



# City of Stockton

## Legislation Text

**File #: 18-4868, Version: 1**

### **ENVISION STOCKTON 2040 GENERAL PLAN UPDATE, UTILITY MASTER PLAN SUPPLEMENTS, AND FINAL ENVIRONMENTAL IMPACT REPORT**

#### RECOMMENDATION

Staff recommends that the Planning Commission adopt a Resolution recommending that the City Council approve:

1. Certification of the Final Environmental Impact Report (FEIR);
2. Envision Stockton 2040 General Plan Update;
3. Utility Master Plan Supplements (UMPS).

#### Summary

In 2016, the City initiated Envision Stockton 2040 General Plan Update with a commitment to updating the General Plan in a sustainable manner. As a result of robust public engagement, staff received extensive input and guidance from the community, including citizens, stakeholders, the Planning Commission, and City Council. In April 2017, the City Council provided guidance to adopt infill standards using a city core intensification alternative. This infill alternative (referred to as Alternative “C”) has the smallest urban footprint of the three alternatives considered. In July 2017, the City Council indicated the desire to continue with the Infill Focus Alternative, with some modifications. The modifications by the Council included allowing flexibility for an economic development catalyst project in the Sphere of Influence (SOI) area north of Eight Mile Road along Interstate 5.

On June 26, 2018, drafts of the General Plan Update, Environmental Impact Report (EIR), and related utility master plan documents were released for public review and comment. The 45-day comment period for the EIR ended on August 10, 2018. EIR comments and responses are contained in the Final EIR [www.stocktongov.com/envisionstockton](http://www.stocktongov.com/envisionstockton) [<http://www.stocktongov.com/envisionstockton>](http://www.stocktongov.com/envisionstockton). The Planning Commission will receive a summary of community engagement efforts and a presentation on the proposed draft Envision Stockton 2040 General Plan Update, Utility Master Plan Supplements, and the Final Environmental Impact Report, inclusive of proposed changes based on comments/input from the community, stakeholders, the Commission, and City Council. Staff recommends that after consideration of the public draft General Plan and any proposed changes that the Planning Commission adopt a Resolution recommending that the City Council approve:

- Certification of the Final Environmental Impact Report (FEIR);
- Envision Stockton 2040 General Plan Update; and,

➤ **Utility Master Plan Supplements (UMPS).**

The Envision Stockton 2040 General Plan Update, Utility Master Plan Supplements (UMPS), July/August 2018, workshop summaries, and the Final Environmental Impact Report (FEIR), and related findings, statement of overriding considerations (SOC), and mitigation monitoring and reporting program (MMRP) can be viewed at: [www.stocktongov.com/envisionstockton](http://www.stocktongov.com/envisionstockton)  
<<http://www.stocktongov.com/envisionstockton>>

## DISCUSSION

### Background

State law requires each city and county to adopt and periodically update a General Plan that provides a comprehensive, long-range plan for its physical development. The General Plan is important because it contains goals, policies and implementation measures to guide development within the city limit and beyond in a Sphere of Influence where City services may someday be provided. The City's current 2035 General Plan was adopted in 2007. Since its adoption, significant economic and demographic changes occurred, prompting the City to update its growth and development assumptions.

In 2016, the City initiated Envision Stockton 2040 General Plan Update with a commitment to updating the General Plan in a sustainable manner. This General Plan Update provides guidance for reevaluation of the City's public infrastructure such as the City's roadways and water and sewer distribution systems and whether the cost (capital and maintenance) of that infrastructure is sustainable. This update provides an opportunity to revisit and reset the goals, policies, and implementation measures for development in the City limits and for future growth areas where City services may eventually be provided within a Sphere of Influence. Policy guidance is provided to reevaluate level of service goals regarding public infrastructure such as water, sewer and transportation improvements. The level of service goals associated with these particular types of improvements and its relationship to land use growth projections determines the cost of development impact fees associated with the cost of building a home or undertaking a development project.

### **Public Outreach and Feedback**

This update has been developed with extensive input and guidance from the community, including citizens, stakeholders, Planning Commission, and City Council. Thus far, there have been more than 30 opportunities (including workshops, open houses, and community events) for public input including a recent series of five public workshops held in locations throughout the City in July and August 2018.

In April 2017, Council provided guidance to adopt infill standards using a city core intensification alternative. This infill alternative (referred to as Alternative "C") has the smallest urban footprint of the three alternatives considered and contains the following attributes:

- Preservation of agricultural lands at City periphery
- Infill focused with a Downtown emphasis
  - Higher intensity mixed-use Downtown
  - High density in and near Downtown

- Professional offices on South Airport Way
- Increased opportunities for a grocery store(s) along South Airport Way
- Opportunities for medical offices near Weston Ranch
- Flexibility for employment/economic generator north of Eight Mile Road

On July 25, 2017, the City Council considered and provided guidance to staff on the development of the General Plan goals and policies. The goals, policies, and actions in a General Plan guide service levels that directly influence the costs related to development projects and operation of city government. The following are highlights of some of the recommended policy changes included in the draft General Plan policy document:

- An increase of allowable densities and intensity of development in both downtown and the greater downtown areas; addition of new infill policies particularly as it relates to downtown and within the city's core and south Stockton.
- Weaving of environmental justice policies throughout the General Plan affecting land use, transportation, and community health policies.
- Incorporating public health policies throughout the General Plan as it relates to land use, transit, and safety policies.

On June 26, 2018, the following draft documents were released for public review and comment:

- Draft Envision Stockton 2040 General Plan policy document,
- Draft EIR, and
- Draft Utility Master Plan Supplements (water, wastewater, and stormwater).

On July 16, 2018, the City Council held a Study Session and staff presented an overview of the draft Envision Stockton 2040 General Plan, Draft EIR, and draft Utility Master Plan Supplements. The presentation covered housing and potential policy and program options for increasing affordable housing within the City of Stockton. Key housing policy/program options discussed included:

- Housing Trust funds
- Inclusionary housing
- Rent stabilization
- Rent Control Ordinances
- Just cause for eviction

## **Economic and Education Enterprise Designation**

Many comments received on the Draft General Plan have centered on the Economic and Education Enterprise designation. This section of the staff report provides a summary of the history of the development of this designation, as well as a staff-recommended change in response to public comments.

## History of Designation

On April 4, 2017, City Council held a study session on the Envision Stockton 2040 General Plan preferred land use alternative. The City Council directed staff to proceed with Alternative C, the Infill Focus Alternative, with some modifications, to serve as the land use map in the Draft General Plan. Council's modifications included allowing flexibility for an economic development catalyst project in the Sphere of Influence (SOI) area north of Eight Mile Road along Interstate 5. Council directed staff to return with options to implement this modification.

On June 8, 2017, the Planning Commission considered four options presented by staff to implement the Council's direction for the area north of Eight Mile Road. The four options are provided in Table 1 below. The Planning Commission discussed the options, and continued the discussion to its June 22, 2017 meeting. At the June 22, 2017 meeting, the Planning Commission provided comments, but did not come to consensus on a preferred option. Comments from the Planning Commission at this meeting included the following:

- Focus on economic/job generators, not retail or residential
- Consider a policy requiring development to show that it couldn't be located elsewhere in Stockton
- Establish high-standard for projects, such as criteria related to:
  - Creation of jobs with wages above median income
  - Equity in hiring practices
  - Minimum number of jobs
  - Vehicle Miles Traveled (VMT)

**Table 1 Options for the Area North of Eight Mile Road**

<b>Land Use Map Options A or B</b>	<b>Map Option A:</b> Keep existing SOI boundary and maintain Village land use or change to other urban type designation.	<b>Map Option B:</b> Remove area 1 boundary and SOI boundary at designation.
<b>Policy Options 1 or 2</b>		



<b>Policy Option 1:</b> Add language to consider development in the area, provided that the plans include significant job generators.	<b>Map A + Policy 1:</b> This combination would allow the most streamlined approach to approving potential new development by keeping the area within the existing SOI inside the Urban Services boundary, simplifying boundary issues, with proposals subject to general policy criteria.	<b>Map B + Policy 1:</b> This combination would allow an extensive approval process by request amendments to the SC boundary, with proposals subject to general policy criteria.
<b>Policy Option 2:</b> Same as #1 with requirements that jobs have above-median wage levels, reduce vehicle miles traveled, fully mitigate environmental impacts, and additional housing is linked to the additional jobs created and housing cost is correlated with job wage levels.	<b>Map A + Policy 2:</b> This combination would streamline the boundary portion of the approval process by keeping the area within the existing SOI inside the Urban Services boundary, but would require compliance with policy criteria that set high performance standards to allow potential new development in the area.	<b>Map B + Policy 2:</b> This combination would allow an extensive approval process by request amendments to the SC boundary, and would require compliance with policy criteria that set high performance standards to allow potential new development in the area.

Note: SOI = Sphere of Influence.

On July 25, 2017, in a City Council study session on the Envision Stockton 2040 General Plan, the Council considered the same four map and policy options and provided guidance to staff to proceed with the Map A + Policy 2 option. This option would maintain the existing SOI and provide an urban land use designation for the economic development catalyst area and establish policy language requiring above-median wage jobs, VMT reductions, environmental impact mitigation, and housing linked to jobs with housing costs correlated to job wage levels.

During the timeframe in which the Planning Commission and City Council discussed the options for the area North of Eight Mile Road, the Healthy Neighborhoods Collaborative submitted a letter, dated June 21, 2017, in which the Collaborative enumerated specific components that its members would like included in the General Plan regarding development in the area north of Eight Mile Road (Attachment A ). Representatives of the Healthy Neighborhoods Collaborative also provided similar verbal comments at the Planning Commission and City Council study sessions on this topic.

Following City Council's guidance on July 25, 2017, staff proceeded with the preparation of the Draft General Plan which includes a new designation called the Economic and Education Enterprise designation and is applied to the area north of Eight Mile Road within the SOI. In developing this designation, staff considered the letter from the Healthy Neighborhoods Collaborative which

contained well-conceived recommendations and incorporated most of the components, as shown in Table 2. The primary difference is that the draft Economic and Education Enterprise designation does not specify that jobs must provide wages that are 120 percent of area median income (see the third row).

**Table 2 Healthy Neighborhoods Collaborative Recommendations**

<b>Healthy Neighborhoods Collaborative Recommendation</b>	<b>Related Text from the Draft Economic and Education Enterprise Designation</b> <i>(emphasis added as appropriate)</i>
A transparent process or policy that guarantees, with documentation, that the “anchor employer” cannot be reasonably accommodated within existing city limits.	Businesses envisioned for this designation include those within a Core Business Cluster industry, as specified in the City’s Economic Development Strategic Plan, that provide a significant number of jobs offering wages averaging above Area Median Income, <b>and that cannot be reasonably accommodated elsewhere within the city limit.</b>
The “anchor employer” must provide a significant number of new jobs in a Core Business Cluster industry as specified in the city’s Economic Development Strategic Plan.	Businesses envisioned for this designation include <b>those within a Core Business Cluster industry, as specified in the City’s Economic Development Strategic Plan, that provide a significant number of jobs</b> offering wages averaging above Area Median Income, and that cannot be reasonably accommodated elsewhere within the city limit.
New jobs created must be of high quality, defined as full-time equivalent and on average offering wages of 120% of Area Median Income.	Businesses envisioned for this designation include those within a Core Business Cluster industry, as specified in the City’s Economic Development Strategic Plan, that provide a significant number of <b>jobs offering wages averaging above Area Median Income,</b> and that cannot be reasonably accommodated elsewhere within the city limit.

The new project must demonstrate development that will reduce Vehicle Miles Traveled (for example, through the provision of vanpool or car share services and/or the promotion of active transportation alternatives) and ensure proportionate amounts of diverse housing stock are available (single family, multifamily, mixed use).

In support of a major job-generator, this designation promotes linked transportation and housing options so that future employees can live close to their jobs and commute ***using transportation modes that support the City's vehicle miles traveled (VMT) reduction goals. Businesses that reduce VMT by providing vanpool programs, car share services, and active transportation alternatives are encouraged.*** The designation also allows ***proximate housing stock that supports the job-generator, including single-family, multi-family, and/or mixed-use dwellings at various levels of affordability, with housing costs that generally correspond to the income levels of the jobs generated by the project.***

Projects proposed north of Eight Mile Road or anywhere outside of existing city limits must be required to go through the city's existing development review process (environmental review, Planning Commission, City Council, and annexation) and include a community benefits analysis.

The City will negotiate with applicants to develop ***community benefit through development agreements that identify desired community amenities in the area of development***, and will ensure that development ***mitigates its environmental impacts as feasible, pursuant to the California Environmental Quality Act (CEQA)...*** Development proponents are ***encouraged to propose creative and innovative master plans*** to further the City's economic development goals consistent with the policies outlined above.

A Community Benefits Agreement must be negotiated with any "anchor employer" to ensure specific amenities or benefits are included to the neighborhoods impacted (for example, local hire initiatives, creation of a community fund, workforce training, etc.).

The City will negotiate with applicants to develop ***community benefit through development agreements that identify desired community amenities in the area of development***, and will ensure that development mitigates its environmental impacts as feasible, pursuant to the California Environmental Quality Act (CEQA).

Note: See pages 2-14 and 2-17 of the Draft General Plan for the full text of the Economic and Education Enterprise designation.

The Draft General Plan was published on June 26, 2018, including the Economic and Education Enterprise designation. Since then, numerous comments on the Economic and Education Enterprise designation have been submitted.

### **Staff-Recommended Change To Economic and Education Enterprise Designation**

In response to the series of community comments on the Economic and Education Enterprise designation, staff recommends changing the text of the Economic and Education Enterprise designation to clarify the process that will be required to proceed with a development project within this designation, as shown below (underline denotes additions; ~~strikethrough~~ denotes deletions):

Development in this designation is intended to support the City's economic development goals by attracting new businesses, industries, and/or educational institutions that provide high-quality jobs to the local workforce. By bringing major job-generators to Stockton, this designation supports the City's Economic Development Strategic Plan and State Executive Orders regarding greenhouse gas (GHG) reduction, Senate Bill (SB) 32, and the San Joaquin Sustainable Communities Strategy.

Businesses envisioned for this designation include:

- Those within a Core Business Cluster industry, as specified in the City's Economic Development Strategic Plan;
- That provide a significant number of jobs offering wages averaging above Area Median Income, and that cannot be reasonably accommodated elsewhere within the city limit.

In support of a major job-generator, this designation promotes:

- ~~I~~Linked transportation and housing options so that future employees can live close to their jobs and commute using transportation modes that support the City's vehicle miles traveled (VMT) reduction goals;
- Businesses that reduce VMT by providing vanpool programs, car share services, and active transportation alternatives are encouraged; and
- ~~The designation also allows p~~Proximate housing stock that supports the job-generator, including single-family, multi-family, and/or mixed-use dwellings at various levels of affordability, with housing costs that generally correspond to the income levels of the jobs generated by the project.

Projects proposed in the Economic and Education Enterprise designation will be required to:

- Adhere to the City's existing development review process including consideration by the Planning Commission and City Council of a General Plan Amendment; (It should be noted that a general plan amendment process will require subsequent discretionary decisions before the planning commission and the city council and will also include a corresponding environmental analysis ).

- The City will negotiate with applicants to develop community benefit through development agreements that identify desired community amenities in the area of development; and
- The City as Lead Agency, and will ensure that development mitigates its environmental impacts as feasible, pursuant to the California Environmental Quality Act (CEQA).

The maximum anticipated floor area ratio (FAR) for non-residential building is 0.6 and the maximum anticipated residential density is 24 dwelling units per gross acre; however, the designation allows variation from these standards with City approval to achieve the economic development goals and complete communities described above. Development proponents are encouraged to propose creative and innovative master plans to further the City's economic development goals consistent with the policies outlined above.

Staff does not recommend changing the language about job wages to specify that jobs must be 120 percent of area median income. Rather, staff recommends maintaining the current language of requiring wages that are above area median income to maintain some flexibility to facilitate future economic development.

