 2 2016-20 ($) | Phase 3 2021-2025 ($) | Phase 4 2026-2030 ($) | Phase 5 2031+ ($) | Future Users Benefit (%) | Improvement Reimbursement Category: Existing User Improvements ($) | Future Improvements Users: Developer ($) | Regional ($) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JF-B2 | Detention Basin | Capri Avenue | Near intersection with Ortigalita Road | - | 32 Acre-Ft | New | | $ 966,000 | | | | $ 966,000 | | 100% | $ - | $ 966,000 | $ - |
| | Land Acquisition | | | | 5 acres | New | | $ 1,200,000 | | | | $ 1,200,000 | | 100% | $ - | $ 1,200,000 | $ - |
| JF-B3 | Detention Basin | Johnson Road | n/o Overland Avenue, s/o Capri Avenue | - | 9 Acre-Ft | New | | $ 373,000 | | | $ 373,000 | | | 100% | $ - | $ 373,000 | $ - |
| | Land Acquisition | | | | 2 acres | New | | $ 480,000 | | | $ 480,000 | | | 100% | $ - | $ 480,000 | $ - |
| | | | | | | | | | | | | | | | | | |
| **Meadowlands No. 1 Subbasin** | | | | | | | | | | | | | | | | | |
| M1-1 | Pipe | Future Industrial Park street alignment | Los Banos Industrial Area Storm Drain Plan Improvement | - | 24 | New | 2,350 | $ 841,000 | | $ 841,000 | | | | 100% | $ - | $ 841,000 | $ - |
| M1-2 | Pipe | Future Industrial Park street alignment | Los Banos Industrial Area Storm Drain Plan Improvement | - | 36 | New | 1,100 | $ 590,000 | | $ 590,000 | | | | 100% | $ - | $ 590,000 | $ - |
| M1-3 | Pipe | Future Industrial Park street alignment | Los Banos Industrial Area Storm Drain Plan Improvement | - | 15 | New | 1,200 | $ 295,000 | | $ 295,000 | | | | 100% | $ - | $ 295,000 | $ - |
| M1-4 | Pipe | Future Industrial Park street alignment | Los Banos Industrial Area Storm Drain Plan Improvement | - | 24 | New | 850 | $ 304,000 | | $ 304,000 | | | | 100% | $ - | $ 304,000 | $ - |
| M1-5 | Pipe | Future Industrial Park street alignment | Los Banos Industrial Area Storm Drain Plan Improvement | - | 15 | New | 700 | $ 172,000 | | $ 172,000 | | | | 100% | $ - | $ 172,000 | $ - |
| M1-6 | Pipe | Future Industrial Park street alignment | Los Banos Industrial Area Storm Drain Plan Improvement | - | 30 | New | 750 | $ 336,000 | | $ 336,000 | | | | 100% | $ - | $ 336,000 | $ - |
| M1-PS | Pump Station | Egret Street | Intersection with Sanhill Crane Street, near the San Luis Canal | 10.9 cfs | 17.5 cfs | Upgrade | | $ 599,000 | | $ 599,000 | | | | 100% | $ - | $ 599,000 | $ - |
| M1-B1 | Detention Basin | Future Industrial Park Storage | Los Banos Industrial Area Storm Drain Plan Improvement | - | 7 Acre-Ft | New | | $ 303,000 | | $ 303,000 | | | | 100% | $ - | $ 303,000 | $ - |
| | Land Acquisition | | | | 2 acres | New | | $ 480,000 | | $ 480,000 | | | | 100% | $ - | $ 480,000 | $ - |
| M1-B2 | Detention Basin | Future Industrial Park Storage | Los Banos Industrial Area Storm Drain Plan Improvement | - | 7 Acre-Ft | New | | $ 303,000 | | $ 303,000 | | | | 100% | $ - | $ 303,000 | $ - |
| | Land Acquisition | | | | 2 acres | New | | $ 480,000 | | $ 480,000 | | | | 100% | $ - | $ 480,000 | $ - |
| M1-B3 | Detention Basin | Future Industrial Park Storage | Los Banos Industrial Area Storm Drain Plan Improvement | - | 2 Acre-Ft | New | | $ 303,000 | | $ 303,000 | | | | 100% | $ - | $ 303,000 | $ - |
| | Land Acquisition | | | | 0.5 acres | New | | $ 120,000 | | $ 120,000 | | | | 100% | $ - | $ 120,000 | $ - |
| **Meadowlands No. 2 Subbasin** | | | | | | | | | | | | | | | | | |
| M2-1 | Pipe | Racquet Club Drive | Park Sharon Drive to the west | - | 30 | New | 1,650 | $ 738,000 | $ 738,000 | | | | | 100% | $ - | $ 738,000 | $ - |
| **Ranchwood No. 2 Subbasin** | | | | | | | | | | | | | | | | | |
| R2-1 | Force Main | Nantes Avenue | n/o Capri Avenue | - | 36 | New | 350 | $ 188,000 | | $ 188,000 | | | | 100% | $ - | $ 188,000 | $ - |
| R2-2 | Pipe | n/o Capri Avenue | Runs west to east to proposed detention basin | - | 36 | New | 2,800 | $ 1,503,000 | | $ 1,503,000 | | | | 100% | $ - | $ 1,503,000 | $ - |
| R2-3 | Pipe | n/o Capri Avenue | Runs west to east to Mercey Springs Avenue | - | 30 | New | 2,150 | $ 962,000 | | $ 962,000 | | | | 100% | $ - | $ 962,000 | $ - |
| R2-4 | Pipe | Mercey Springs Avenue | n/o Capri Avenue to proposed lift station | - | 36 | New | 250 | $ 134,000 | | $ 134,000 | | | | 100% | $ - | $ 134,000 | $ - |
| R2-5 | Pipe | e/o Nantes Avenue | Runs north and south | - | 36 | New | 1,650 | $ 886,000 | | $ 886,000 | | | | 100% | $ - | $ 886,000 | $ - |