### **September 13, 2018 Planning Commission Study Session Discussion**

At its September 13, 2018 study session on the Draft General Plan, the Planning Commission discussed specific policies and actions in the Draft Envision Stockton 2040 General Plan. During this discussion, the Commission requested that staff prepare potential policy language options to respond to comments made by the Commission at the meeting so that the Commission could consider potential revisions to the Draft General Plan at the recommendation hearing. The policy options prepared by staff are provided below and organized by General Plan chapter.

#### **Chapter 3: Land Use**

The Commission discussed Action LU-6.2A, which directs the City to develop and implement an infill incentive program. Commissioners requested that this action prioritize different categories of infill and include incentives to address blight. Based on these comments, the action could be revised as follows (underline denotes additions; ~~strikethrough~~ denotes deletions):

**Action LU-6.2A:** Develop and implement an infill incentive program that encourages infill development through expedited permitting, changes in fee structures, prioritizing infrastructure improvements in infill areas, property owner and/or landlord incentives to maintain property and reduce blight, and/or other strategies. As part of this program, define and prioritize categories of infill types based on land use, and residential density or non-residential intensity.

#### **Chapter 6: Community Health**

The Commission discussed Action CH-2.3D, which directs the City to focus enforcement of public health-related codes in disadvantaged communities. Commissioners requested that this action consider properties that are governed by homeowners associations, many of which are not being maintained. Based on Commissioner comments, the action could be revised as follows:

**Action CH-2.3D:** Focus enforcement of public health-related codes in disadvantaged communities,

including on properties that are managed by homeowner's associations.

The Commission discussed the need to promote the growth of small and minority-owned businesses. Policy CH-3.1 directs the City to promote entrepreneurial development and small business expansion. Options to address the Commission's discussion include the following revisions to Action CH-3.1A and/or a new action CH-3.1B, as follows:

**Action CH-3.1A:** Coordinate with the Small Business Development Centers and other agencies to provide well-tailored services and resources for small and minority-owned businesses.

**New - Action CH-3.1B:** Provide training, promotion, and technical, financial, and business assistance to small and minority-owned businesses.

The Commission discussed Action CH-3.2B, which directs the City to develop an ordinance to restrict check-cashing establishments and tobacco stores in areas with high concentrations of similar establishments, and to continue to restrict over-concentration of liquor stores through the Alcohol Ordinance. Commissioners discussed the need for a map that illustrates the locations of these target uses, plus mini markets, gas stations, and fast food restaurants. Such map could be used to inform decision-making about whether to allow these uses and where to target efforts to attract a grocery store or other options that would provide access to healthy food. Options to address the Commission's discussion include the following revisions:

**Action CH-1.2B:** Prepare a healthy food ordinance that creates incentives and guidelines that support access to healthy food, such as standards requiring that a percent of sales area in neighborhood food and beverage stores be devoted to healthy foods and/or requiring acceptance of CalFresh and WIC. As part of this ordinance, collect geographic data about current health conditions, and discourage unhealthy food establishments (e.g., mini markets and fast food restaurants) in neighborhoods with high rates of obesity and/or diabetes.

**Action CH-1.2C:** Collaborate with non-profit partners and San Joaquin County Public Health Services to attract full-service grocery stores in areas that lack access to fresh food and/or are at a high risk of obesity and diabetes.

**Action CH-3.2B:** Consider options and develop an ordinance to restrict mini markets, gas stations, fast food restaurants, check-cashing establishments, and tobacco stores in areas with high existing concentrations of similar establishments and continue to restrict over-concentrations of liquor stores through the City's Alcohol Ordinance. To inform the development of this ordinance, create a map that identifies the locations of current establishments of these types, and regularly maintain it so that it continues to aid in decision-making about such uses.

**New - Action CH-3.2D:** Work with the California Department of Alcoholic Beverage Control to avoid over concentration of liquor stores.

## **Staff Recommended Changes to the Draft General Plan**

This section of the staff report lists specific staff-recommended changes to the Draft General Plan based on public comments received to date. The staff-recommended changes are provided below and organized by General Plan chapter. Staff also recommends deleting the references to the

existing General Plan goals, policies, and implementation measures that are provided in parentheses following policies and actions. Such references were intended only for the public review draft. Proposed changes are as follows (underline denotes additions; ~~strikethrough~~ denotes deletions):

## **Chapter 1: Introduction**

- *Page 1-5.* The following paragraph was only intended for the public review draft; for the adopted General Plan, staff recommends deleting it: “~~For this Public Review Draft of the 2040 General Plan, goals, policies, and actions that are carried forward from the prior 2035 General Plan, either verbatim or with modifications, are identified by the 2035 General Plan goal, policy, or implementation measure number in parentheses following the goal, policy, or action text (e.g., “(ED-3)” after Goal LU-1 refers to Goal ED-3 in the Economic Development Element of the 2035 General Plan).~~ This is intended to help reviewers understand the context, but will be removed in the final, adopted 2040 General Plan.”

## **Chapter 2: Planning Framework**

- *Page 2-15:* As a correction, revise Figure 2-8, General Plan Land Use Map, to show the Institutional designation on the portion of a parcel that is located along the western boundary of the Sphere of Influence (SOI) and General Plan Planning Area. In response to a comment from the University of the Pacific (UOP), revise Figure 2-8 to designate the entire UOP campus property as Institutional (Attachment D).

## **Chapter 3: Land Use**

- *Page 3-15.* In response to a comment from the City of Stockton Public Works Department, add the following new action:  
“Action LU-3.3F. Allow developers to develop pocket parks that function as social gathering places and/or children’s play areas, and which can count towards the park standard requirements for new development.”
- *Page 3-17.* In response to a comment from the Delta Stewardship council, revise second paragraph as follows: “To aid regional conservation efforts, California’s Delta Stewardship Council adopted the Delta Reform Plan in 2013, which includes rules and recommendations to improve water supply, protect the Delta ecosystem, and preserve, protect, and enhance agricultural, cultural, and recreational features. As shown on Figure 3-6, the western portion of the Planning Area is located within the “Legal Delta,” the area subject to State oversight through the Delta Plan, including actions such as ensuring that the Stockton General Plan is consistent with the Delta Plan.”

## **Clear Boundaries**

On September 24, 2018, staff received a memo from Eric Parfrey, representing the Sierra Club and Campaign for Common Ground (Attachment B) that had been originally sent to Mayor Tubbs regarding agricultural lands and open space between Stockton and Lodi. Prior to receipt of the memo, staff had been proactively considering a change to the action language contained in the public draft Envision Stockton 2040 policy document. Below is the existing policy language, as modified through consultation with San Joaquin County Community Development Department staff. For the Planning Commission’s information, the 2016 adopted County General Plan Clear Boundaries policy language is also provided.

*Page 3-20. In response to a comment from the Eric Parfrey, representing the Sierra Club and Campaign for Common Ground, revise Action LU-5.3B as follows: “Coordinate with San Joaquin County to develop a plan for a greenbelt or community separator around the city preserve agricultural land and open space areas in the unincorporated County that contribute to maintaining clear boundaries between cities.”*

Adopted San Joaquin County General Plan Language reads as the following:

#### LU-1.5 Clear Boundaries

The County shall strive to preserve agricultural and open space areas that contribute to maintaining clear boundaries among cities and unincorporated communities.

## CHAPTER 4: TRANSPORTATION

- *Page 4-4.* In response to a comment from SJCOG, revise the last paragraph as follows: “Stockton is a regional transportation hub. Residents and commuters have access to a variety of transit options for both inter-city and regional travel. The San Joaquin Council of Governments (SJCOG) coordinates transportation planning and financing for the region and administers regional plans that promote sustainable growth, including the Regional Transportation Plan & Sustainable Communities Strategy that guides funding and policy decisions, the Regional Congestion Management Program that identifies regionally significant roadways, and the Smart Growth Transit-Oriented Development Plan that promotes transit-friendly land use planning and development. Together, these plans intend to enhance multi-modal opportunities in Stockton for both passengers and freight.”
- *Page 4-5.* In response to a comment from SJCOG, revise Action TR-1.3A as follows: “Protect the Airport and related aviation facilities from encroachment by ensuring that all future development within the Airport Influence Area (AIA) is consistent with the policies adopted by the San Joaquin County Airport Land Use Commission (ALUC), except in cases where the City Council concludes that project approval would provide for the orderly development of the Airport and the areas surrounding it while protecting the public health, safety, and welfare by minimizing the public’s exposure to excessive noise and safety hazards, consistent with the San Joaquin County Airport Land Use Compatibility Plan and the Stockton Metropolitan Airport Land Use Compatibility Plan.”
- *Page 4-7.* In response to a comment from SJCOG, revise Action TR-1.3B as follows: “Where substantial development already exists within the AIA and is incompatible with ALUC policies, only allow additional infill development of similar land uses if projects meet all of the following criteria to be an infill project:
  - The project site is bounded on at least three sides by uses similar to those proposed.
  - The proposed project would not extend the perimeter of the area developed with incompatible uses.
  - The proposed project does not otherwise increase the intensity and/or incompatibility of the use with respect to the criteria identified in the San Joaquin County Airport Land Use Compatibility Plan and in the Stockton Metropolitan Airport Land Use Compatibility



Plan through use permits, density transfers, or other strategies.”

- *Page 4-11.* In response to a comment from SJCOG, add the following as a new Action: “Action TR-3.2D: Continue to coordinate with the San Joaquin Council of Governments to increase opportunities for additional park and ride facilities, consistent with the San Joaquin County Regional Park and Ride Lot Master Plan.”
- *Page 4-12.* In response to a comment from SJCOG, revise Action TR-4.1A as follows: “Strive for Level of Service (LOS) D or better for both daily roadway segment and peak hour intersection operations, except when doing so would conflict with other land use, environmental, or economic development priorities, and with the following additional exceptions:
  - In the Greater Downtown, strive for LOS E or better, but LOS F may be acceptable after consideration of physical or environmental constraints and other City goals and policies.
  - Strive for different LOS standards along the following corridors due to physical constraints that limit the improvements that can be constructed:
    - Benjamin Holt Drive, Plymouth Road to Gettysburg Place – LOS F
    - Eight Mile Road, Trinity Parkway to I-5 – LOS E
    - Eight Mile Road, Lower Sacramento Road to West Lane - LOS E
    - Eighth Street, I-5 to El Dorado Street - LOS E
    - Eighth Street, Airport Way to Mariposa Road - LOS E
    - French Camp Road, Manthey Road to I-5 LOS E
    - French Camp Road, I-5 to Val Dervin Parkway- LOS F
    - Hammer Lane, I-5 to Kelly Drive – LOS E
    - Hammer Lane, West Lane to Holman Road – LOS E
    - Interstate 5, Hammer Lane to Benjamin Holt Drive – LOS E
    - Interstate 5, Benjamin Holt Drive to Downing Avenue - LOS F
    - Interstate 5, Downing Avenue to French Camp Road – LOS E
    - Otto Drive, I-5 to Thornton Road - LOS F
  - Roadway segments determined to be operating at deficient LOS by the San Joaquin Council of Governments in the Regional Congestion Management Program.
  - Accept worse than adopted-standard LOS at intersections where widening the intersection would reduce bicycle and pedestrian safety and/or increase.”

## CHAPTER 6: COMMUNITY HEALTH

- In response to a comment from the Catholic Charities Diocese of Stockton, revise Figure 6-1, Disadvantaged Communities, to change the way the data is shown on the map (i.e., adjust the colors used for each category), as shown on Attachment C .

## APPENDIX B: SB244 ANALYSIS

- *Page B-14.* As a correction, revise the discussion of drainage as follows: “~~Storm drain services are provided by the City of Stockton through an underground storm main. There are no storm drain deficiencies in this area.~~ Roadside ditches are used to manage stormwater for the community by the County, along with some underground storm mains managed by the City.”

There are locations within this area that are prone to flooding during sizeable storms.”

- *Page B-28.* As a correction, revise the conclusion as follows: “Although there are several communities in and around Stockton that meet the State definition of a disadvantaged unincorporated community, the City serves most of these communities with City services. The analysis showed that there are no deficiencies within most of the communities and that infrastructure services are sufficient. However, some communities rely on septic systems and lack wastewater collection infrastructure, and one community currently lacks water supply infrastructure, and one ten communities lack adequate storm drainage facilities; therefore, the City should work with the County and other utility providers to seek funding to complete sewer, and water, and storm drainage systems in these areas. As described above, there are funding opportunities available to address these deficiencies.”

## **Full Buildout of the General Plan**

A number of comments on the Draft Environmental Impact Report (EIR) for the General Plan express concern about theoretical full buildout beyond the timeframe of the General Plan, which are reported in Chapter 3 of the Draft EIR, including in Table 3-3 on page 3-26. Although detailed responses to these comments are provided in Chapter 5 of the Final EIR, the following is to provide clarity on the General Plan planning horizon:

The General Plan EIR evaluates the impacts associated with the amount of development that is anticipated to occur by 2040, the “horizon” or targeted final year of the General Plan. The General Plan caps development to that year 2040 amount, noting that further development would require additional environmental review separate from that done for the General Plan EIR (see Action LU-6.1A).

The reason that the theoretical full buildout of the General Plan (which could take hundreds of years to achieve) is reported in Chapter 3 of the Draft EIR is to explain the methodology that was used to develop the 2040 horizon-year development projections. Specifically, to estimate the 2040 development projection, a percentage of the full theoretical buildout potential was distributed amongst the geographic “study areas” defined through the community participation process for the General Plan update.

As shown in Chapter 3 of the Final EIR, staff has refined the formatting of Table 3-3 on page 3-26 of the Draft EIR to highlight how the full theoretical buildout numbers relate to the 2040 horizon-year projection that was evaluated in the EIR. The original and revised versions are shown below. In the revised version, the formatting has been changed to clarify how a specific percentage of the full theoretical buildout capacity was assumed to occur by 2040 within each study area. Those 2040 development projections reported in Table 3-3, combined with pending and approved projects, constitute the entirety of the development that was analyzed in the EIR, in conformance with CEQA Guidelines Section 15378(a), which requires that an EIR consider the reasonably foreseeable indirect physical changes in the environment resulting from a project.

It is also important to note that the General Plan EIR does not establish City policy. The *General Plan* provides policy guidance for how much development can occur and where, including the overall development cap established in Action LU-6.1A. The *General Plan EIR* discloses the potential

impacts associated with implementation of the General Plan. Its assumptions about where and how much development will occur do not in any way “pre-approve” future development, nor do they prohibit development. They are assumptions that factor into the analysis presented in the EIR with the purpose of disclosing the potential environmental impacts resulting from adoption and implementation of the General Plan.

## Original Version of Table 3-3 in the Draft EIR

2040 GENERAL PLAN UPDATE AND UTILITY MASTER PLAN SUPPLEMENTS  
DRAFT ENVIRONMENTAL IMPACT REPORT  
CITY OF STOCKTON

### PROJECT DESCRIPTION

**TABLE 3-3 2040 DEVELOPMENT BY STUDY AREA**

Study Area #/Name	Net New Single-Family Units (Full Buildout)	Percent Applied to 2040	Net New Single-Family Units (2040)	Net New Multi-Family Units (Full Buildout)	Percent Applied to 2040	Net New Multi-Family Units (2040)	Net New Commercial Square Feet (Full Buildout)	Percent Applied to 2040	Net New Commercial Square Feet (2040)	Net New Industrial Square Feet (Full Buildout)	Percent Applied to 2040	Net New Industrial Square Feet (2040)
1. Eight Mile Rd	3,940	35%	1,380	25,350	5%	1,200	197,000	20%	39,000	74,095,000	0%	0
2. Pacific Ave Corridor	0	0%	0	440	25%	110	188,000	50%	94,000	0	0%	0
3. West Ln and Alpine Rd	80	100%	80	2,720	25%	680	1,294,000	25%	323,000	0	0%	0
4. Port/Waterfront	20	100%	20	2,210	80%	1,770	6,800,000	30%	2,040,000	2,323,000	25%	581,000
5. El Dorado/Center Corridors	0	0%	0	1,500	80%	1,200	4,367,000	30%	1,310,000	0	0%	0
6. Miner/Weber Corridors <sup>a</sup>	0	0%	0	1,560	80%	1,250	2,926,000	50%	1,463,000	0	0%	0
7. Wilson Way Corridor	0	0%	0	940	25%	230	1,213,000	50%	607,000	0	0%	0
8. I-5/Highway 4 Interchange	0	0%	0	820	80%	660	777,000	50%	389,000	0	0%	0
9. Railroad Corridor at California St	0	0%	0	1,680	80%	1,340	5,197,000	25%	1,299,000	0	0%	0
10. I-5 and Charter Way	90	100%	90	980	10%	100	535,000	25%	134,000	98,000	85%	84,000
11. Charter Wy/MLK Jr Blvd Corridor	0	0%	0	790	50%	400	1,619,000	20%	324,000	0	0%	0
12. Airport Way Corridor	0	0%	0	430	25%	110	274,000	75%	205,000	5,475,000	25%	1,369,000
13. Mariposa and Charter	0	0%	0	570	0%	0	324,000	25%	81,000	0	0%	0
14. East Weston Ranch <sup>b</sup>	0	0%	0	610	0%	0	574,000	75%	431,000	0	0%	0
15. South of French Camp Rd	0	0%	0	0	0%	0	0	0%	0	0	0%	0
16. E French Camp Rd	0	0%	0	0	0%	0	0	0%	0	0	0%	0
Outside of Study Areas <sup>c</sup>	16,360	9%	1,500	29,810	0%	0	19,487,000	0%	0	126,805,000	0%	0
<b>Grand Total<sup>d</sup></b>	<b>20,480</b>		<b>3,060</b>	<b>70,400</b>		<b>9,040</b>	<b>45,773,000</b>		<b>8,739,000</b>	<b>208,796,000</b>		<b>2,033,000</b>

a. Excludes Open Window approved project.

b. Excludes Weston Ranch Town Center approved project.

c. Excludes approved/pending projects.

d. Numbers do not always add up due to rounding.

Source: PlaceWorks, 2017.

## Revised Table 3-3.

TABLE 3-3 (AS REVISED IN THE FINAL EIR) 2040 DEVELOPMENT BY STUDY AREA

Study Area #/Name	Net New Single-Family Units (Full Buildout)	Percent Applied to 2040	Net New Single-Family Units (2040)	Net New Multi-Family Units (Full Buildout)	Percent Applied to 2040	Net New Multi-Family Units (2040)	Net New Commercial Square Feet (Full Buildout)	Percent Applied to 2040	Net New Commercial Square Feet (2040)	Net New Industrial Square Feet (Full Buildout)	Percent Applied to 2040	Net New Industrial Square Feet (2040)
1. Eight Mile Rd	3,940	35%	1,380	25,350	5%	1,200	197,000	20%	39,000	74,095,000	0%	0
2. Pacific Ave Corridor	0	0%	0	440	25%	110	188,000	50%	94,000	0	0%	0
3. West Ln and Alpine Rd	80	100%	80	2,720	25%	680	1,294,000	25%	323,000	0	0%	0
4. Port/Waterfront	20	100%	20	2,210	80%	1,770	6,800,000	30%	2,040,000	2,323,000	25%	581,000
5. El Dorado/Center Corridors	0	0%	0	1,500	80%	1,200	4,367,000	30%	1,310,000	0	0%	0
6. Miner/Weber Corridors <sup>a</sup>	0	0%	0	1,560	80%	1,250	2,926,000	50%	1,463,000	0	0%	0
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8. I-5/Highway 4 Interchange	0	0%	0	820	80%	660	777,000	50%	389,000	0	0%	0
9. Railroad Corridor at California St	0	0%	0	1,680	80%	1,340	5,197,000	25%	1,299,000	0	0%	0
10. I-5 and Charter Way	90	100%	90	980	10%	100	535,000	25%	134,000	98,000	85%	84,000
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15. South of French Camp Rd	0	0%	0	0	0%	0	0	0%	0	0	0%	0
16. E French Camp Rd	0	0%	0	0	0%	0	0	0%	0	0	0%	0
Outside of Study Areas <sup>c</sup>	16,360	9%	1,500	29,810	0%	0	19,487,000	0%	0	126,805,000	0%	0
<b>Grand Total<sup>d</sup></b>			<b>3,060</b>			<b>9,040</b>			<b>8,739,000</b>			<b>2,033,000</b>

Note: To estimate the 2040 development, a percentage of the full theoretical buildout potential was assumed for each study area, as shown in the gray, italicized columns.

a. Excludes Open Window approved project.

b. Excludes Weston Ranch Town Center approved project.

c. Excludes approved/pending projects.

d. Numbers do not always add up due to rounding.

## Climate Action Plan Advisory Committee

On September 20, 2018, the Climate Action Plan Advisory Committee (CAPAC) met to consider making a recommendation to the Planning Commission and City Council on supportive policies for balanced infill/outskirt development consistent with the 2008 Settlement Agreement with the Sierra Club and the state Attorney General (Attachment E). With three members absent (Nelson, Pedroza, Trehune) the CAPAC voted 5-2 (Hatch, Leek dissenting) to recommend approval of staff recommended infill/outskirt policies with amendments to address minor text edits to Actions 6.1e, 6.1f and 2.2c. However, a minimum of six affirmative votes is needed to forward an approval recommendation.

## DRAFT GENERAL PLAN COMMENTS AND RESPONSES

This section of the staff report responds to written comments on the Draft General Plan that suggested specific text edits. This section is organized by comment letter, with a reference to the comment letter number from the Final EIR. Staff responses are provided below each comment. Note that responses to comments made on the Draft EIR are addressed separately in the Final EIR.

### 7/23/18 SIERRA CLUB LETTER (LETTER #A03 IN FINAL EIR)

The Sierra Club suggested the following changes to the Draft General Plan. As explained in the responses provided below, the recommended goals and policies are already addressed in the Draft General Plan and/or other programs, so staff does not recommend any changes.

- Add a “Sustainability/Climate Change” (or similar title) section and put in relevant goals, as noted below.
  - *Response:* Background information about climate change is provided on page 6-12 of the Draft General Plan. Policies and actions that address climate change are denoted with a globe symbol and summarized in Appendix A. In addition, the City has adopted a standalone Climate Action Plan (CAP), which remains in effect.
- Add goals that address climate change, greenhouse gas reduction, and clean energy (there are a few related goals and policies in the draft plan, e.g., POLICY CH-5.1 “Accommodate a changing climate through adaptation and resiliency planning and projects,” but several more should be added from the Climate Action Plan (we appreciate that the city has committed to updating the CAP).
  - *Response:* As indicated in the comment, Policy CH-5.1 addresses climate change. Other policies and actions that address climate change, including greenhouse gas (GHG) reduction and clean energy, are denoted with a globe symbol and summarized in Appendix A. The CAP is a standalone document that remains in effect, and it would be redundant to repeat GHG reduction measures from the CAP in the General Plan.
- Add a goal that addresses need for City resiliency programs to combat climate changes due to rising sea levels and increased flood risk.
  - *Response:* Action CH-5.1A directs the City to conduct a comprehensive climate change vulnerability assessment to inform the development of adaptation and resilience policies and strategies, and incorporate them into the Safety Element. This assessment and the associated policies and strategies will consider rising sea levels and increased flood risk. In addition, Policies SAF-2.3 and SAF-2.4 and their associated actions address flood risk.
- Add a goal that addresses jobs/housing balance (POLICY LU-6.4 “Ensure that land use decisions balance travel origins and destinations in as close proximity as possible” is a start, but more specificity and consistency with the land use map is needed).
  - *Response:* Action LU-6.4A provides specificity and Action LU-6.4B addresses land use patterns related to a jobs/housing balance, as follows:
    - Action LU-6.4A: Maintain a reasonable balance between potential job generation and local workforce availability with a goal of one job for each employed resident.
    - Action LU-6.4B: Maintain a reasonable proximity and balance (i.e., magnitude) between job generating uses, housing opportunities, and resident services and amenities.
- Add goals and policies
- (from Housing Element?) that address affordable housing and inclusionary housing.
  - *Response:* Goal CH-4 - Ensure that all residents have a safe, high-quality, and stable place to call home - and its associated policies and actions address affordable housing. Action CH-4.1B directs the City to conduct a study to explore the feasibility of inclusionary housing requirements, and to implement the feasible approaches identified

in the study.

- Add goals and policies that specifically support the redevelopment of struggling shopping centers into mixed use projects with a strong component of affordable housing.
  - *Response:* The following actions support redevelopment, including for struggling shopping centers:
    - Action LU-1.1B: Evaluate the City's parking policies, and amend the Development Code to provide more flexibility as appropriate to facilitate mixed-use redevelopment.
    - Action CH-2.1B: Provide incentives for rehabilitation or redevelopment of distressed properties.
    - Action CH-2.1C: Develop incentives to promote reuse of distressed areas, such as through permit streamlining, density bonuses, and other appropriate tools.
    - Action CH-2.1D: Conduct marketing to potential developers to encourage the redevelopment and conversion of distressed commercial strips into housing and mixed-use areas.
    - Action CH-2.2A: Aggressively facilitate the conservation and rehabilitation of older neighborhoods through the following approaches:
      - Utilize all federal, State, and local programs for conservation and rehabilitation projects.
      - Prioritize older neighborhoods for investment using funds such as the Community Development Block Grants.
      - Encourage private investment in older neighborhoods.
      - Cooperate in joint public-private partnerships to invest in older neighborhoods
- Add goals and policies that specifically address City/developer funding for increased transit services (this is required by the Settlement Agreement).
  - *Response:* As part of the City's commitments under the 2008 Settlement Agreement, the City has approved a transit gap study and program that involves the transmittal of 100 percent of the City's Local Transportation Fund (LTF) to the San Joaquin Regional Transit District (RTD) for transit purposes, as they are the acknowledged transit provider in Stockton.
- Add more specific goals related to crime prevention as recommended by Commissioners and members of the public.
  - *Response:* Crime prevention is addressed through Goal SAF-1 - Create a safe and welcoming environment in all areas of the city at all times of day - and its associated policies and actions.

#### **7/25/18 CALIFORNIA PUBLIC UTILITIES COMMISSION (CPUC) (LETTER #A04 IN FINAL EIR)**

The CPUC suggested the following change to the Draft General Plan. As explained in the response provided below, the recommended change is already addressed in the Draft General Plan, so staff does not recommend any further changes.

- Add language to the Stockton 2040 General Plan Update so that any future development adjacent to or near the rail right-of-way (ROW) is planned with the safety of the rail corridor in mind.
  - *Response:* Actions TR-1.1C and TR-1.2C address safety around rail corridors, as shown below. In addition, individual projects that are adjacent to or near the rail ROW will be subject to project-specific design review to consider safety around rail corridors, among other issues.
    - Action TR-1.1C: Require roadways in new development areas to be designed with multiple points of access and to address barriers, including waterways and railroads, in order to maximize connectivity for all modes of transportation.
    - Action TR-1.2C: Provide grade separations at railroad crossings on arterial streets where feasible to ensure public safety and minimize traffic delay.

**8/9/18 SIERRA CLUB, DELTA-SIERRA GROUP MOTHER LODGE CHAPTER (LETTER #A08 IN FINAL EIR)**

The Delta-Sierra Group Mother Lodge Chapter of the Sierra Club suggested the following changes to the Draft General Plan. As explained in responses provided below, the recommended text changes are already addressed in the Draft General Plan, so staff does not recommend any further changes.

- Policy TR 2.3 states “wheel” more frequently. Wheel should be changed to bicycle.
  - *Response:* The term “wheel” conveys the meaning adequately, particularly including wheelchair access for disabled persons, and changing to “bicycle” is not necessary.
- Action SAF-2.4.C in the proposed General Plan directs the City to preserve waterways and floodplains for non-urban uses to maintain flood carrying capacity. Additionally, language should be included that commits the City of Stockton to enhance these environments where wildlife migration has been identified as feasible, such as the Calaveras River.
  - *Response:* The following actions in the Draft General Plan address habitat enhancement, including in and along waterways and floodplains:
    - Action LU-5.1B: Protect, preserve, and improve riparian corridors and incorporate them in the City’s parks, trails, and open space system.
    - Action LU-5.1C: Require landscape plans to incorporate native and drought-tolerant plants in order to preserve the visual integrity of the landscape, conserve water, provide habitat conditions suitable for native vegetation, and ensure that a maximum number and variety of well-adapted plants are maintained.
    - Action LU-5.2A: Continue to coordinate with the San Joaquin Council of Governments and comply with the terms of the Multi-Species Habitat Conservation and Open Space Plan to protect critical habitat areas that support endangered, threatened, and special-status species.
    - Action LU-5.2B: For projects on or within 100 feet of sites that have the potential to contain special-status species or critical or sensitive habitats, including wetlands, require preparation of a baseline assessment by a qualified biologist following appropriate protocols, such as wetland delineation protocol defined by the US Army Corps of Engineers. If such sensitive species or habitats are found to be present, development shall avoid impacting the resource, and if avoidance

is not feasible, impacts shall be minimized through project design or compensation identified in consultation with a qualified biologist.

- Action LU-5.2C: Require new development to implement best practices to protect biological resources, including incidental take minimization measures and other federal and State requirements and recommendations that are consistent with the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan.
- Action SAF-2.3A: Coordinate with appropriate State, federal, and local flood control agencies to develop a flood protection plan for the levee systems protecting the city that:
  - Identifies the levees protecting the city and the entities responsible for the operation and maintenance of the levees;
  - Determines the flood levels in the waterways and the level of protection offered by the existing levees along the waterways;
  - Identifies a long-term plan to upgrade the system as necessary to provide at least a 100-year level of flood protection to the city, and 200-year level of flood protection, where feasible;
  - Encourages multi-purpose flood management projects that, where feasible, incorporate recreation, resource conservation, preservation of natural riparian habitat, and scenic values of the city's streams, creeks, and lakes; and
  - Includes provisions for updates to reflect future State or federally mandated levels of flood protection.
- Policy SAF-3.2: Protect the availability of clean potable water from groundwater sources. Revise to include from groundwater contamination sources.
  - *Response:* The following actions in the Draft General Plan address water quality:
    - Action SAF-3.1A: Actively participate in appropriate forums designed to discuss and solve regional water supply and quality issues.
    - Action SAF-3.2B: Require new development to employ low impact development (LID) approaches, including:
      - Conserving natural areas and reducing imperviousness.
      - Runoff storage.
      - Hydro-modification (to mimic pre-development runoff volume and flow rate).
      - Reducing trash accumulation.
      - Public education and outreach.
    - Action SAF-3.4A: Require all new urban development to be served by an adequate wastewater collection system to avoid possible contamination of groundwater from onsite wastewater disposal systems.



- Action CH-2.3E: Work with wastewater and water utilities to seek funding to complete sewer and water systems in areas within the SOI where parcels still rely on septic systems and wells.

**8/10/18 SJCOG (LETTER #A12 IN FINAL EIR)**

SJCOG suggested the following changes to the Draft General Plan. Staff does not recommend these changes, as explained in responses provided below.

- Include the Federal Aviation Administration (FAA) notification requirement, as found in page 3-40 of SMALUCP and page 3-28 of SJCALUCP, in Action TR-1.3B.
  - *Response:* The City will comply with all FAA notification requirements. Adding a reference to comply with such requirements would be redundant with federal and State law.
- SJCOG provided the following comments related to transportation demand management (TDM):
  - “Commercial, retail, office, industrial and multifamily residential development should be required to prepare a Transportation Demand Management Plan, to support the Active and Mobile Community Goals, that may include on-site amenities, bike parking, shower facilities, lockers, preferential parking, transportation information kiosks, EV charging stations and park and ride spaces as much as feasible.”
  - “Mitigate potential air quality impacts by requiring large employers and business parks based on employment size to submit a Transportation Demand Management Plan.”
  - “SJCOG recommends modifying the Policy SAF-4.2 language as follows: Require all new large employers to work with the San Joaquin Council of Governments dibs program to implement a transportation demand management plan to address elements such as California's Parking Cash-Out Program, vanpooling/carpooling, transit, Emergency Ride Home Program, Preferential Parking, telecommuting, bicycle parking and on-site amenities, and rideshare and transit incentives.”
  - “SJCOG recommends adding the following new policy: Support San Joaquin Valley Air Pollution Control District Rule 9410 by requiring employers of 100 or more employees to work with the San Joaquin Council of Government's dibs program to develop and implement a Trip Reduction Program (eTrip).”
  - *Response:* San Joaquin Valley Air Pollution Control District (SJVAPCD) Rule 9410 and Policy SAF-4.2 in the Draft General Plan, which are cited in the comments, already address TDM. SJVAPCD Rule 9410 requires TDM for employers with over 100 employees. According to Rule 9410, such employers must implement an Employer Trip Reduction Implementation Plan (ETRIP) that meets specific targets. Draft General Plan Policy SAF-4.2 supports this rule as follows: “Encourage major employers to participate in a transportation demand management program (TDM) that reduces vehicle trips through approaches such as carpooling, vanpooling, shuttles, car-sharing, bike-sharing, end-of-trip facilities like showers and bicycle parking, subscription bus service, transit

subsidies, preferential parking, and telecommuting.” In addition, Draft General Plan Action SAF-4.2A further supports the rule as follows: “Provide information and conduct marketing and outreach to major existing and new employers about the transportation demand management (TDM) program facilitated by the San Joaquin Council of Governments.” No changes to the policy and action are required in order to support TDM.