| R2-6 | Pipe | 1,250' w/o Mercey Springs Avenue | n/o Capri Avenue to the north | - | 30 | New | 1,400 | $ 626,000 | | | $ 626,000 | | | 100% | $ - | $ 626,000 | $ - |
| R2-PS | Pump Station | Mercey Springs Avenue | n/o intersection with St. Francis Street | - | 8.9 cfs | New | | $ 805,000 | | $ 805,000 | | | | 100% | $ - | $ 805,000 | $ - |
| | Land Acquisition | | | | 0.5 acres | New | | $ 120,000 | | $ 120,000 | | | | 100% | $ - | $ 120,000 | $ - |
| R2-B1 | Detention Basin | n/o Capri Avenue | Near SOI boundary | - | 12 Acre-Ft | New | | $ 442,000 | | $ 442,000 | | | | 100% | $ - | $ 442,000 | $ - |
| | Land Acquisition | | | | 2 acres | New | | $ 480,000 | | $ 480,000 | | | | 100% | $ - | $ 480,000 | $ - |
| NC-1 | Box Culvert Channel | n/o El Cajon Lane, n/o San Ramon Lane | Mercey Springs Avenue to e/o Place Road | - | 7 X 7 | New | 3,050 | $ 5,710,000 | | $ 5,710,000 | | | | 100% | $ - | $ - | $ 5,710,000 |
| NC-2 | Box Culvert Channel | n/o Capri Avenue, Mercey Springs Avenue | Nantes Avenue to Mercey Springs Avenue, then north | - | 7 X 7 | New | 6,300 | $ 11,794,000 | | | $ 11,794,000 | | | 100% | $ - | $ - | $ 11,794,000 |
| **Skylark No. 2 Subbasin** | | | | | | | | | | | | | | | | | |
| S2-1 | Pipe | Future HWY 152 Alignment | Near Mercey Springs Avenue to proposed basin | - | 36 | New | 2,650 | $ 1,423,000 | | | $ 1,423,000 | | | 100% | $ - | $ 1,423,000 | $ - |
| S2-2 | Pipe | e/o Place Road | e/o intersection of San Ramon Lane and Place Road | - | 42 | New | 1,650 | $ 1,033,000 | | | $ 1,033,000 | | | 100% | $ - | $ 1,033,000 | $ - |
| S2-3 | Pipe | Place Road (Future) | Quail Street to the south | - | 33 | New | 850 | $ 418,000 | | $ 418,000 | | | | 100% | $ - | $ 418,000 | $ - |
| S2-4 | Pipe | Place Road (Future) | s/o Quail Street to Regency Drive | - | 36 | New | 2,050 | $ 1,100,000 | | $ 1,100,000 | | | | 100% | $ - | $ 1,100,000 | $ - |
| S2-5 | Pipe | Regency Drive | e/o Place Road | - | 27 | New | 1,800 | $ 725,000 | | $ 725,000 | | | | 100% | $ - | $ 725,000 | $ - |
| S2-6 | Pipe | n/o Willmott Avenue | e/o Place Road to proposed 36-inch pipe to the east | - | 30 | New | 400 | $ 179,000 | $ 179,000 | | | | | 100% | $ - | $ 179,000 | $ - |
| S2-7 | Pipe | n/o Willmott Avenue | e/o Place Road to proposed 42-inch pipe to the east | - | 36 | New | 500 | $ 268,000 | $ 268,000 | | | | | 100% | $ - | $ 268,000 | $ - |
| S2-8 | Pipe | n/o Willmott Avenue | e/o Place Road to w/o Ward Road | - | 42 | New | 1,050 | $ 658,000 | $ 658,000 | | | | | 100% | $ - | $ 658,000 | $ - |
| S2-9 | Pipe | n/o Willmott Avenue | Runs west to east to Ward Road | - | 48 | New | 400 | $ 286,000 | $ 286,000 | | | | | 100% | $ - | $ 286,000 | $ - |
| S2-10 | Pipe | Ward Road | s/o Greenwich Street to n/o Willmott Avenue | - | 15 | New | 950 | $ 234,000 | $ 234,000 | | | | | 100% | $ - | $ 234,000 | $ - |
| S2-11 | Pipe | Ward Road | Palmero Drive to n/o Willmott Avenue | - | 18 | New | 1,200 | $ 322,000 | $ 322,000 | | | | | 100% | $ - | $ 322,000 | $ - |
| S2-12 | Pipe | Ward Road | n/o Willmott Avenue | - | 24 | New | 300 | $ 107,000 | $ 107,000 | | | | | 100% | $ - | $ 107,000 | $ - |
| S2-13 | Force Main | Ward Road | Proposed lift station to San Luis Canal | - | 12 | New | 850 | $ 167,000 | $ 167,000 | | | | | 100% | $ - | $ 167,000 | $ - |
| S2-14 | Force Main | e/o Place Road | e/o intersection of San Ramon Lane and Place Road | - | 12 | New | 100 | $ 20,000 | | $ 20,000 | | | | 100% | $ - | $ 20,000 | $ - |
| S2-PS-1 | Pump Station | Ward Road | n/o Willmott Avenue | - | 3.5 cfs | New | | $ 317,000 | $ 317,000 | | | | | 100% | $ - | $ 317,000 | $ - |
| | Land Acquisition | | | | 0.5 acres | New | | $ 120,000 | $ 120,000 | | | | | 100% | $ - | $ 120,000 | $ - |
| S2-PS-2 | Pump Station | Saint Francis Estates Pump Station | Near intersection with San Ramon Lane | 5.7 cfs | 24.6 cfs | Upgrade | | $ 2,221,000 | | $ 2,221,000 | | | | 100% | $ - | $ 2,221,000 | $ - |
| | Land Acquisition | | | | 0.5 acres | New | | $ 120,000 | | $ 120,000 | | | | 100% | $ - | $ 120,000 | $ - |
| S2-B1 | Detention Basin | Place Road | Near intersection with Regency Drive | - | 57 Acre-Ft | New | | $ 1,500,000 | | $ 1,500,000 | | | | 100% | $ - | $ 1,500,000 | $ - |
| | Land Acquisition | | | | 9 acres | New | | $ 2,160,000 | | $ 2,160,000 | | | | 100% | $ - | $ 2,160,000 | $ - |