- SJCOG encourages the addition of “high-quality” transit facilities, as defined by Senate Bill (SB) 375, to Action LU-2.2B, which directs the City to establish a Transit Oriented Development (TOD) Overlay Zone around the Robert J. Cabral ACE Train Station and the San Joaquin Street Amtrak Station.
  - *Response:* According to the 2018 Regional Transportation Plan/Sustainable Communities Strategy, “high-quality” transit facilities in Stockton include bus transit hubs and transfer stations and bus rapid transit (BRT) routes. Given the extent of these facilities, adding the TOD Overlay would cover too broad of an area and reduce the effectiveness of the overlay. Therefore, staff does not recommend any changes.
- Policy SAF-2.5 and/or its associated actions, which relate to noise exposure, should include a reference to the noise exposure contour maps that are included as Exhibit 3B in the Stockton Municipal Airport Land Use Compatibility Plan.
  - *Response:* Referring to the airport noise contour maps in the Stockton Municipal Airport Land Use Compatibility Plan would not change the effectiveness of the draft policy or actions; therefore, staff does not recommend this change.

#### **8/1/18 COLLEEN FOSTER (LETTER #B02 IN FINAL EIR)**

Colleen Foster requested that the introduction starting on page 3-22 of the Draft General Plan related to fiscal health be revised, as indicated below. Staff does not recommend this change, as explained in the response provided below.

- Revise the introduction to the section about fiscal health on page 3-22 to state that new housing does not generate adequate revenue to support City services.
  - *Response:* Fiscal impacts of new development are project-specific, including to the specific development agreement for a project. Action LU-6.5A requires the preparation of a fiscal impact analysis for large development projects and proposed annexations to ensure a full accounting of infrastructure and public service costs and to confirm whether revenue enhancement mechanisms are necessary to ensure net fiscal balance or better. The action also directs the City to require appropriate fiscal mitigations, when necessary, to ensure the City’s ongoing fiscal health. Action LU-6.5A would ensure that new residential development provide any needed fiscal mitigations to support the City’s fiscal health.

#### **Revisions to the Utility Master Plan Supplements**

Each Utility Master Plan Supplement (UMPS) Technical Memorandum (TM) contains the General Plan land use map. Because of the changes to the General Plan Map, the UMPS TM have been revised to show the updated version of the land use map. Also, based on comments from the City Municipal Utilities Department, the text is Section 8.2 on page 19 of the UMPS for Potable Water has

been revised (Attachment F).

On October 10, 2018, as this staff report was being written, a comment letter was received from the League of Women Voters indicating opposition to housing and industrial development north of Eight Mile Road. The noted letter is attached to this staff report for the Planning Commission's information (Attachment G).

Present Situation:

The Planning Commission will receive a staff presentation on the proposed draft Envision Stockton 2040 General Plan Update, Utility Master Plan Supplements, and the Final Environmental Impact Report. This presentation will include proposed changes based on comments/input received from the community, stakeholders, the Commission, and City Council. After consideration of the public draft General Plan and proposed changes, staff recommends that the Planning Commission adopt a Resolution recommending that the City Council approve: Certification of the Final Environmental Impact Report (FEIR); Envision Stockton 2040 General Plan Update; and Utility Master Plan Supplements (UMPS) (Attachment F).

Public Hearing Notice

A Public Notice of this hearing was published in The Record on October 10, 2018.

Attachment A - Healthy Neighborhoods Letter

Attachment B - Memorandum on Ag Belt

Attachment C - Revised Fig. 6-1 - Disadvantaged Communities

Attachment D - UOP Letter - General Plan Designation Request

Attachment E - CAPAC Settlement Agreement Consistency Table

Attachment F - Revised Utility Technical Memorandums

Attachment G - League of Women Voters October 10, 2018, Comment Letter



TEN|SPACE



**PUBLIC HEALTH  
ADVOCATES**  
EVERYONE HAS THE RIGHT TO BE HEALTHY



Healthy Neighborhoods Collaborative  
1106 N. El Dorado Street  
Stockton, CA 95202

June 21, 2017

Mr. David Kwong  
Community Development Director  
City of Stockton  
345 N. El Dorado Street  
Stockton, CA 95202

Dear Mr. Kwong,

The Healthy Neighborhoods Collaborative would like to thank you for the opportunity to provide input on the Stockton General Plan.

The Healthy Neighborhoods Collaborative is made up of public health, environmental, environmental justice, housing, and transportation advocates as well as community and faith groups. Together we are working toward a more healthful, equitable, and sustainable city.

As a Collaborative, we would like to provide comments on the proposed options for allowing growth north of Eight Mile Road. Our Collaborative recognizes the need for flexibility in the General Plan should the opportunity for a truly catalytic anchor institution present itself, and we believe the General Plan should include policies to prepare the city to attract such an entity. However, we believe that the city must also incorporate strong and definitive language to ensure that any project that requires a location outside of the existing city boundaries reflects the goals of the city at large.

During the city's public input process, there has been a clear preference for Land Use Alternative C, which prioritizes investment and growth in our existing neighborhoods rather than through expanding our city limits. If the city decides to allow development of an "anchor employer" in an area outside of the existing boundaries against the spirit of Alternative C, we believe that this development must be held to a very high standard. Specifically, our Collaborative would like to see the following components memorialized in any General Plan language permitting growth north of Eight Mile Road.

- A transparent process or policy that guarantees, with documentation, that the "anchor employer" cannot be reasonably accommodated within existing city limits
- The "anchor employer" must provide a significant number of new jobs in a Core Business Cluster industry as specified in the city's Economic Development Strategic Plan
- New jobs created must be of high quality, defined as full-time equivalent and on average offering wages of 120% of Area Median Income
- The new project must demonstrate development that will reduce Vehicle Miles Traveled (for example, through the provision of vanpool or car share services and/or the promotion of active transportation alternatives) and ensure proportionate amounts of diverse housing stock are available (single family, multifamily, mixed use)
- Projects proposed north of Eight Mile Road or anywhere outside of existing city limits must be required to go through the city's existing development review process (environmental review, Planning Commission, City Council, and annexation) and include a community benefits analysis
- A Community Benefits Agreement must be negotiated with any "anchor employer" to ensure specific amenities or benefits are included to the neighborhoods impacted (for example, local hire initiatives, creation of a community fund, workforce training, etc.)

Thank you for this opportunity to provide comment. We look forward to your response as well as continuing to provide public input as the General Plan process continues to move forward.

Sincerely,

A handwritten signature in cursive script that reads "Yolanda Park". The ink is dark and the signature is fluid, with a large loop for the 'Y' and a trailing flourish.

Yolanda Park, Co-Chair  
Healthy Neighborhoods Collaborative

Eric Parfrey, Steering Committee Chair  
Campaign for Common Ground

Elvira Ramirez, Executive Director  
Catholic Charities Diocese of Stockton

Richard Abood, Executive Committee  
Delta Sierra Group

Kristine Williams, Central Valley Program Officer  
Enterprise Community Partners

Pastor Curtis Smith, Chapter Director  
Faith in San Joaquin

Jeri Bigbee  
First Unitarian Universalist Social Justice Committee

LaCresia Hawkins, Program Manager  
Public Health Advocates

Jeremey Terhune, Co-Founder and Executive Director  
PUENTES

Hector Lara, Executive Director  
Reinvent South Stockton

Christina D. B. Frankel, Executive Director  
Save Downtown Stockton Foundation

Tammy Evans, RN, PHN, MSN, PhD, Director  
SJC Public Health Services

David Garcia, Chief Operating Officer  
TenSpace

Jasmine Leek, Director  
Third City Coalition

CC:

Mayor Michael Tubbs  
Vice Mayor Elbert Holman  
Councilmember Dan Wright  
Councilmember Susan Lofthus  
Councilmember Susan Lenz  
Councilmember Christina Fugazi  
Councilmember Jesus Andrade  
Planning Commissioner Don Aguillard  
Planning Commissioner Elizabeth Hull  
Planning Commissioner Sol Jobrack  
Planning Commissioner D'Adrea Davie  
Planning Commissioner Kimberly Warmsley  
Planning Commissioner Waqar Rizvi  
Planning Commissioner Anne Mallett  
David Stagnaro, Community Development Department

## M\_E\_M\_O\_R\_A\_N\_D\_U\_M

TO: Mayor Michael Tubbs  
FR: Eric Parfrey  
RE: Proposed “Ag Belt” and Ag Conservation Easements  
DATE: September 20, 2018

Following up on our meeting on August 20, 2018, you asked to be given some background information on agricultural conservation easements and how a proposed “Ag Belt” between Stockton and Lodi would work. (The term “Ag Belt” is more appropriate than “greenbelt,” which implies public parkland.)

First, Sierra Club and Campaign for Common Ground have advocated for the establishment of an Ag Belt north of Eight Mile Road and south of the Lodi Sphere of Influence for the over a decade. We made this strong request as part of the last 2007 General Plan and we were ignored by the staff and the City Council. Once again, we are asking that one or more strong policies and action measures be included in this updated 2040 plan in place of the existing weak and ineffective Policy LU-5.3 and Action LU-5.3B, as follows:

Policy LU-5.3 **Actively work to conserve prime agricultural lands outside the City boundaries and** ~~Define~~ discrete and clear city edges that preserve agriculture, open space, and scenic views.

Action LU-5.3B The City, in ~~Coordinate with~~ **coordination with San Joaquin County to develop a plan for a greenbelt or community separator around the city,** ~~the City of Lodi, the California Farmland Trust, residents and affected landowners, shall prepare an Agricultural Belt Action Plan that addresses, among other items, how to target the agricultural mitigation fees that are collected by the two cities and the County toward purchasing easements within a defined buffer area between Stockton and Lodi. The location of the Agricultural Belt area shall be identified in a non-parcel specific, general fashion on the Plan Land Use Diagram map.~~

There is a long, failed history over the last decades of half-hearted attempts by the City of Stockton, the County, and Lodi to establish an Ag Belt. Now is the time to see that it actually gets done. It is incumbent upon the City of Stockton to take a strong leadership position on this project since it is the irresponsible sprawling land use practices of Stockton in the past that have kept these ag lands under so much threat of urbanization.

## How Do Agricultural Conservation Easements Work?

The creation of an Ag Belt can only be accomplished through strong political leadership and the reliance on existing and new funding sources. Agricultural separators between communities are created using a common tool called an agricultural conservation easement.

An agricultural conservation easement is a deed restriction landowners voluntarily place on their property to protect the farm from development. They are used by landowners (the “grantor”) to authorize a qualified conservation organization or public agency (“grantee”) to monitor and enforce the restrictions set forth in the agreement. Conservation easements are flexible documents tailored to each property and the needs of individual landowners. Agricultural conservation easements are designed to keep land available for farming.

In general, agricultural conservation easements limit subdivision, non-farm development and other uses that are inconsistent with commercial agriculture. Some easements allow lots to be reserved for family members. Agricultural conservation easements often permit commercial development related to the farm operation and the construction of farm buildings. Most do not restrict farming practices, although some grantees ask landowners to implement soil and water conservation plans. For example, landowners who receive federal funds for farm easements must implement an agricultural land easement conservation plan approved by the USDA Natural Resources Conservation Service (see the attached “Agricultural Conservation Easements” fact sheet prepared by the American Farmland Trust and USDA).

Landowners that enter into voluntary conservation easements are compensated for giving up or selling their “development rights.” The value of the compensation to the landowner for entering into the easement is determined by an appraisal. In the Central Valley the value of development rights to a typical large parcel of prime agricultural land may be about 60% to 80% of the fee simple value of the land without an easement. Thus, the landowner of a prime property that is valued at \$15,000 to \$20,000 per acre could be reimbursed for selling an easement at a rate of approximately \$9,000 to \$16,000 per acre.

## How Are Purchases of Conservation Easements Funded?

The purchase of easements for agricultural, habitat, and other types of conservation easements is typically coordinated through a local land trust. Land trusts California is home to more than 150 land trusts that have protected more than 2.5 million acres. Land trusts use a variety of funding sources to pay farmers for the purchase of easements, including grants from State and federal agencies and funds collected by local ag mitigation fee programs.

The City of Stockton, as well as San Joaquin County and the cities of Manteca, Lathrop, and Tracy, have an ongoing relationship with the most active land trust that is operating in the county, the California Central Valley Farmland Trust (formerly called the Central Valley Farmland Trust). Over the last two decades, the Trust has protected 50 family farms covering



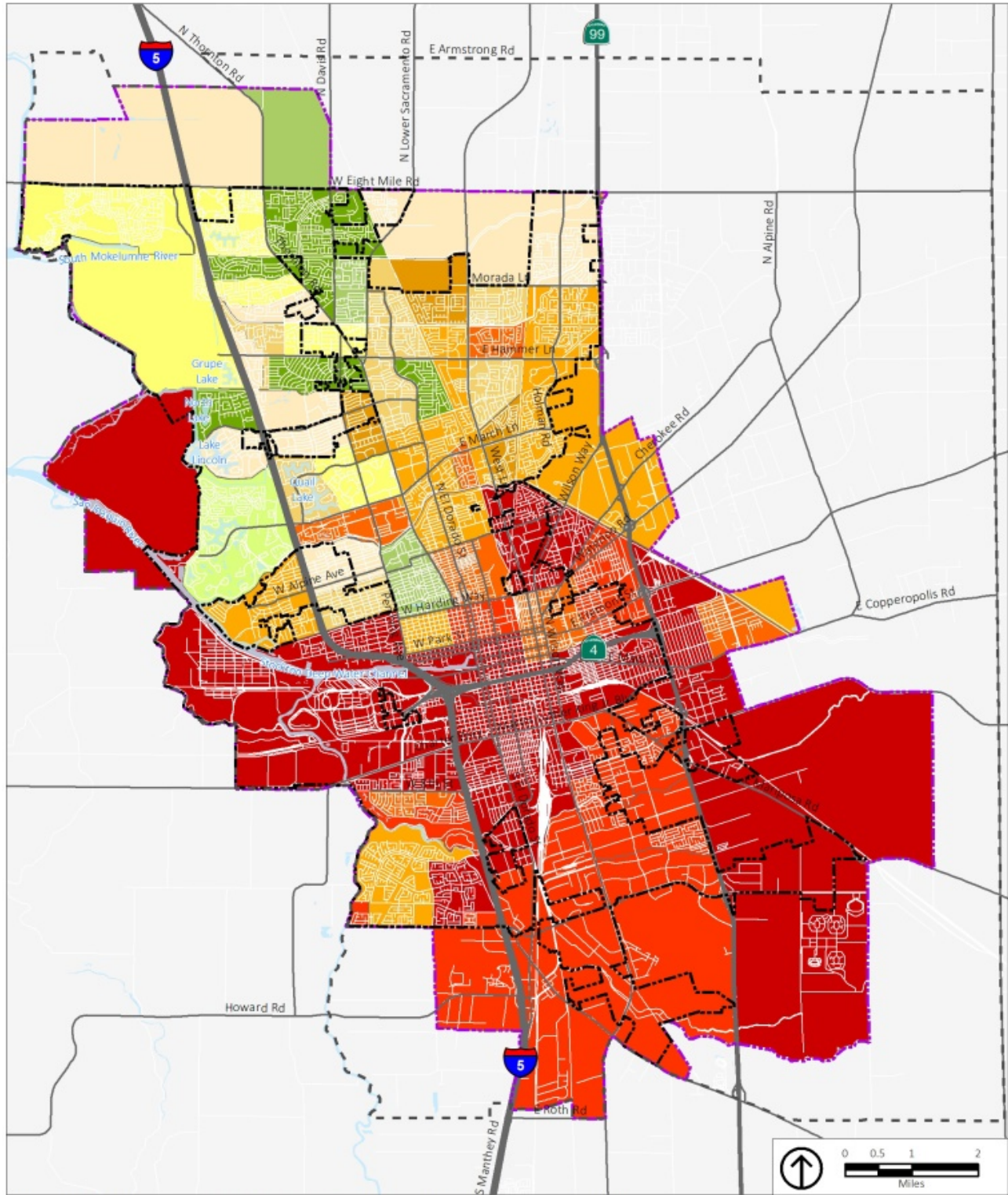
nearly 15,000 acres in San Joaquin, Sacramento, Stanislaus, and Merced counties (see <http://cafarmtrust.org/all-properties/>).

Another very successful example of a local land trust is located in Yolo County. Since its founding in 1988, Yolo Land Trust has permanently conserved nearly 11,000 farmland acres (see <http://theyololandtrust.org/>).

#### Next Steps

1. City Council adopts the new General Plan with a clear and unambiguous policy to prepare an Ag Belt Action Plan that will result in the establishment of an Ag Belt. The Council must appoint a task force or action team to oversee that effort. The task force or team should include representatives from the City of Stockton, the County, the City of Lodi, the California Farmland Trust, as well as residents and affected landowners.
2. Charge the action team with a detailed work plan that sets forth specific items to accomplish and strict deadlines to prepare the Ag Belt Action Plan. For example, the action team should be directed to review the existing agricultural fee mitigation programs adopted by the City of Stockton and the County and to make any recommended changes to the programs to ensure that funds are directed specifically to purchase easements on properties located within the proposed Ag Belt. Similarly, the action team should meet with representatives of the California Farmland Trust to review their strategic plan and to negotiate with them to amend the strategic plan to target properties within the Ag Belt. An updated Memorandum of Understanding should be negotiated between the City of Stockton, the County, and the Trust, and adding in the City of Lodi.
3. Following the preparation of a first draft Ag Belt Action Plan the documents should be subject to public review including workshops or hearings at the Planning Commission and City Council. The plan would presumably be subject to CEQA, so an environmental analysis would be required.

**Figure 6-1**  
**Disadvantaged Communities**



Source: California Office of Environmental Health Hazard Assessment, 2018; PlaceWorks, 2018.

**Percent of Disadvantaged Communities**





*Sent Via E-Mail  
September 26, 2018*

David Stagnaro  
Planning Manager  
City of Stockton Community Development Department  
425 North El Dorado Street  
Stockton, California 95202  
David.Stagnaro@stocktonca.gov

RE: Envision Stockton EIR  
Amended Comments (follow-up to Letter dated 8.10.18)

**FACILITIES**

Real Estate Management  
Physical Planning  
Space Management

3601 Pacific Avenue  
Stockton, California 95211  
Tel 209.946.2319

Dear Mr. Stagnaro,

As a follow-up to our original comments sent to your attention via e-mail on August 10, 2018 and subsequent discussions with City staff and representatives, University of the Pacific is amending its request related to our parcels. At this time, University of the Pacific is requesting that all Pacific parcels (shown on the attached **Campus Base Map**) be assigned the General Plan land use designation of "Institutional". There is a second attachment entitled **Exhibit "B" LLA 16-03**, which was part of the lot line adjustment requested and made to Parcel APN 110-260-04 in 2016.

Pacific staff and administration will continue to work with City staff and representatives to further develop the land use zoning designation(s) of these parcels over the coming months. It is anticipated that the zoning district of "University/College" is likely to be requested for all parcels; however, that will be determined as the City and Pacific refine and clarify the anticipated development of our parcels, as well as the "University/College" zoning district.

As noted in our original comments, University of the Pacific is grateful for the opportunity to review and provide comments on this General Plan Update. We appreciate the collaborative work over the past months and look forward to continuing discussions with City staff, one of the University's critical local partners, as the Update is finalized.

Respectfully Submitted,

*Priscilla Meckley-Archuleta*

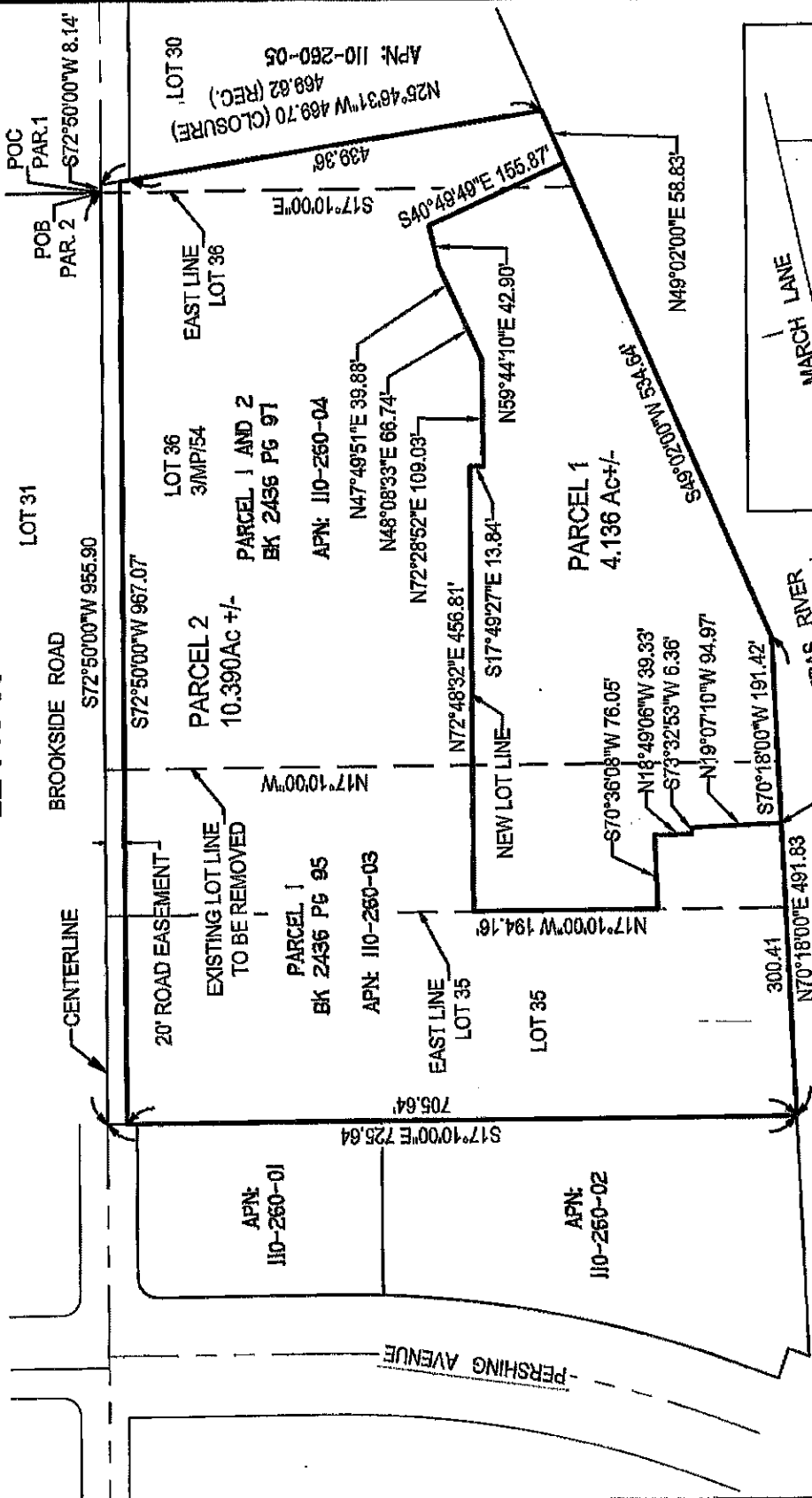
Priscilla Meckley-Archuleta  
Executive Director





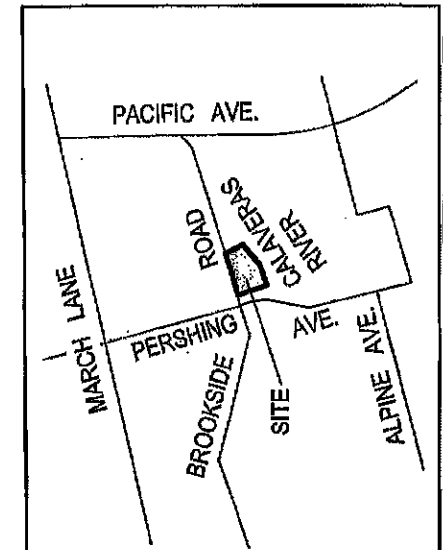
# EXHIBIT "B"

## LLA 16-03



NOTE: AN ACCESS EASEMENT FOR  
PARCEL ONE WILL BE DEDICATED BY  
SEPERATE DOCUMENT.

VICINITY MAP  
NTS



**SIEGFRIED**  
8044 Brookside Road  
Suite 100  
Stockton, California 95219  
Tel: 209-942-0914  
Fax: 209-942-0914  
www.siegfried.com

PROJECT

UOP  
UPPER  
DIVISION  
EXPERIENCE

1116 BROOKSIDE  
ROAD  
STOCKTON, CA

SHEET TITLE

LOT LINE  
ADJUSTMENT  
16-03  
SITE MAP

Proj Mgr DK  
Drawn by LZ  
Date 4.06.16  
Scale As Shown  
Job No. 15009  
SHEET:

**2008 SETTLEMENT AGREEMENT CONSISTENCY**

Attachment E

2008 SETTLEMENT AGREEMENT PROVISION	DRAFT ENVISION STOCKTON 2040 GENERAL PLAN POLICY/ACTION
6a: Require 4,400 units of new housing growth to be in Greater Downtown Stockton.	Policy LU-2.2: Facilitate the development of at least 4,400 units in the Greater Downtown by 2040.
	Action LU-2.2A: Provide more flexibility for residential development, including through a streamlined permit process, and to contribute to the “charm” of the Downtown.
	Action LU-2.2C: Adjust the Public Facilities Fee structure to promote development in the Downtown.
6b: Require an additional 14,000 units of new housing growth to be in 2008 city limit.	Policy LU-6.2: Prioritize development and redevelopment of vacant, underutilized, and blighted infill areas.
	Action LU-6.2A: Implement an infill incentive program that encourages infill through expedited permitting, changes in fee structures, and other strategies.
	Action 6.2B: Do not approve future annexations or City utility connections unless they are consistent with the overall goals and policies of the General Plan and do not adversely impact the City’s fiscal viability, environmental resources, infrastructure and services, and quality of life.
6c: Provide incentives to promote infill development in the Greater Downtown.	Action LU-2.1A: Develop and utilize all available financing tools and incentives to stimulate Downtown investment.
	Action LU-2.1B: Provide flexibility for redevelopment of historic structures in the Downtown.
	Policy LU-2.2: Facilitate the development of at least 4,400 units in the Greater Downtown by 2040.
	Action LU-2.2A: Provide more flexibility for residential development, including through a streamlined permit process, and to contribute to the “charm” of the Downtown.
	Action LU-2.2B: Establish Transit Oriented Development (TOD) Overlay Zones around the ACE and Amtrak train stations to promote high-density residential and TOD.
	Action LU-2.2C: Adjust the Public Facilities Fee structure to promote development in the Downtown.
	Action LU-2.3A: Establish an entertainment district in the Downtown with strategies to promote entertainment uses, including reducing permit requirements and other incentives.
6d: Provide incentives for infill development within the existing city limit but outside the Greater Downtown.	Policy LU-6.2: Prioritize development and redevelopment of vacant, underutilized, and blighted infill areas.
	Action LU-6.2A: Implement an infill incentive program that encourages infill through expedited permitting, changes in fee structures, and other strategies.
7a: Establish criteria for minimum levels of transportation efficiency, transit availability and level of service (LOS), City service capacity, water availability, and other urban services performance measures.	Policy LU-6.2: Prioritize development and redevelopment of vacant, underutilized, and blighted infill areas.
	Action LU-6.2B: Do not approve future annexations or City utility connections unless they are consistent with the overall goals and policies of the General Plan and do not adversely impact the City’s fiscal viability, environmental resources, infrastructure and services, and quality of life.
	Action LU-6.3A: Require development to mitigate any impacts to existing sewer, water, stormwater, street, fire station, park, or library infrastructure that would reduce service levels.

## 2008 SETTLEMENT AGREEMENT CONSISTENCY

	Policy TR-4.1: Utilize level of service (LOS) information to aid understanding of potential major increases to vehicle delay at key signalized intersections.
	Action TR-4.1A: Strive for traffic LOS D or better.
	Policy TR-4.2: Replace LOS with: (1) vehicle-miles traveled (VMT) per capita; and (2) impacts to non-automobile travel modes, as the metrics to analyze impacts related to land use proposals under the California Environmental Quality Act, in accordance with SB 743.
	Action TR-4.2A: Require projects to evaluate per capita vehicle miles traveled (VMT) and impacts to transit, bicycle, and pedestrian modes.
	Action TR-4.2B: Amend the Transportation Impact Analysis Guidelines to include alternative travel metrics and screening criteria.
	Action TR-4.3A: Amend the Transportation Impact Analysis Guidelines to establish a threshold of 15 percent below baseline VMT per capita to determine a significant impact under CEQA.
	Policy SAF-3.2: Protect the availability of clean potable water from groundwater sources.
	Action SAF-3.2A: Continue to cooperate with San Joaquin County, Stockton East Water District, and CalWater to monitor groundwater withdrawals and ensure that they fall within the target yield for the drinking water aquifer.
	Policy SAF-3.4: Ensure adequate collection, treatment, and safe disposal of wastewater.
	Action SAF-3.4A: Require all new development to be served by an adequate wastewater collection system to avoid possible contamination of groundwater from onsite disposal systems.
7b: Establish criteria for firm, effective milestones that will assure infill, jobs/housing, GHG, and VMT reduction goals are met before new entitlements can be granted.	Policy LU-6.1: Carefully plan for future development and proactively mitigate potential impacts.
	Action LU-6.1A: Require that environmental review for any development project that would exceed the development anticipated in the General Plan EIR address associated growth impacts.
	Action LU-6.1B: Monitor the rate of growth to ensure that it does not overburden the City's infrastructure and services.
	Action LU-6.1C: Require that vacant unincorporated properties be annexed prior to provision of City services.
	Action LU-6.1D: Require that all utility connections outside the city limit be for land uses that are consistent with the General Plan.
	Action LU-6.1E: Do not approve new development unless there is adequate infrastructure in place or planned and funded.
	Action LU-6.1F: Adjust the Public Facilities Fee structure to encourage development in areas where infrastructure is already present and ensure that non-infill pays its fair share of anticipated citywide capital facilities and operational costs.
7c: Establish impact fees on new development or alternative financing mechanisms that will ensure the milestones identified in 7a and 7b are met. Such fees shall be structured to ensure that development is revenue-neutral to the City, may be in addition to mitigation measures required by	Policy LU-2.2: Facilitate the development of at least 4,400 new housing units in the Greater Downtown by 2040.
	Action LU-2.2C: Adjust the Public Facilities Fee structure to promote development in the Downtown.
	Policy LU-3.3: Maintain or expand the currently available amount of public park and open space area in each neighborhood.
	Action LU-3.3-D: Periodically review the City's Development Impact Fee requirements to determine whether they should be adjusted to reflect the City's recreation priorities.