**Table ES.2 Capital Improvement Projects**

**Storm Drainage System Master Plan**

**City of Los Banos**

| Figure No. | Type of Improvement | Description/ Street | Description / Limits | Project Length/Size and Cost: Ex. Size/ Diam. (in) | New Size/ Diam. (in) | Replace/ New | Length (ft) | Capital Improvement Cost[2,3] ($) | Capital Improvement Program: Phase 1 2010-15 ($) | Phase 2 2016-20 ($) | Phase 3 2021-2025 ($) | Phase 4 2026-2030 ($) | Phase 5 2031+ ($) | Future Users Benefit (%) | Improvement Reimbursement Category: Existing User Improvements ($) | Future Improvements Users: Developer ($) | Regional ($) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S2-B2 | Detention Basin | Ward Road | n/o Willmott Avenue | - | 21 Acre-Ft | New | | $ 705,000 | | $ 705,000 | | | | 100% | $ - | $ 705,000 | $ - |
| | Land Acquisition | | | | 3 acres | New | | $ 720,000 | | $ 720,000 | | | | 100% | $ - | $ 720,000 | $ - |
| **Walmart No. 1 Subbasin** | | | | | | | | | | | | | | | | | |
| W1-1 | Pipe | Ortigalita Road | n/o Pioneer Road | - | 48 | New | 1,300 | $ 930,000 | | $ 930,000 | | | | 100% | $ - | $ 930,000 | $ - |
| W1-2 | Pipe | Ortigalita Road | Pioneer Road to proposed basin | - | 60 | New | 1,450 | $ 1,297,000 | | $ 1,297,000 | | | | 100% | $ - | $ 1,297,000 | $ - |
| W1-3 | Pipe | Pioneer Road | Ortigalita Road to w/o Ortigalita Road | - | 48 | New | 1,950 | $ 1,396,000 | | | $ 698,000 | $ 698,000 | | 100% | $ - | $ 1,396,000 | $ - |
| W1-4 | Pipe | Pioneer Road | e/o Los Banos Canal to w/o Ortigalita Road | - | 36 | New | 2,050 | $ 1,100,000 | | | | $ 1,100,000 | | 100% | $ - | $ 1,100,000 | $ - |
| W1-5 | Pipe | Ortigalita Road | Pioneer Road to s/o Pioneer Road, then West. | - | 27 | New | 2,800 | $ 1,127,000 | | | | $ 564,000 | $ 563,000 | 100% | $ - | $ 1,127,000 | $ - |
| W1-6 | Pipe | n/o Pioneer Road | Connection to proposed detention basin. | - | 36 | New | 700 | $ 376,000 | | $ 376,000 | | | | 100% | $ - | $ 376,000 | $ - |
| W1-7 | Pipe | Badger Flat Road | Intersection of Badger Flat Road and Cardoza Road | - | 27 | New | 1,350 | $ 544,000 | | $ 544,000 | | | | 100% | $ - | $ 544,000 | $ - |
| W1-B1 | Detention Basin | s/o Tavertine Road | nw/o intersection of Ortigalita Road and Pioneer Road | - | 5 Acre-Ft | New | | $ 220,000 | | $ 220,000 | | | | 100% | $ - | $ 220,000 | $ - |
| | Land Acquisition | | | | 1 acre | New | | $ 240,000 | | $ 240,000 | | | | 100% | $ - | $ 240,000 | $ - |
| **Walmart No. 2 Subbasin** | | | | | | | | | | | | | | | | | |
| W2-1 | Pipe | Badger Flat Road | CCID Main Canal to the south along Badger Flat Road | - | 66 | New | 2,700 | $ 2,657,000 | | $ 2,657,000 | | | | 100% | $ - | $ 2,657,000 | $ - |
| W2-2 | Pipe | n/o Pacheco Blvd | Pacheco Blvd to Badger Flat Road. | - | 60 | New | 3,650 | $ 3,266,000 | | $ 3,266,000 | | | | 100% | $ - | $ 3,266,000 | $ - |
| W2-3 | Pipe | s/o Pacheco Blvd | s/o Pacheco Blvd | - | 42 | New | 2,100 | $ 1,315,000 | | $ 1,315,000 | | | | 100% | $ - | $ 1,315,000 | $ - |
| W2-3B | Casing[1] | Pacheco Blvd | Crossing Pacheco Blvd | - | 42/60 | New | 500 | $ 1,740,000 | | $ 1,740,000 | | | | 100% | $ - | $ 1,740,000 | $ - |
| W2-4 | Pipe | s/o Pacheco Blvd | s/o Pacheco Blvd | - | 36 | New | 1,350 | $ 725,000 | | $ 725,000 | | | | 100% | $ - | $ 725,000 | $ - |
| W2-5 | Force Main | Badger Flat Road | Near CCID Main Canal; point of discharge | - | 36 | New | 200 | $ 107,000 | | $ 107,000 | | | | 100% | $ - | $ 107,000 | $ - |
| W2-PS | Pump Station | Badger Flat Road | Near CCID Main Canal | - | 12.2 cfs | New | | $ 1,104,000 | | $ 1,104,000 | | | | 100% | $ - | $ 1,104,000 | $ - |
| | Land Acquisition | | | | 0.5 acres | New | | $ 120,000 | | $ 120,000 | | | | 100% | $ - | $ 120,000 | $ - |
| W2-B1 | Detention Basin | Badger Flat Road | Near CCID Main Canal | - | 25 Acre-Ft | New | | $ 798,000 | | $ 798,000 | | | | 100% | $ - | $ 798,000 | $ - |
| | Land Acquisition | | | | 4.0 | New | | $ 960,000 | | $ 960,000 | | | | 100% | $ - | $ 960,000 | $ - |
| | | | | | | | **Future Improvements Subtotal:** | **$ 204,257,000** | **$ 3,396,000** | **$ 77,910,000** | **$ 39,574,000** | **$ 54,640,000** | **$ 28,737,000** | | **$ 179,000** | **$ 176,211,000** | **$ 27,867,000** |
| | | | | | | | **Total CIP (Existing and Future Users):** | **$ 228,028,000** | **$ 8,520,000** | **$ 83,267,000** | **$ 46,631,000** | **$ 57,757,000** | **$ 31,853,000** | | **$ 22,107,900** | **$ 178,053,100** | **$ 27,867,000** |

Notes:

1. Proposed casings size and carrier pipe size.
2. Baseline Construction Cost plus 20% to account for unforeseen events and unknown conditions.
3. Estimated Construction Cost plus 30% to cover other costs including Engineering, Construction Management, and Program Implementation.
4. Land acquisition costs were included for pump stations and storm detention basins, but not pipelines since these will be located in public right of way.
5. Costs are based on the Engingeering News Record Construction Cost Index 20-city average of 8592.
6. The capital costs for these projects are included in the Wastewater Collection System Master Plan since they benefit the sanitary sewer system.

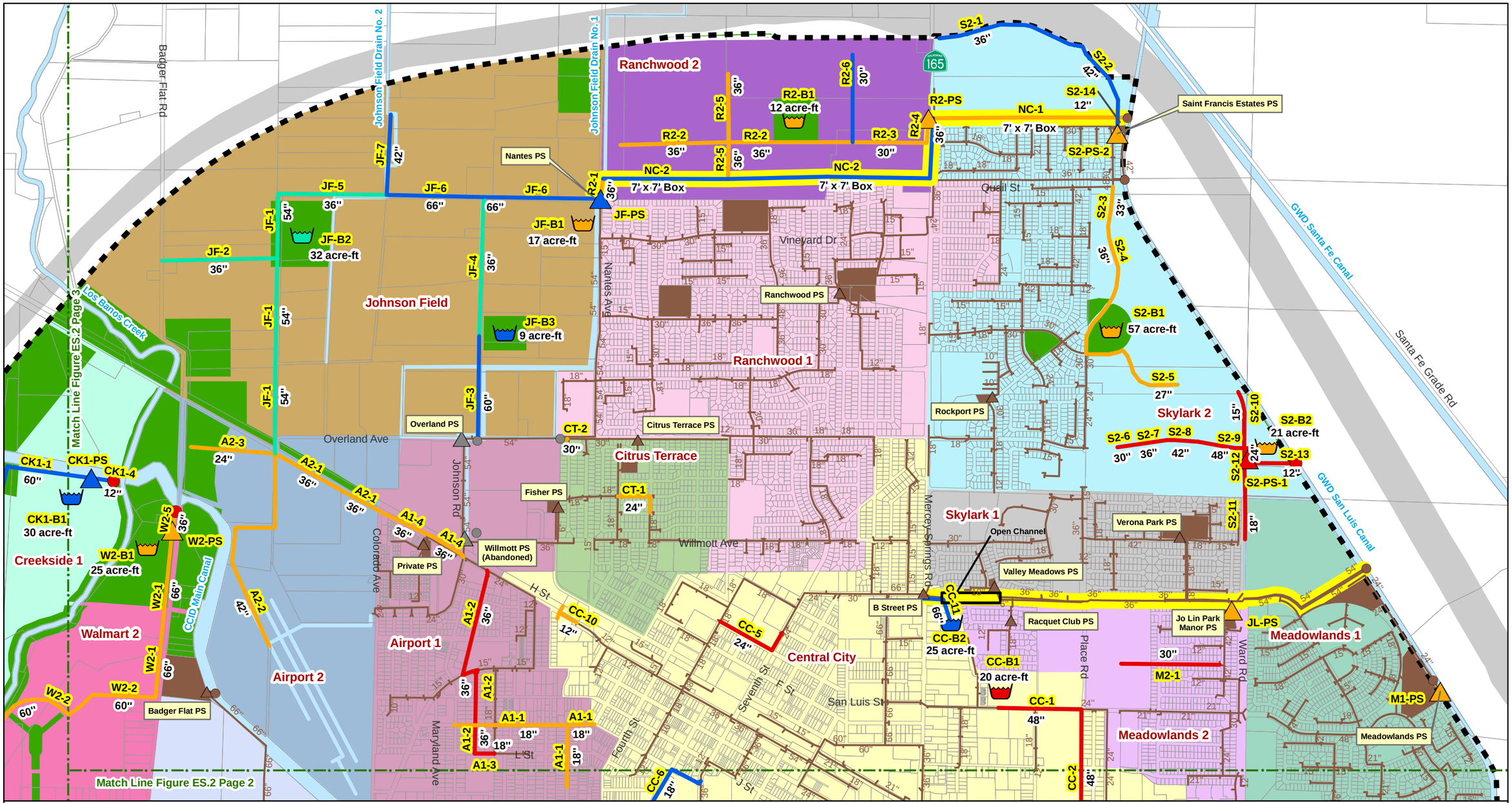
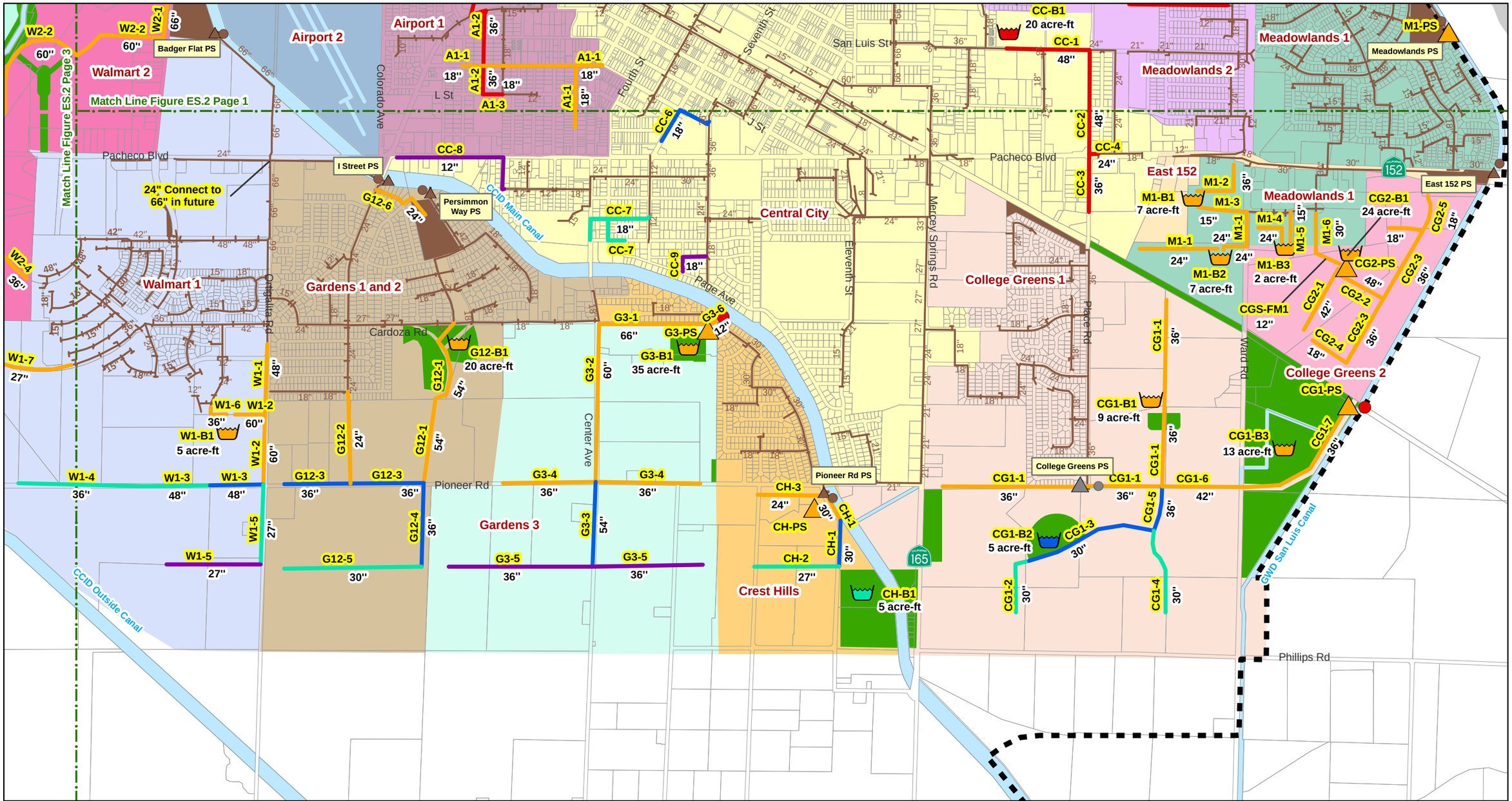