## 2008 SETTLEMENT AGREEMENT CONSISTENCY

CEQA, and shall be based on a fiscal impact analysis and a public facilities financing plan.	Policy LU-6.1: Carefully plan for future development and proactively mitigate potential impacts.
	Action LU-6.1F: Adjust the Public Facilities Fee structure to encourage development in areas where infrastructure is already present and ensure that non-infill pays its fair share of anticipated citywide capital facilities and operational costs.
	Policy LU-6.2: Prioritize development and redevelopment of vacant, underutilized, and blighted infill areas.
	Action LU-6.2A: Implement an infill incentive program that encourages infill through expedited permitting, changes in fee structures, and other strategies.
	Policy LU-6.5: Improve and maintain the City's fiscal health.
	Action LU-6.5A: Require preparation of a fiscal impact analysis for large development projects and annexations to ensure a full accounting of infrastructure and public service costs, and require fiscal mitigations when necessary.
	Action LU-6.5B: Utilize development agreements to implement public facilities financing plans and secure fiscal mitigations.
	Action LU-6.5C: Utilize developer fees, the City's public facilities fees, and other methods to finance public facilities.
7d: Explore the feasibility of enhancing the financial viability of infill development in the Greater Downtown, through the use of such mechanisms as an infill mitigation bank.	Policy LU-2.1: Promote the Downtown and waterfront as a hub for regional commerce and entertainment, with high-quality housing to complement commercial activity and to infuse the area with daytime, evening, and weekend activity.
	Action LU-2.1A: Develop and utilize all available financing tools and incentives to stimulate Downtown investment.
	Action LU-2.1B: Provide flexibility for redevelopment of historic structures in the Downtown.
	Action LU-2.2C: Adjust the Public Facilities Fee structure to promote development in the Downtown.





## MEMORANDUM

DATE        October 1, 2018

TO           David Stagnaro

              City of Stockton Community Development Department

FROM       Tanya Sundberg and Charlie Knox

SUBJECT     Revisions to Utility Master Plan Supplements

Each Utility Master Plan Supplement (UMPS) Technical Memorandum (TM) shows the General Plan land use map as an attachment to the TM. Because staff has recommended changes to the land use map, the UMPS TM have been revised to show the updated version of the land use map in the attachments to those reports.

Also, based on comments from the City of Stockton Municipal Utilities Department, the text in Section 8.2 on page 19 of the UMPS for Potable Water (prepared by West Yost Associates) has been revised as follows:

### 8.2 COSMUD Northern and Southern Systems

The COSMUD water system includes a northern system and a southern system, essentially separated by the Cal Water system serving the center of the City. Since the completion of the Delta Water Treatment Project, COSMUD operates the two systems essentially as two separate, distinct systems. There is an eastern connection between the two systems, but the connection is kept closed. Evaluating the northern and southern COSMUD systems as if they were operated as a single system would allow the storage and pumping facilities to be evaluated collectively. However, additional studies of the potential benefits and impacts of connecting the north and south systems would need to be prepared.

~~To allow the northern and southern COSMUD systems to be operated as a single system, it is recommended that:~~

- ~~• A western connection between the northern and southern COSMUD systems be constructed,~~
- ~~• The water provided by Stockton East Water District (SEWD) to the southern COSMUD system be treated to the same standards as the water in the northern COSMUD system. This could be done by either SEWD or COSMUD, and~~

- ~~The eastern connection be opened.~~

The full versions of the revised UMPS are provided as Attachments 1, 2, and 3 to this memorandum.

**ATTACHMENT 1**

**REVISED POTABLE WATER MASTER PLAN SUPPLEMENT**



## **TECHNICAL MEMORANDUM**

DATE: December 12, 2017 Project No.: 425-10-16-04.006  
SENT VIA: EMAIL  
TO: City of Stockton, Municipal Utilities Department  
FROM: Patrick Johnston, PE, RCE #59028  
REVIEWED BY: Doug Moore, PE, RCE #58122  
SUBJECT: Stockton General Plan Update—Potable Water Master Plans Supplement

This Technical Memorandum (TM) presents the Supplement for the Stockton General Plan Update (GPU) to the City of Stockton's Water Master Plan (2008) and California Water Service Company's (Cal Water) Water Master Plan (2009). Where appropriate, information related to the Service Area of the Cal Water is also included in this TM. This TM includes the following Sections:

- Summary
  - Demand Projection Summary by Development Area
  - Demand Projection Summary by Service Area
  - Required New Infrastructure Evaluations Summary
  - Cost Evaluations Summary
- Demand Projection Estimates by Development Area
  - GPU Land Uses by Development Area
  - Water Demand Factors
  - Average Day Demands by Development Area
  - Maximum Day Demands by Development Area
  - Peak Hour Demands by Development Area
  - Demand Projection Estimates by Service Area
- Infrastructure Evaluations
  - City of Stockton Municipal Utilities District (COSMUD) Infrastructure Evaluation
    - Water Storage Capacity
    - Pumping Facility Capacity
    - Distribution Pipeline Capacity

- Cal Water Infrastructure Evaluation
  - Water Storage Capacity
  - Pumping Facility Capacity
  - Distribution Pipeline Capacity
- Cost Evaluations by Service Area
  - COSMUD
  - Cal Water
- Recommended Future Actions
  - Water Distribution System
  - COSMUD Northern and Southern Systems
  - Future Development-Specific Potable Water Improvements

The analyses and conclusions presented in this TM are based on generalized land use data and preliminary engineering evaluations. All these evaluations should be refined and updated through detailed evaluations of each specific development project.

## SUMMARY

A summary of this TM is presented below. The development of the summary data is presented in the following sections of this TM. The 2040 land uses are shown on Figure 1 as well as the COSMUD Service Areas and the Cal Water Service Area, and the General Plan Update buildout land use map is provided in Attachment A.

### Demand Projection Summary by Development Area

The estimated Average Day Demands, Maximum Day Demands and Peak Hour Demands are summarized in Table 1 and discussed below:

- The total Average Day Demands are estimated to increase from about 48.6 million gallons per day (mgd) for existing land uses to 66.3 mgd for the 2040 land uses.
- The total Maximum Day Demands are estimated to increase from about 85.0 mgd for existing land uses to 115.4 mgd for the 2040 land uses.
- The total Peak Hour Demands are estimated to increase from about 137.3 mgd for existing land uses to 196.1 mgd for the 2040 land uses.

### Demand Projection Summary by Service Area

Demands within the City are distributed between the service areas for COSMUD and Cal Water as described below:

- For the existing land uses, the COSMUD service area contains 52 percent of the demands, while the Cal Water service area contains 48 percent of the demands.
- The ratio is different with the 2040 land uses, with the COSMUD service area containing 61 percent of the demands and the Cal Water service area containing 39 percent of the demands.

**Table 1. Summary of Water Demand Estimates**

<i>Land Use</i>	<i>Demand (mgd)</i>		
	<i>Existing</i>	<i>Net New</i>	<i>2040</i>
<b>Average Day Demand</b>			
Study Areas	2.09	2.42	4.51
Approved/Pending Development Projects Within City Limit	2.05	5.15	7.20
Approved/Pending Development Projects Outside City Limit but Within Sphere of Influence	0.34	7.27	7.61
Remaining City Outside of Study Areas and Outside of Approved/Pending Projects(e)	44.16	2.84	46.99
<b>Total</b>	<b>48.63</b>	<b>17.68</b>	<b>66.32</b>
<b>Maximum Day Demand</b>			
Study Areas	3.68	4.27	7.95
Approved/Pending Development Projects Within City Limit	3.49	8.78	12.27
Approved/Pending Development Projects Outside City Limit but Within Sphere of Influence	0.57	12.36	12.94
Remaining City Outside of Study Areas and Outside of Approved/Pending Projects	77.27	4.96	82.23
<b>Total</b>	<b>85.01</b>	<b>30.37</b>	<b>115.38</b>
<b>Peak Hour Demand</b>			
Study Areas	5.95	6.99	12.94
Approved/Pending Development Projects Within City Limit	7.16	17.87	25.03
Approved/Pending Development Projects Outside City Limit but Within Sphere of Influence	1.18	25.45	26.63
Remaining City Outside of Study Areas and Outside of Approved/Pending Projects	123.01	8.51	131.53
<b>Total</b>	<b>137.30</b>	<b>58.83</b>	<b>196.13</b>

## Required New Infrastructure Evaluations Summary

Preliminary infrastructure evaluations were performed for water storage facilities, booster pumping facilities, and the pipeline facilities for the COSMUD and Cal Water Service Areas. These infrastructure evaluations were developed by:

- Estimating the water demands for the GPU 2040 level of development within the COSMUD and Cal Water Service Areas. The 2040 level of development is significantly less than full buildout of the land uses in the GPU.
- Comparing the 2040 estimated water demands with the demands in the COSMUD and Cal Water WMPs. The COSMUD and Cal Water WMPs were based on full buildout the 2035 General Plan.
- The required infrastructure needed for the 2040 level of development was estimated by comparison with the infrastructure identified in the WMPs, but revised based on the changes in water demands.

### For COSMUD:

- The 2035 buildout average day demands from the COSMUD WMP were 98.2 mgd. The 2040 average day demands from this study are 39.9 mgd, representing a decrease of approximately 60 percent.
- The required new storage is 24.9 mg for the 2040 GPU development. For comparison, the required new storage from the WMP for buildout of the 2035 General Plan is 142.9 mg.
- Potentially, no new booster pumping capacity is needed for the 2040 GPU development, depending on the existing booster pumps ability (depending on location) to serve the new development. For comparison, the required new pumping capacity from the WMP for buildout of the 2035 General Plan is 150,087 gpm.
- Water distribution piping will be needed for many of the new growth areas. However, in comparison to the buildout of the 2035 General Plan, significant reductions of the water distribution piping should occur for some study areas.

### For Cal Water:

- The 2035 buildout average day demands from the Cal Water WMP were 35.1 mgd. The 2040 average day demands from this study are 26.4 mgd, representing a decrease of approximately 25 percent.
- The required new storage is 0.5 mg for the 2040 GPU development. For comparison, the required new storage from the WMP for buildout of the 2035 General Plan is 13.5 mg.
- The required new booster pumping capacity needed for the 2040 GPU development is 3,057 gpm. For comparison, the required new pumping capacity from the WMP for buildout of the 2035 General Plan is 13,925 gpm.
- The existing water distribution piping, along with recent and ongoing system improvements should be adequate for the GPU 2040 development.

## Cost Evaluations Summary

Preliminary infrastructure cost estimates for water storage facilities and booster pumping facilities were developed for the COSMUD and Cal Water Service Areas.

For COSMUD:

- The 2040 GPU required new water storage is 24.9 mg, which has an estimated cost of \$37.9 million. For comparison, from the WMP (for buildout of the 2035 General Plan), the required new storage was estimated to be 109.2 mg, which has an estimated cost of \$166.4 million.
- No new booster pumping capacity was needed for the 2040 GPU land uses (if the locations of the existing booster pumps will result in adequate service to the new development). For comparison, from the WMP (for buildout of the 2035 General Plan), the required new booster pumping was estimated to be 150,087 gpm, which has an estimated cost of \$65.5 million.

Cal Water:

- The 2040 GPU required new water storage is 0.5 mg, which has an estimated cost of \$0.8 million. For comparison, from the WMP (for buildout of the 2035 General Plan), the required new storage was estimated to be 13.5 mg, which has an estimated cost of \$21.5 million.
- The 2040 GPU required new booster pumping capacity of 3,057 gpm, which has an estimated cost of \$2.2 million. For comparison, from the WMP (for buildout of the 2035 General Plan), the required new booster pumping was estimated to be 13,925 gpm, which has an estimated cost of \$9.8 million.

## DEMAND PROJECTION ESTIMATES BY DEVELOPMENT AREA

### GPU Land Uses by Development Area

The land use data for this evaluation was provided by Placeworks, and is provided in Attachment A (including the buildout land use map, the dwelling unit data, acreage data, and 2040 percent development data). The land use data has been reorganized in Table 2 to be suitable for water demand estimating. The reorganized land use data includes existing land use data, net new land use data for 2040, and 2040 land use data. For single family and multi-family residential land uses, Table 2 includes both the dwelling unit data and the acreage data. For commercial and industrial land uses, Table 2 includes only acreage data. All the water demands were based on gross areas shown in Table 2.



Table 2. Land Use Data																					
Study Area or Development Name	Single Family (Dwelling Units)			Single Family (Gross Acres)			Multi Family (Dwelling Units)			Multi Family (Gross Acres)			Commercial (Gross Acres)			Industrial (Gross Acres)			Total Area (Gross Acres)		
	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040
Study Areas																					
Study Area 1 - Eight Mile Rd Area	121	1,379	1,500	17.2	232.1	249.3	96	1,198	1,294	8.4	73.2	81.6	17.9	0.6	18.5	4.0	0.0	4.0	47.5	305.9	353.4
Study Area 2 - Pacific Ave Corridor	22	0	22	4.3	0.0	4.3	114	110	224	3.5	4.7	8.2	115.8	3.6	119.4	0.1	0.0	0.1	123.7	8.3	132.1
Study Area 3 - West Ln and Alpine Rd Area	208	77	285	38.7	51.6	90.2	94	680	774	5.8	29.9	35.7	68.4	6.2	74.6	54.5	0.0	54.5	167.4	87.7	255.1
Study Area 4 - Port/Waterfront	54	17	71	8.0	11.2	19.2	288	1,770	2,058	8.6	26.7	35.3	10.3	2.9	13.2	44.3	5.6	49.9	71.1	46.5	117.6
Study Area 5 - El Dorado/Center Corridors	45	0	45	5.5	0.0	5.5	359	1,196	1,555	8.3	17.2	25.5	8.1	1.8	9.9	9.9	0.0	9.9	31.8	19.0	50.8
Study Area 6 - Miner/Weber Corridors <sup>(a)</sup>	47	0	47	4.4	0.0	4.4	219	1,248	1,467	4.8	18.0	22.8	6.5	3.4	9.9	7.2	0.0	7.2	22.9	21.3	44.3
Study Area 7 - Wilson Way Corridor	12	0	12	1.6	0.0	1.6	6	234	240	0.2	6.8	7.1	2.1	5.1	7.2	14.9	0.0	14.9	18.9	12.0	30.9
Study Area 8 - I-5/Highway 4 Interchange	8	0	8	1.0	0.0	1.0	1	659	660	0.1	38.0	38.1	0.9	0.9	1.8	13.2	0.0	13.2	15.2	38.9	54.1
Study Area 9 - Railroad Corridor at California St	19	0	19	2.3	0.0	2.3	23	1,340	1,363	1.3	19.3	20.6	4.8	1.5	6.3	7.0	0.0	7.0	15.4	20.7	36.2
Study Area 10 - I-5 and Charter Way Area	228	86	314	42.8	57.9	100.7	29	98	127	4.1	4.2	8.3	26.3	2.6	28.9	4.6	2.7	7.3	77.8	67.4	145.2
Study Area 11 - Charter Way/MLK Jr Blvd Corridor	5	0	5	0.3	0.0	0.3	0	396	396	0.0	7.7	7.7	2.9	0.4	3.3	0.0	0.0	0.0	3.2	8.2	11.3
Study Area 12 - Airport Way Corridor	53	0	53	7.2	0.0	7.2	4	108	112	0.4	4.7	5.1	6.8	10.2	17.0	89.5	13.1	102.6	103.9	28.0	131.9
Study Area 13 - Mariposa and Charter Area	12	0	12	3.9	0.0	3.9	77	0	77	5.9	0.0	5.9	5.6	1.5	7.2	0.0	0.0	0.0	15.5	1.5	17.0
Study Area 14 - East Weston Ranch <sup>(b)</sup>	1	0	1	1.1	0.0	1.1	0	0	0	0.0	0.0	0.0	4.9	14.8	19.8	0.0	0.0	0.0	6.1	14.8	20.9
Study Area 15 - South of French Camp Rd	89	0	89	75.7	0.0	75.7	9	0	9	6.1	0.0	6.1	0.0	0.0	0.0	0.1	0.0	0.1	81.8	0.0	81.8
Study Area 16 - E French Camp Rd Area	59	0	59	122.7	0.0	122.7	4	0	4	9.1	0.0	9.1	0.1	0.0	0.1	0.2	0.0	0.2	132.2	0.0	132.2
Subtotal (Study Areas)	983	1,558	2,541	336.9	352.8	689.7	1,323	9,036	10,359	66.8	250.5	317.3	281.5	55.6	337.1	249.5	21.4	270.8	934.6	680.2	1,614.8
Approved/Pending Development Projects Within City Limit																					
Westlake Villages	0	2,630	2,630	0.0	680.0	680.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	680.0	680.0
Delta Cove	0	1,164	1,164	0.0	132.7	132.7	0	381	381	0.0	47.6	47.6	0.0	2.6	2.6	0.0	0.0	0.0	0.0	182.9	182.9
North Stockton Projects III	235	2,220	2,455	38.0	355.0	393.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.0	355.0	393.0
Cannery Park	0	981	981	0.0	272.0	272.0	0	210	210	0.0	16.0	16.0	0.0	104.0	104.0	0.0	0.0	0.0	0.0	392.0	392.0
Nor Cal Logistics Center	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crystal Bay	0	951	951	0.0	19.4	19.4	0	392	392	0.0	78.7	78.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.1	98.1
Sanctuary	0	5,452	5,452	0.0	1,026.0	1,026.0	0	1,618	1,618	0.0	67.4	67.4	0.0	35.5	35.5	0.0	0.0	0.0	0.0	1,128.9	1,128.9
Tidewater Crossing	310	-310	0	869.6	-869.6	0.0	0	0	0	0.0	0.0	0.0	0.0	16.0	16.0	0.0	0.0	0.0	869.6	-853.6	16.0
Open Window <sup>(c)</sup>	0	0	0	0.0	0.0	0.0	9	1,391	1,400	0.0	11.9	11.9	12.9	-1.0	11.9	0.0	0.0	0.0	12.9	10.9	23.8
Weston Ranch Town Center	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	41.5	41.5	0.0	0.0	0.0	0.0	41.5	41.5
Subtotal (Approved/Pending Projects Within City Limit)	545	13,088	13,633	907.6	1,615.5	2,523.1	9	3,992	4,001	0.0	221.6	221.6	12.9	198.6	211.5	0.0	0.0	0.0	920.5	2,035.7	2,956.2
Approved/Pending Development Projects Outside City Limit but Within Sphere of Influence																					
Mariposa Lakes	5	8,955	8,960	151.0	939.3	1,090.3	3	1,553	1,556	0.0	585.0	585.0	0.0	150.0	150.0	0.0	0.0	0.0	151.0	1,674.3	1,825.3
Airpark 599	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	128.0	128.0	0.0	0.0	0.0	0.0	128.0	128.0
Tra Vigne <sup>(d)</sup>	0	1,244	1,244	0.0	846.4	846.4	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	846.4	846.4
Subtotal (Approved/Pending Projects Outside City Limit but Within Sphere of Influence)	5	10,199	10,204	151.0	1,785.7	1,936.7	3	1,553	1,556	0.0	585.0	585.0	0.0	278.0	278.0	0.0	0.0	0.0	151.0	2,648.7	2,799.7
Remaining City Outside of Study Areas and Outside of Approved/Pending Projects <sup>(e)</sup>	76,463	1,501	77,964	13,870.5	1,270.5	15,141.0	33,183	0	33,183	1,915.9	0.0	1,915.9	546.6	0.0	546.6	1,783.8	0.0	1,783.8	18,116.8	1,270.5	19,387.3
Grand Total	77,996	26,346	104,342	15,266.0	5,024.6	20,290.5	34,518	14,581	49,099	1,982.7	1,057.1	3,039.8	841.0	532.1	1,373.1	2,033.2	21.4	2,054.6	20,122.9	6,635.1	26,758.0

## Water Demand Factors

The 2008 COSMUD WMP and the 2009 Cal Water WMP provided water demand factors for both existing land uses (Figures 3-8 through 3-16 of the COSMUD WMP and Figures 3-10 through 3-22 of the Cal Water WMP) and for future land uses (Table 3-8 of the COSMUD WMP and Table 3-11 of the Cal Water WMP) for use in estimating demands in the water distribution system. Demand factors used for estimating water distribution system demands are intentionally conservative, meaning they are higher than the corresponding actual demands may be, to allow for a range of different demands within a land use category. For example, actual commercial demands would be very low for rental storage units to very high for restaurants. To allow for this range of actual possible demands, conservative (high) demand factors are used for estimating water demands, resulting in pipeline sizes that can accommodate either low or high actual demands.

The gross area demand factors used in this GPU water demand estimate are summarized in Table 3, which includes factors for single family residential, multi-family (including a higher factor for downtown multi-family) residential, commercial, and industrial land uses.

## Average Day Demands by Development Area

The Average Day Demand estimates are calculated in Table 4. Average Day demands are the estimate of the water used by the residents and businesses in the water system service area. The Average Day Demands are calculated by multiplying the appropriate land use data by the appropriate demand factor. The following Average Day Demands are calculated for existing, net new, and 2040 land use conditions:

- Average Day Demand from exiting land uses: 48.6 mgd
- Average Day Demand from net new land uses: 17.7 mgd
- Average Day Demand from 2040 land uses: 66.3 mgd

## Maximum Day Demands by Development Area

The Maximum Day demand estimates are calculated in Table 5. Maximum Day demands are the estimate of the water used by the residents and businesses in the water system service area on the day of the year when the demands are the highest. The Maximum Day demands are calculated by multiplying the Average Day Demands by the appropriate maximum day peaking factor (see Table 3). The Maximum Day peaking factor for the COSMUD service area is 1.7. The Maximum Day peaking factor for the Cal Water service area is 1.8. The following Maximum Day demands are calculated for existing, net new, and 2040 demands:

- Maximum Day demand from exiting land uses: 85.0 mgd
- Maximum Day demand from net new land uses: 30.4 mgd
- Maximum Day demand from 2040 land uses: 115.3 mgd

Table 3. Water Demand Factors and Peaking Factors		
Land Use Category	Units	Factor
City of Stockton and Cal Water Demand Factors		
Single Family Residential	gpd/ gross acre	2,232
Multi-Family Residential	gpd/ gross acre	4,642
Multi-Family Residential (Downtown)	gpd/ gross acre	13,927
Commercial	gpd/ gross acre	2,053
Industrial	gpd/ gross acre	1,785
City of Stockton Peaking Factors		
Maximum Day Peaking Factor (Maximum Day to Average Day)		1.7
Peak Hour Peaking Factor (Peak Hour to Average Day)		3.5
Cal Water Peaking Factors		
Maximum Day Peaking Factor (Maximum Day to Average Day)		1.8
Peak Hour Peaking Factor (Peak Hour to Average Day)		2.5

Study Area Name	Water District	Percent Cal Water	Percent City	Single Family, gpd			Multi Family, gpd			Commercial, gpd			Industrial, gpd			Total, gpd		
				Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040
Study Areas																		
Study Area 1 - Eight Mile Rd Area	No District	0%	100%	38,425	517,995	556,420	39,109	339,673	378,782	36,693	1,238	37,931	7,200	0	7,200	121,427	858,907	980,333
Study Area 2 - Pacific Ave Corridor	California Water	95%	5%	9,689	0	9,689	16,141	21,943	38,084	237,866	7,382	245,248	135	0	135	263,831	29,325	293,157
Study Area 3 - West Ln and Alpine Rd Area	California Water	90%	10%	86,297	115,113	201,409	27,109	138,818	165,926	140,544	12,704	153,248	97,252	0	97,252	351,201	266,634	617,835
Study Area 4 - Port/Waterfront	California Water	100%	0%	17,756	25,082	42,838	39,899	310,294	350,193	21,051	6,040	27,091	79,152	9,920	89,073	157,858	351,336	509,195
Study Area 5 - El Dorado/Center Corridors	California Water	100%	0%	12,357	0	12,357	38,412	132,726	171,138	16,645	3,706	20,351	17,646	0	17,646	85,060	136,432	221,492
Study Area 6 - Miner/Weber Corridors	California Water	100%	0%	9,805	0	9,805	22,438	166,973	189,411	13,401	6,896	20,297	12,795	0	12,795	58,439	173,869	232,308
Study Area 7 - Wilson Way Corridor	California Water	100%	0%	3,679	0	3,679	1,151	31,767	32,918	4,318	10,522	14,840	26,666	0	26,666	35,814	42,289	78,103
Study Area 8 - I-5/Highway 4 Interchange	California Water	100%	0%	2,301	0	2,301	635	176,391	177,027	1,832	1,832	3,664	23,521	0	23,521	28,289	178,224	206,513
Study Area 9 - Railroad Corridor at California St	California Water	100%	0%	5,132	0	5,132	6,207	89,381	95,588	9,816	3,062	12,878	12,478	0	12,478	33,633	92,443	126,076
Study Area 10 - I-5 and Charter Way Area	California Water	100%	0%	95,618	129,215	224,834	18,890	19,551	38,441	54,035	5,258	59,293	8,216	4,859	13,075	176,759	158,883	335,642
Study Area 11 - Charter Way/MLK Jr Blvd Corridor	California Water	100%	0%	630	0	630	0	35,911	35,911	5,930	894	6,824	0	0	0	6,560	36,805	43,365
Study Area 12 - Airport Way Corridor	California Water	80%	20%	16,017	0	16,017	1,634	21,837	23,471	13,974	20,902	34,875	159,884	23,376	183,261	191,510	66,115	257,625
Study Area 13 - Mariposa and Charter Area	California Water	100%	0%	8,800	0	8,800	27,566	0	27,566	11,521	3,180	14,701	0	0	0	47,887	3,180	51,067
Study Area 14 - East Weston Ranch	City of Stockton	0%	100%	2,534	0	2,534	0	0	0	10,151	30,452	40,602	0	0	0	12,685	30,452	43,137
Study Area 15 - South of French Camp Rd	No District	0%	100%	168,856	0	168,856	28,345	0	28,345	0	0	0	116	0	116	197,317	0	197,317
Study Area 16 - E French Camp Rd Area	No District	0%	100%	273,929	0	273,929	42,440	0	42,440	240	0	240	335	0	335	316,944	0	316,944
Subtotal (Study Areas)				751,827	787,406	1,539,233	309,975	1,485,266	1,795,240	578,016	114,067	692,083	445,397	38,156	483,553	2,085,215	2,424,894	4,510,109
Approved/Pending Development Projects Within City Limit																		
Westlake Villages	City of Stockton	0%	100%	0	1,517,661	1,517,661	0	0	0	0	0	0	0	0	0	0	1,517,661	1,517,661
Delta Cove	City of Stockton	0%	100%	0	296,234	296,234	0	220,925	220,925	0	5,298	5,298	0	0	0	0	522,457	522,457
North Stockton Projects III	City of Stockton	0%	100%	84,810	792,309	877,119	0	0	0	0	0	0	0	0	0	84,810	792,309	877,119
Cannery Park	City of Stockton	0%	100%	0	607,065	607,065	0	74,276	74,276	0	213,544	213,544	0	0	0	0	894,885	894,885
Nor Cal Logistics Center	City of Stockton	0%	100%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crystal Bay	City of Stockton	0%	100%	0	43,298	43,298	0	365,346	365,346	0	0	0	0	0	0	0	408,644	408,644
Sanctuary	City of Stockton	0%	100%	0	2,289,883	2,289,883	0	312,888	312,888	0	72,954	72,954	0	0	0	0	2,675,725	2,675,725
Tidewater Crossing	City of Stockton	0%	100%	1,940,866	-1,940,866	0	0	0	0	0	32,853	32,853	0	0	0	1,940,866	-1,908,013	32,853
Open Window	California Water	100%	0%	0	0	0	0	165,749	165,749	26,491	-2,053	24,437	0	0	0	26,491	163,696	190,186
Weston Ranch Town Center	City of Stockton	0%	100%	0	0	0	0	0	0	0	85,111	85,111	0	0	0	0	85,111	85,111
Subtotal (Approved/Pending Development Projects Within City Limit)				2,025,676	3,605,584	5,631,260	0	1,139,184	1,139,184	26,491	407,706	434,197	0	0	0	2,052,167	5,152,474	7,204,641
Approved/Pending Development Projects Outside City Limit but Within Sphere of Influence																		
Mariposa Lakes	No District	0%	100%	337,010	2,096,381	2,433,392	0	2,715,721	2,715,721	0	307,996	307,996	0	0	0	337,010	5,120,099	5,457,109
Airpark 599	No District	0%	100%	0	0	0	0	0	0	0	262,823	262,823	0	0	0	0	262,823	262,823
Tra Vigne	No District	0%	100%	0	1,889,150	1,889,150	0	0	0	0	0	0	0	0	0	0	1,889,150	1,889,150
Subtotal (Approved/Pending Development Projects Outside City Limit but Within Sphere of Influence)				337,010	3,985,531	4,322,541	0	2,715,721	2,715,721	0	570,819	570,819	0	0	0	337,010	7,272,071	7,609,082
Remaining City Outside of Study Areas and Outside of Approved/Pending Projects		50%	50%	30,956,888	2,835,553	33,792,441	8,894,162	0	8,894,162	1,122,394	0	1,122,394	3,184,912	0	3,184,912	44,158,357	2,835,553	46,993,910
Grand Total				34,071,402	11,214,074	45,285,476	9,204,137	5,340,171	14,544,308	1,726,900	1,092,592	2,819,492	3,630,310	38,156	3,668,466	48,632,749	17,684,993	66,317,741
Total Cal Water				15,663,904	1,669,236	17,333,140	4,623,119	1,291,995	5,915,114	1,087,328	74,504	1,161,832	1,981,260	33,481	2,014,741	23,355,611	3,069,215	26,424,826
Total City of Stockton				18,407,498	9,544,838	27,952,336	4,581,018	4,048,176	8,629,194	639,572	1,018,088	1,657,660	1,649,050	4,675	1,653,725	25,277,138	14,615,778	39,892,916
Note: The water demands, analyses, and conclusions presented in this TM are based on generalized land use data and preliminary engineering evaluations. All these evaluations should be refined and updated through detailed evaluations of each specific development project.																		