**Figure ES.2**
**Proposed Drainage System Improvements (1 of 3)**
Storm Drainage System Master Plan
City of Los Banos




**Legend**

**Existing Storm Drainage System**
- Outfall
- Pump Station
- Storm Drains
- Storm Basins

**Future Drainage Facilities**
- Outfall
- Outfall to be Abandoned

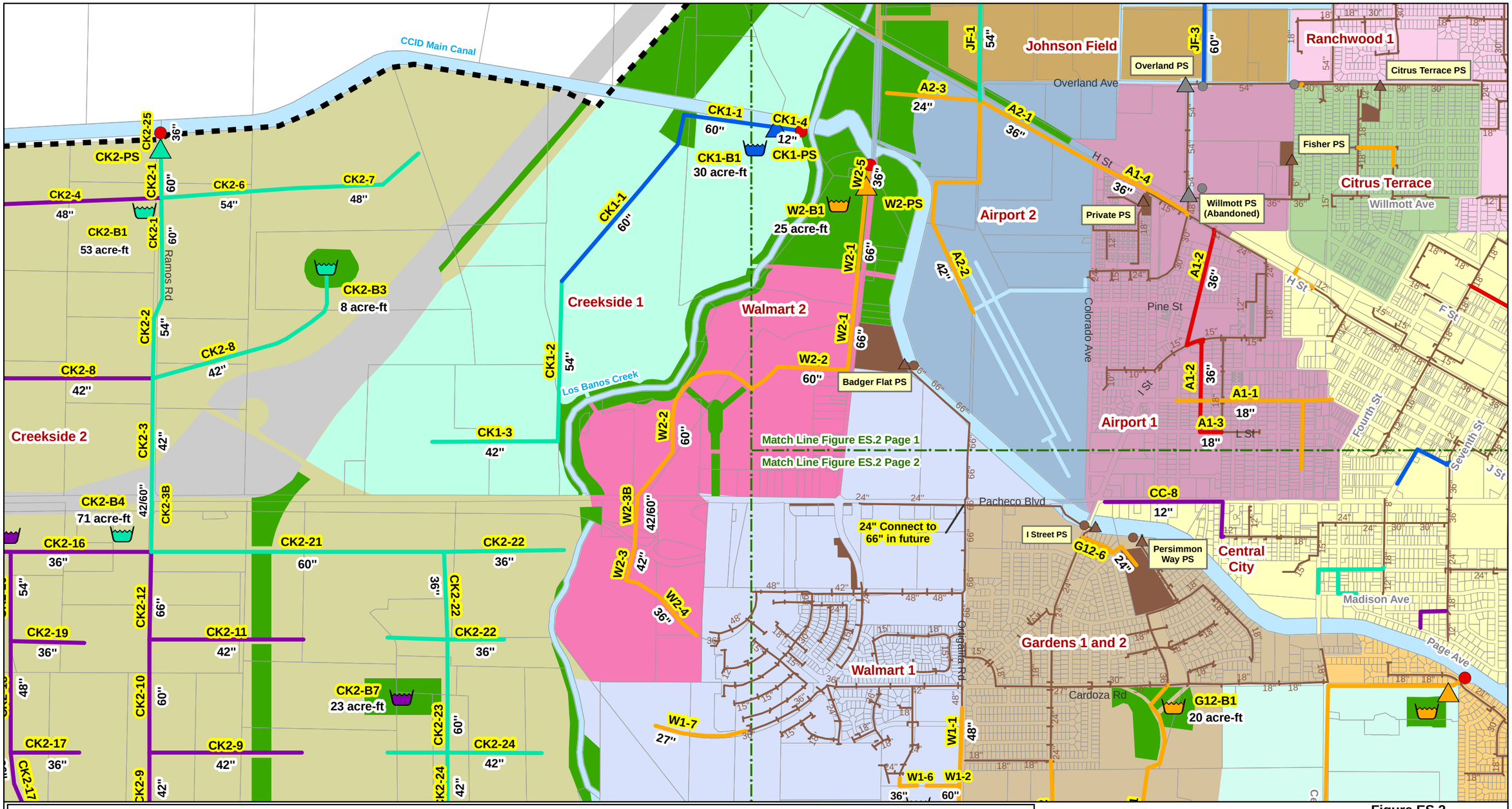
**Storm Basin**
- Phase 1 (2010 - 2015)
- Phase 2 (2016 - 2020)
- Phase 3 (2021 - 2025)
- Phase 4 (2026 - 2030)
- Phase 5 (2031+)

**Pump Station**
- Phase 1 (2010 - 2015)
- Phase 2 (2016 - 2020)
- Phase 3 (2021 - 2025)
- CH-2 CIP ID
- Phase 4 (2026 - 2030)
- Phase 5 (2031+)
- Lift Station To Be Abandoned
- 12" CIP Diameter
- 8" Existing Diameter

**Storm Drains**
- Phase 1 (2010 - 2015)
- Phase 2 (2016 - 2020)
- Phase 3 (2021 - 2025)
- Phase 4 (2026 - 2030)
- Phase 5 (2031+)

- Waterways/Canals
- Future Park
- SR 152 Bypass Corridor
- Drainage Subbasins
- Parcels
- Sphere of Influence

**Figure ES.2**
**Proposed Drainage System Improvements (2 of 3)**
Storm Drainage System
Master Plan
City of Los Banos




**Legend**

**Existing Storm Drainage System**
- Outfall
- Pump Station
- Storm Drains
- Storm Basins

**Future Drainage Facilities**
- Outfall
- Outfall to be Abandoned

**Storm Basin**
- Phase 1 (2010 - 2015)
- Phase 2 (2016 - 2020)
- Phase 3 (2021 - 2025)
- Phase 4 (2026 - 2030)
- Phase 5 (2031+)

**Pump Station**
- Phase 1 (2010 - 2015)
- Phase 2 (2016 - 2020)
- Phase 3 (2021 - 2025)
- CK2-4 CIP ID
- Phase 4 (2026 - 2030)
- Phase 5 (2031+)
- Lift Station To Be Abandoned
- 12" CIP Diameter
- 8" Existing Diameter

**Storm Drains**
- Phase 1 (2010 - 2015)
- Phase 2 (2016 - 2020)
- Phase 3 (2021 - 2025)
- Phase 4 (2026 - 2030)
- Phase 5 (2031+)

- Waterways/Canals
- Future Park
- SR 152 Bypass Corridor
- Drainage Subbasins
- Parcels
- Sphere of Influence

N

0 1,000 2,000 Feet

**Figure ES.2**
**Proposed Drainage System Improvements (3 of 3)**
Storm Drainage System
Master Plan
City of Los Banos

carollo
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A majority of the proposed improvements is required to serve future users. Continued growth will trigger the construction of new facilities to support this growth. Future users were assigned 100 percent of the future project's benefit and 100 percent of the costs.

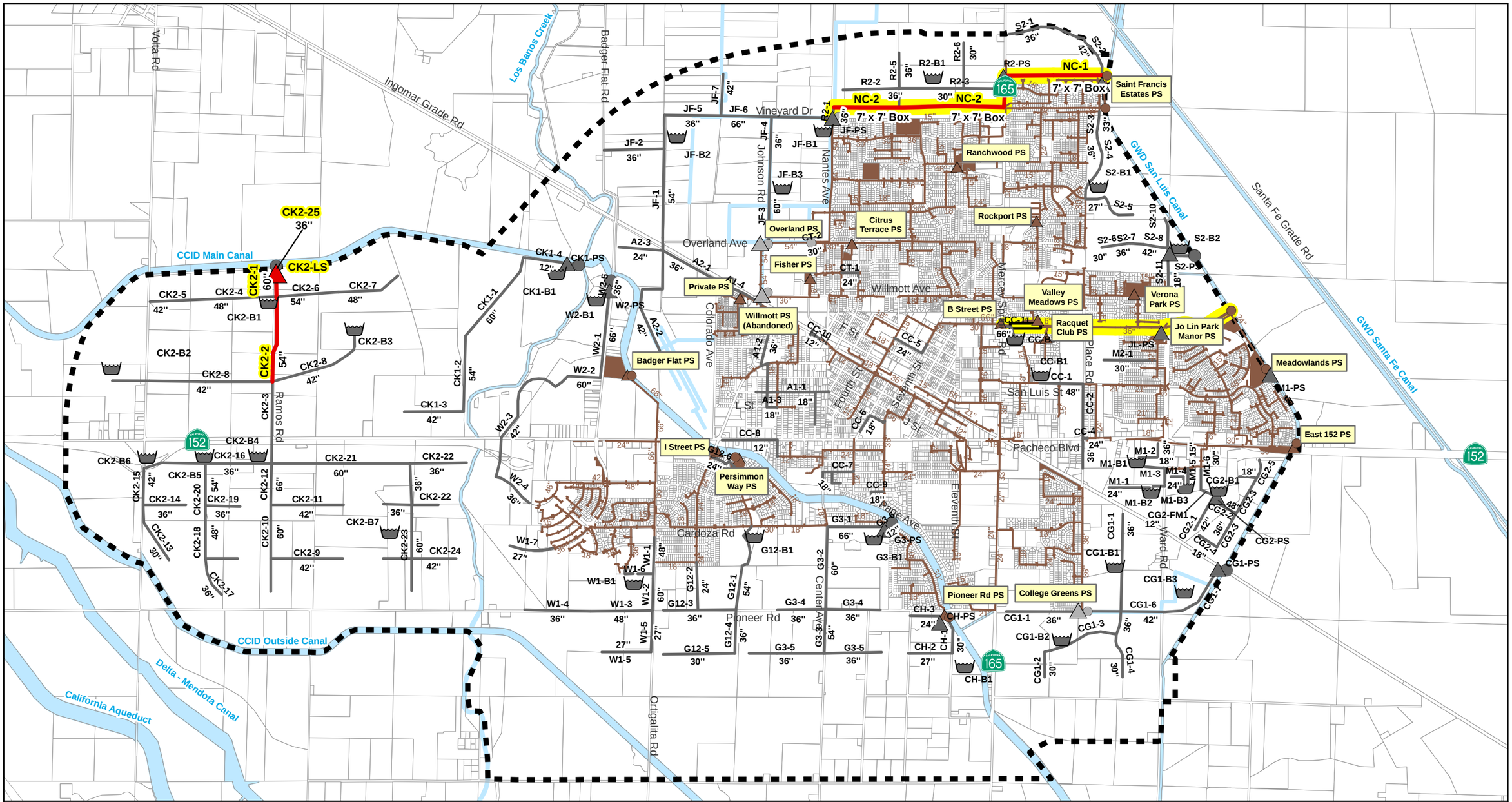
Most projects were assigned 100 percent to either existing or future users. Exceptions include the following:

- The Johnson Field subbasin detention basin (JF-B1), which will provide storage for runoff generated within the Airport No. 1 subbasin and new users within the Johnson Field subbasin.
- The Gardens No. 1 and No. 2 subbasin storm drain (G12-6) that connects pipelines in 'I' Street to the Persimmon Way detention basin. This storm drain conveys existing and future runoff to the detention basin and relieves flooding along 'I' Street.
- The Central City B Street Storage Basin (CC-B2), which will provide storage for the existing system and future infill development within the Central City Subbasin.
- The Talbott Park Storage Basin (CC-B1) and new 48-inch pipeline (CC-1 and CC-2) that will serve the recently constructed commercial developments near the road south of Interstate 152, along with future infill development west of Place Road, north of Interstate 152.

More information on the breakdown in cost split between existing and future users and whether a proposed improvement is intended to correct an existing deficiency, to serve a future user, or both is provided in Chapter 6 and 7. The future improvements were broken down further based on their funding source. Future improvements will be funded by developers or through development impact fees. All projects fall into one of the three following categories:

- Existing Improvements: Existing improvements correct existing deficiencies or rehabilitate/replace existing facilities that have reached their useful life. These projects are funded through user rates.
- Developer Improvements: Future improvements that serve new users. These improvements will be developer funded and/or may be part of a reimbursement agreement between developers.
- Regional Improvements: Future improvements that serve new users. These improvements will be funded through storm drainage development impact fees collected by the City.

The majority of future improvements are Developer Improvements, but some storm drains, detention basin and pump stations were designated Regional Improvements. The Regional Improvements are shown in Figure ES.3.




**Legend**

**Existing Storm Drainage System**
- Outfall
- Pump Station
- Storm Drains
- Storm Basins
- Outfall Conveyance
- NC-2 Regional CIP ID
- S2-7 CIP ID

**Future Drainage Facilities**
**Regional Improvements**
- Storm Basin
- Pump Station
- Pipelines

**Other Improvements**
- Storm Basin
- Pump Station
- Outfall
- Pipelines
- Outfall to be Abandoned
- Lift Station to be Abandoned
- 12" CIP Diameter
- 8" Existing Diameter
- Waterways/Canals
- Sphere of Influence
- Parcels

N

0 2,500 5,000 Feet

**Figure ES.3**
**Regional Improvements**
Storm Drainage System
Master Plan
City of Los Banos

## ES.6.2 Existing System Improvements

This Master Plan proposes about 15 miles of storm drains to replace existing pipelines, provide service to existing areas without drainage facilities, or to restore aging infrastructure.

The proposed existing system improvements reduce the flooding around downtown by installing storm drains in areas that lack drainage facilities, and by adding detention basins to store peak flows. Some of the proposed storm drain improvements also benefit the wastewater collection system where, due to the lack of drainage facilities, storm water is conveyed to the sewer system. The downtown area of the City experiences sudden increases in wastewater flow following large storm events. Previous master plans prepared by the City identified several storm drain connections to the collection system that cause this increase in flow. The area in the City where runoff currently drains to the sewer system is shown in Chapter 5 (Figure 5.1).

The Wastewater Collection System Master Plan concluded that if the City implements storm drain projects to separate these inflow connections, then a large downtown wastewater sewer project could be avoided. The Wastewater Collection System Master Plan was completed under the assumption that the City would implement the downtown storm drain projects to separate the two systems. By implementing the storm drain projects and removing storm runoff from the collection system, there are fewer sewer capital projects that must be implemented. The storm drain improvements that separate runoff from the wastewater collection system are discussed in Chapter 6. The capital costs for these storm drain projects were included in the Wastewater Collection System Master Plan because they benefit the sewer system.

The State Water Resources Control Board (SWRCB) recently adopted (May 2, 2006) the Statewide General Waste Discharge Requirements (WDR) for Sanitary Sewer Systems. The purpose of the WDR is to reduce sanitary sewer overflows (SSO). Large increases in sewer flow following a storm could result in SSOs. Identifying and removing the storm connections to the sewer system will reduce the likelihood of SSOs.

### *ES.6.2.1 Storm Drain Replacement Program*

In addition to the storm drain improvements recommended to mitigate capacity deficiencies, the City will implement a storm drain replacement program. The storm drain replacement program will remove older pipes that may be reaching the end of their useful life, and replace them with new pipes. It was assumed that the City would replace about 0.25 miles of storm drains every year through 2035.

This program will improve the reliability of the storm drainage system, extend the useful life of existing storm drains and maintain the operation of the drainage system. These older storm drains are located throughout the City and are not shown in Figure ES.2. The City

should also consider an asset management program to identify which pipes need to be replaced and to establish a schedule for replacement, as well as assess the pipe condition.

#### *ES.6.2.2 Manhole Replacement Program*

The City will implement a manhole replacement program to remove older manholes in the storm drainage system that are reaching the end of their useful life and susceptible to failure. The City will also replace manholes that lack the access for City staff to perform routine maintenance.

#### *ES.6.2.3 Pump Station Rehabilitation or Replacement Program*

Pump station replacement or rehabilitation will be necessary to maintain proper operation of existing facilities. We assumed that pump stations would be rehabilitated or replaced every five years, starting in Phase 2. The Jo Lin Park Manor pump station should be rehabilitated to install belt driven pumps, replace the float system and replace the electrical system.

### ES.6.3 Future System Improvements

All future storm drainage system improvements will serve undeveloped areas. The improvements are organized by drainage subbasin and the facilities are sized to meet the storm discharge guidelines established in the Phase I Plan. This Master Plan is proposing about 38 miles of new storm drains to serve future users. The storm drains fall in the 12- to 66-inch diameter range. Most of the proposed pump stations were less than 25 cubic feet per second (cfs) in capacity. The proposed detention basins ranged in size from 2-acre-feet (AF) up to 71 AF. The proposed detention basins play a critical role in storing peak flows and reducing the size of storm drains and pump stations.

The general goal followed for locating storm detention basins was to place them where future parks or open space was placed in the 2030 General Plan. This will allow the City to take advantage of future parks or open space to serve a dual use as a recreation facility and detention basin. This is consistent with the City's policy to construct all basins as multiple purpose basins to maximize open space and recreational opportunities.

A second goal was to strategically place detention basins in the upper watershed of subbasins so that peak flows were stored upstream. Storing storm runoff upstream attenuated the peak flows and reduced the size of the conveyance system (storm drains and pump stations) downstream.

Placing storm detention basins in the upper watershed of subbasins required the appropriate selection of storm drain capacities to work in unison with the detention basins. Figure ES.2 shows that some storm drain diameters decrease in size downstream of a detention basin. The reason for this reduction in size is that the storm drain acts as a hydraulic constriction and forces runoff to back up into the detention basin. A larger diameter storm drain would allow runoff to pass through without backing into the detention basin and would negate the purpose of the basin.

If the storm drain diameters proposed in this Master Plan are revised, then an analysis on the impacts on the storm detention basins and the pump stations should be conducted prior to approval. The changes may impact the operation of the system.

## ES.7 CAPITAL PROJECT PRIORITIZATION

The capital improvements for the City's storm drainage system were prioritized based on the following factors:

- Upgrading existing storm drains or building new detention basins to mitigate existing flooding, in particular in the Central City subbasin
- Building new storm drains, pump stations, and detention basins necessary to serve future users

Higher priority projects were listed within the Phase 1 (2010-15) and Phase 2 (2016-20) implementation timeframes in Table ES.2. Lower priority projects were listed in Phase 3 (2021-25) through Phase 5 (2031+).

The existing system improvements were proposed primarily to mitigate existing flooding in and around the downtown area, and to provide storm drains where runoff currently flows into the wastewater collection system.

Future development will require the construction of new storm drains, pump stations, and detention basins to serve new users. Proposed improvements within areas identified for early development were assigned a higher priority. Areas within an approved tentative map tract received the highest priority. The actual implementation of the improvements serving future users depends on the pace of development. The priorities presented below are estimates based on available information provided by the City. Changes in the City's planning assumptions or growth projections could increase or decrease the priority of each improvement.

### ES.7.1 Existing System Improvement Prioritization

The highest priority projects are those that mitigate existing flooding or reduce storm inflow into the wastewater collection system. Due to economic conditions and the slowdown in development, the probability and practicality of constructing all these improvements in the next five years is low. For this reason, the improvements were distributed amongst the first three phases according to priority and level of greatest benefit to existing users. Refer to Table ES.2 in the 2010-2015 column for all Phase 1 projects, the 2016-2020 column for all Phase 2 projects, and the 2021-2015 column for all Phase 3 projects. Figure ES.2 illustrates the locations of these improvements and the phasing by color code. The proposed Phase 1 projects and the subbasins in which they are located include:

- Airport No. 1 subbasin storm drain projects (A1-1, 2 and 3) implemented as part of the Wastewater Collection System Master Plan

- Central City subbasin storm drain projects (CC-1 through CC-9) and detention basin (CC-B1). Projects CC-6 through CC-9 implemented as part of the Wastewater Collection System Master Plan

The proposed Phase 2 projects and the subbasins in which they are located include:

- Central City subbasins storm drainage project (CC-10)
- Citrus Terrace subbasin storm drain project (CT-1)
- Johnson Field subbasin detention basin (JF-B1)
- On going storm drain, manhole, and pump station replacement or rehabilitation program

The proposed Phase 3 projects and the subbasins in which they are located include:

- Central City subbasin storm drain projects (CC-B2 and CC-11)
- Ongoing storm drain, manhole, and pump station replacement or rehabilitation program.

## ES.7.2 Future System Improvement Prioritization

The implementation of the storm drainage system improvements that serve future growth will depend on the City's pace of development and selection of areas to be served with urban infrastructure. The City provided guidance on future development and phasing of infrastructure to serve future users. Based on this input, the projects were grouped into the following timeframes:

- Years 2010 through 2015
- Years 2016 through 2020
- Years 2021 through 2025
- Years 2026 through 2030
- Beyond 2031

### *ES.7.2.1 Phase 1 Projects (2010-2015)*

The high priority future system improvements are those required to serve future users, are part of future infill development, have approved development plans, and categorized as Phase 1. The majority of these improvements are storm drains, but they also include pump stations and detention basins. As shown in Table ES.2 and illustrated in Figure ES.2, several storm drain improvements fall into the Phase 1 category and are considered high priority. The highest priority projects include:

- Meadowlands No. 2 subbasin storm drain (M2-1)
- Skylark No. 2 subbasin storm drains (S2-6 through S2-13) and pump station (S2-PS-1)

#### *ES.7.2.2 Phase 2 Projects (2016-2020)*

The Phase 2 projects will serve new development in the growth areas targeted by the City. As shown in Table ES.2 and illustrated in Figure ES.2, all the projects with a Phase 2 entry in the 2016-2020 column will likely be implemented within this phase. Some of the projects identified within Phase 2 are part of a larger capital project. For example, the first three reaches of the Gardens No. 3 storm drains (G3-1, 2, and 4) and the pump station are targeted as the first segments of this series of storm drains to be constructed. Also, the first reach of the North Channel (NC-1) will be constructed in Phase 2.

There are a number of Phase 2 storm drain improvements that extend out to proposed detention basins, or serve areas that could be developed by year 2015. Some general areas with a near term development potential include the proposed Industrial Business Park around Ward Road, land between Cardoza and Pioneer Road, commercial areas around Highway 152 on the west side of the City, and vacant land around Nantes and Overland Avenues. As shown in Figure ES.2, storm drains, detention basins, and pump stations illustrated as Phase 2 improvements serve these areas.

Storm drainage improvements around the College Greens No. 1 subbasin (CG1-1, 6, and 7), No. 2 subbasin (CG2-1, 2, 3, 4, 5, FM1, PS, and B1), and Meadowlands No. 1 Subbasin (M1-1, 2, 3, 4, 5, 6, B1, B2, B3, PS) around Ward Road and the proposed Industrial Business Park are important because they provide storm drainage service to a key re-development site in the City. Also, the drainage improvements in the WalMart No. 2 subbasin provide the necessary facilities to support commercial development around Highway 152.

#### *ES.7.2.3 Phase 3 through 5 Projects (2021 and beyond)*

The lower priority future system improvements are those required to serve anticipated growth from 2021 and beyond. The storm drainage improvements in Phase 3 extend farther out towards the boundary of the study area. This is also the phase that the North Channel box culvert (NC-2) in the northern part of the City would be completed.

A majority of the western portion of the study area, west of Los Banos Creek, is slated for development after year 2020. This area will support employment based land uses. These improvements are considered lower priority and are categorized as Phase 4 and 5.

## ES.8 CAPITAL PROJECT COSTS

A summary of the capital project costs and the implementation timeframe is presented in Table ES.2. The future improvements are broken down further into Regional or Developer Improvements. The difference between these two is the funding source. The breakdown in existing and future user share by phase is presented in Table ES.3.

**Table ES.3 Existing Versus Future User Cost Share**
**Storm Drainage System Master Plan**
**City of Los Banos**

| | Implementation Phase | | | | | |
|---|---|---|---|---|---|---|
| | **2010-15 ($, mill.)** | **2016-20 ($, mill.)** | **2021-25 ($, mill.)** | **2026-30 ($, mill.)** | **2031 + ($, mill.)** | **Total ($, mill.)** |
| Existing Improvement[2] | 4.53 | 7.81 | 3.53 | 3.12 | 3.12 | **22.11** |
| Future Developer Improvement[3] | 3.99 | 73.27 | 27.98 | 44.28 | 28.74 | **178.05** |
| Future Regional Improvement[4] | -- | 5.71 | 11.79 | 10.36 | -- | **27.87** |
| **Total** | **8.52** | **86.80** | **43.10** | **57.76** | **31.85** | **228.03** |

Notes:
1. All costs are in November 2009 dollars. ENR CCI 20 City average = 8592
2. Projects are funded through user rates.
3. Projects are developer funded and/or may be part of a development reimbursement agreement.
4. Projects funded through storm drainage development impact fees collected by the City.