Table 5. Maximum Day Demand																			
Study Area Name	Water District	Percent Cal Water	Percent City	Maximum Day Factor	Single Family, gpd			Multi Family, gpd			Commercial, gpd			Industrial, gpd		Total, gpd			
					Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040
Study Areas																			
Study Area 1 - Eight Mile Rd Area	No District	0%	100%	1.70	65,322	880,592	945,914	66,485	577,444	643,929	62,378	2,105	64,483	12,241	0	12,241	206,425	1,460,142	1,666,567
Study Area 2 - Pacific Ave Corridor	California Water	95%	5%	1.80	17,393	0	17,393	28,973	39,388	68,361	426,969	13,250	440,219	243	0	243	473,577	52,639	526,216
Study Area 3 - West Ln and Alpine Rd Area	California Water	90%	10%	1.79	154,471	206,051	360,522	48,524	248,484	297,008	251,574	22,739	274,314	174,081	0	174,081	628,650	477,274	1,105,925
Study Area 4 - Port/Waterfront	California Water	100%	0%	1.80	31,961	45,148	77,109	71,818	558,529	630,347	37,891	10,872	48,763	142,474	17,857	160,331	284,144	632,406	916,550
Study Area 5 - El Dorado/Center Corridors	California Water	100%	0%	1.80	22,243	0	22,243	69,141	238,907	308,048	29,961	6,670	36,631	31,762	0	31,762	153,108	245,577	398,685
Study Area 6 - Miner/Weber Corridors	California Water	100%	0%	1.80	17,648	0	17,648	40,389	300,551	340,940	24,121	12,413	36,535	23,032	0	23,032	105,190	312,965	418,155
Study Area 7 - Wilson Way Corridor	California Water	100%	0%	1.80	6,623	0	6,623	2,071	57,181	59,252	7,772	18,939	26,712	47,999	0	47,999	64,465	76,121	140,586
Study Area 8 - I-5/Highway 4 Interchange	California Water	100%	0%	1.80	4,142	0	4,142	1,143	317,505	318,648	3,298	3,298	6,596	42,338	0	42,338	50,921	320,802	371,723
Study Area 9 - Railroad Corridor at California St	California Water	100%	0%	1.80	9,238	0	9,238	11,173	160,885	172,058	17,668	5,512	23,180	22,461	0	22,461	60,540	166,397	226,937
Study Area 10 - I-5 and Charter Way Area	California Water	100%	0%	1.80	172,113	232,588	404,701	34,002	35,191	69,194	97,262	9,465	106,727	14,788	8,746	23,534	318,166	285,990	604,156
Study Area 11 - Charter Way/MLK Jr Blvd Corridor	California Water	100%	0%	1.80	1,134	0	1,134	0	64,640	64,640	10,674	1,609	12,283	0	0	0	11,808	66,249	78,057
Study Area 12 - Airport Way Corridor	California Water	80%	20%	1.78	28,511	0	28,511	2,909	38,871	41,779	24,874	37,205	62,078	284,594	41,610	326,204	340,887	117,685	458,573
Study Area 13 - Mariposa and Charter Area	California Water	100%	0%	1.80	15,840	0	15,840	49,619	0	49,619	20,738	5,723	26,461	0	0	0	86,197	5,723	91,920
Study Area 14 - East Weston Ranch	City of Stockton	0%	100%	1.70	4,309	0	4,309	0	0	0	17,256	51,768	69,023	0	0	0	21,564	51,768	73,332
Study Area 15 - South of French Camp Rd	No District	0%	100%	1.70	287,055	0	287,055	48,186	0	48,186	0	0	0	197	0	197	335,438	0	335,438
Study Area 16 - E French Camp Rd Area	No District	0%	100%	1.70	465,680	0	465,680	72,148	0	72,148	409	0	409	569	0	569	538,805	0	538,805
Subtotal (Study Areas)					1,303,683	1,364,379	2,668,062	546,580	2,637,576	3,184,157	1,032,846	201,569	1,234,415	796,779	68,213	864,992	3,679,889	4,271,738	7,951,626
Approved/Pending Development Projects Within City Limit																			
Westlake Villages	City of Stockton	0%	100%	1.70	0	2,580,024	2,580,024	0	0	0	0	0	0	0	0	0	0	2,580,024	2,580,024
Delta Cove	City of Stockton	0%	100%	1.70	0	503,598	503,598	0	375,573	375,573	0	9,006	9,006	0	0	0	0	888,176	888,176
North Stockton Projects III	City of Stockton	0%	100%	1.70	144,178	1,346,924	1,491,102	0	0	0	0	0	0	0	0	0	144,178	1,346,924	1,491,102
Cannery Park	City of Stockton	0%	100%	1.70	0	1,032,010	1,032,010	0	126,269	126,269	0	363,025	363,025	0	0	0	0	1,521,304	1,521,304
Nor Cal Logistics Center	City of Stockton	0%	100%	1.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crystal Bay	City of Stockton	0%	100%	1.70	0	73,607	73,607	0	621,088	621,088	0	0	0	0	0	0	0	694,694	694,694
Sanctuary	City of Stockton	0%	100%	1.70	0	3,892,801	3,892,801	0	531,910	531,910	0	124,022	124,022	0	0	0	0	4,548,733	4,548,733
Tidewater Crossing	City of Stockton	0%	100%	1.70	3,299,472	-3,299,472	0	0	0	0	0	55,850	55,850	0	0	0	3,299,472	-3,243,622	55,850
Open Window	California Water	100%	0%	1.80	0	0	0	0	298,348	298,348	47,683	-3,696	43,987	0	0	0	47,683	294,652	342,335
Weston Ranch Town Center	City of Stockton	0%	100%	1.70	0	0	0	0	0	0	0	144,689	144,689	0	0	0	0	144,689	144,689
Subtotal (Approved/Pending Projects Within City Limit)					3,443,650	6,129,493	9,573,143	0	1,953,188	1,953,188	47,683	692,895	740,578	0	0	0	3,491,333	8,775,576	12,266,909
Approved/Pending Development Projects Outside City Limit but Within Sphere of Influence																			
Mariposa Lakes	No District	0%	100%	1.70	572,917	3,563,848	4,136,766	0	4,616,726	4,616,726	0	523,593	523,593	0	0	0	572,917	8,704,168	9,277,085
Airpark 599	No District	0%	100%	1.70	0	0	0	0	0	0	0	446,800	446,800	0	0	0	0	446,800	446,800
Tra Vigne	No District	0%	100%	1.70	0	3,211,554	3,211,554	0	0	0	0	0	0	0	0	0	0	3,211,554	3,211,554
Subtotal (Approved/Pending Projects Outside City Limit but Within Sphere of Influence)					572,917	6,775,403	7,348,320	0	4,616,726	4,616,726	0	970,393	970,393	0	0	0	572,917	12,362,521	12,935,439
Remaining City Outside of Study Areas and Outside of Approved/Pending Projects		50%	50%	1.75	54,167,524	4,961,574	59,129,098	15,562,764	0	15,562,764	1,963,934	0	1,963,934	5,572,874	0	5,572,874	77,267,095	4,961,574	82,228,669
Grand Total					59,487,773	19,230,849	78,718,622	16,109,345	9,207,490	25,316,835	3,044,463	1,864,857	4,909,320	6,369,653	68,213	6,437,866	85,011,234	30,371,409	115,382,643
Total Cal Water					27,420,042	2,932,701	30,352,743	8,098,917	2,323,888	10,422,805	1,926,513	133,623	2,060,136	3,483,213	59,891	3,543,104	40,928,685	5,450,103	46,378,788
Total City of Stockton					32,067,732	16,298,148	48,365,880	8,010,428	6,883,602	14,894,029	1,117,950	1,731,234	2,849,184	2,886,439	8,322	2,894,761	44,082,549	24,921,306	69,003,855
Note: The water demands, analyses, and conclusions presented in this TM are based on generalized land use data and preliminary engineering evaluations. All these evaluations should be refined and updated through detailed evaluations of each specific development project.																			

### **Peak Hour Demands by Development Area**

The Peak Hour demand estimates are calculated in Table 6. Peak Hour demands are the estimate of the water used by the residents and businesses in the water system service area for the single hour during the year when the demands are the highest. The Peak Hour demands are calculated by multiplying the Average Day Demands by the appropriate peak hour peaking factor. The Peak Hour peaking factor for the COSMUD service area is 3.5. The Peak Hour peaking factor for the Cal Water service area is 2.5. The following Peak Hour demands are calculated for existing, net new, and 2040 demands:

- Peak Hour demand from exiting land uses: 137.3 mgd
- Peak Hour demand from net new land uses: 58.8 mgd
- Peak Hour demand from 2040 land uses: 196.1 mgd

### **Demand Projection Estimates by Service Area**

Demands within the City are distributed between the service areas for COSMUD and Cal Water. For the existing land uses, the COSMUD service area contains 52 percent of the demands, while the Cal Water service area contains 48 percent of the demands. The ratio is different with the 2040 land uses, with the COSMUD service area containing 61 percent of the demands and the Cal Water service area containing 39 percent of the demands.

The majority of the Study Areas are within the Cal Water Service Area. However, the Eight Mile Study area constitutes about 22 percent of the demands for all of the study areas, and is assigned to the COSMUD Service Area. The majority of the approved or pending development projects within the City limits or outside of the City limits are within the COSMUD Service Area, or are expected to be served by COSMUD. The result of this is that, while the existing demands are split almost evenly between the COSMUD and Cal Water Service Areas, the 2040 land use demands are more skewed to the COSMUD Service Area. Overall, 85 percent of the increases in demands from new development occur within areas that will be served by COSMUD.

As stated above, the demand analyses presented in this TM are based on generalized land use data and preliminary engineering evaluations. All these demand analyses should be refined and updated through detailed evaluations of each specific development project.



Table 6. Peak Hour Demand																			
Study Area Name	Water District	Percent Cal Water	Percent City	Peak Hour Factor	Single Family, gpd			Multi Family, gpd			Commercial, gpd			Industrial, gpd			Total, gpd		
					Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040
Study Areas																			
Study Area 1 - Eight Mile Rd Area	No District	0%	100%	3.50	134,487	1,812,984	1,947,471	136,880	1,188,856	1,325,736	128,425	4,334	132,759	25,201	0	25,201	424,993	3,006,174	3,431,167
Study Area 2 - Pacific Ave Corridor	California Water	95%	5%	2.55	24,708	0	24,708	41,160	55,956	97,115	606,558	18,824	625,381	345	0	345	672,770	74,779	747,549
Study Area 3 - West Ln and Alpine Rd Area	California Water	90%	10%	2.60	224,371	299,293	523,664	70,482	360,926	431,408	365,415	33,029	398,444	252,855	0	252,855	913,123	693,248	1,606,371
Study Area 4 - Port/Waterfront	California Water	100%	0%	2.50	44,390	62,706	107,095	99,747	775,735	875,482	52,627	15,100	67,727	197,881	24,801	222,682	394,645	878,341	1,272,986
Study Area 5 - El Dorado/Center Corridors	California Water	100%	0%	2.50	30,893	0	30,893	96,030	331,815	427,845	41,613	9,264	50,877	44,114	0	44,114	212,650	341,079	553,729
Study Area 6 - Miner/Weber Corridors	California Water	100%	0%	2.50	24,512	0	24,512	56,095	417,432	473,528	33,502	17,241	50,743	31,989	0	31,989	146,097	434,673	580,771
Study Area 7 - Wilson Way Corridor	California Water	100%	0%	2.50	9,198	0	9,198	2,877	79,418	82,295	10,795	26,305	37,100	66,666	0	66,666	89,535	105,723	195,258
Study Area 8 - I-5/Highway 4 Interchange	California Water	100%	0%	2.50	5,753	0	5,753	1,588	440,979	442,567	4,580	4,580	9,160	58,802	0	58,802	70,724	445,559	516,283
Study Area 9 - Railroad Corridor at California St	California Water	100%	0%	2.50	12,831	0	12,831	15,518	223,451	238,969	24,539	7,656	32,195	31,196	0	31,196	84,083	231,107	315,190
Study Area 10 - I-5 and Charter Way Area	California Water	100%	0%	2.50	239,046	323,038	562,084	47,226	48,877	96,102	135,087	13,146	148,233	20,539	12,148	32,687	441,897	397,209	839,106
Study Area 11 - Charter Way/MLK Jr Blvd Corridor	California Water	100%	0%	2.50	1,575	0	1,575	0	89,777	89,777	14,825	2,235	17,060	0	0	0	16,401	92,012	108,413
Study Area 12 - Airport Way Corridor	California Water	80%	20%	2.70	43,247	0	43,247	4,412	58,961	63,373	37,730	56,434	94,164	431,688	63,116	494,804	517,076	178,512	695,588
Study Area 13 - Mariposa and Charter Area	California Water	100%	0%	2.50	22,000	0	22,000	68,915	0	68,915	28,803	7,949	36,751	0	0	0	119,718	7,949	127,667
Study Area 14 - East Weston Ranch	City of Stockton	0%	100%	3.50	8,871	0	8,871	0	0	0	35,527	106,580	142,107	0	0	0	44,397	106,580	150,978
Study Area 15 - South of French Camp Rd	No District	0%	100%	3.50	590,996	0	590,996	99,206	0	99,206	0	0	0	406	0	406	690,609	0	690,609
Study Area 16 - E French Camp Rd Area	No District	0%	100%	3.50	958,752	0	958,752	148,540	0	148,540	841	0	841	1,172	0	1,172	1,109,305	0	1,109,305
Subtotal (Study Areas)					2,375,630	2,498,021	4,873,651	888,674	4,072,184	4,960,858	1,520,866	322,676	1,843,542	1,162,854	100,065	1,262,919	5,948,024	6,992,946	12,940,970
Approved/Pending Development Projects Within City Limit																			
Westlake Villages	City of Stockton	0%	100%	3.50	0	5,311,815	5,311,815	0	0	0	0	0	0	0	0	0	0	5,311,815	5,311,815
Delta Cove	City of Stockton	0%	100%	3.50	0	1,036,819	1,036,819	0	773,238	773,238	0	18,541	18,541	0	0	0	0	1,828,599	1,828,599
North Stockton Projects III	City of Stockton	0%	100%	3.50	296,837	2,773,080	3,069,917	0	0	0	0	0	0	0	0	0	296,837	2,773,080	3,069,917
Cannery Park	City of Stockton	0%	100%	3.50	0	2,124,726	2,124,726	0	259,966	259,966	0	747,404	747,404	0	0	0	0	3,132,096	3,132,096
Nor Cal Logistics Center	City of Stockton	0%	100%	3.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crystal Bay	City of Stockton	0%	100%	3.50	0	151,543	151,543	0	1,278,710	1,278,710	0	0	0	0	0	0	0	1,430,253	1,430,253
Sanctuary	City of Stockton	0%	100%	3.50	0	8,014,591	8,014,591	0	1,095,109	1,095,109	0	255,339	255,339	0	0	0	0	9,365,039	9,365,039
Tidewater Crossing	City of Stockton	0%	100%	3.50	6,793,030	-6,793,030	0	0	0	0	0	114,985	114,985	0	0	0	6,793,030	-6,678,045	114,985
Open Window	California Water	100%	0%	2.50	0	0	0	0	414,372	414,372	66,227	-5,133	61,093	0	0	0	66,227	409,239	475,465
Weston Ranch Town Center	City of Stockton	0%	100%	3.50	0	0	0	0	0	0	0	297,889	297,889	0	0	0	0	297,889	297,889
Subtotal (Approved/Pending Projects Within City Limit)					7,089,867	12,619,544	19,709,411	0	3,821,395	3,821,395	66,227	1,429,025	1,495,252	0	0	0	7,156,093	17,869,964	25,026,058
Approved/Pending Development Projects Outside City Limit but Within Sphere of Influence																			
Mariposa Lakes	No District	0%	100%	3.50	1,179,535	7,337,335	8,516,870	0	9,505,024	9,505,024	0	1,077,986	1,077,986	0	0	0	1,179,535	17,920,345	19,099,880
Airpark 599	No District	0%	100%	3.50	0	0	0	0	0	0	0	919,881	919,881	0	0	0	0	919,881	919,881
Tra Vigne	No District	0%	100%	3.50	0	6,612,024	6,612,024	0	0	0	0	0	0	0	0	0	0	6,612,024	6,612,024
Subtotal (Approved/Pending Projects Outside City Limit but Within Sphere of Influence)					1,179,535	13,949,358	15,128,894	0	9,505,024	9,505,024	0	1,997,867	1,997,867	0	0	0	1,179,535	25,452,250	26,631,785
Remaining City Outside of Study Areas and Outside of Approved/Pending Projects		50%	50%	3.00	92,940,970	8,513,099	101,454,069	26,702,686	0	26,702,686	3,369,730	0	3,369,730	9,561,971	0	9,561,971	123,013,386	8,513,099	131,526,485
Grand Total					103,586,003	37,580,022	141,166,025	27,591,361	17,398,603	44,989,964	4,956,822	3,749,569	8,706,391	10,724,824	100,065	10,824,889	137,297,039	58,828,259	196,125,298
Total Cal Water					46,909,612	4,892,323	51,801,935	13,784,759	3,247,017	17,031,776	3,025,097	191,097	3,216,194	5,783,703	87,442	5,871,145	64,743,901	8,417,880	73,161,781
Total City of Stockton					56,676,391	32,687,699	89,364,090	13,806,602	14,151,586	27,958,187	1,931,726	3,558,471	5,490,197	4,941,121	12,623	4,953,744	72,553,138	50,410,379	122,963,518
Note: The water demands, analyses, and conclusions presented in this TM are based on generalized land use data and preliminary engineering evaluations. All these evaluations should be refined and updated through detailed evaluations of each specific development project.																			

## INFRASTRUCTURE EVALUATIONS

The difference in demands that results from the changes in development areas causes changes in the required infrastructure in the Capital Improvement Programs from the WMPs. There are different changes for the COSMUD Service Area and the Cal Water Service Area.

The infrastructure evaluations and conclusions presented below are preliminary. These evaluations and conclusions should be verified through the preparation of updates to the COSMUD and Cal Water WMPs when the GPU process is completed and the final land uses have been adopted.

### COSMUD Infrastructure Evaluation

The decreases in projected demands from the COSMUD WMP, within the COSMUD Service Area, change the infrastructure needs for water storage capacity, pumping facility capacity and distribution pipeline capacity. The projected demands in the COSMUD WMP and for this study are:

- Average Day Demand – 2035 WMP: 98.2 mgd. This study for 2040: 39.9 mgd
- Maximum Day Demand – 2035 WMP: 166.9 mgd. This study for 2040: 69.0 mgd
- Peak Hour Demand – 2035 WMP: 343.7 mgd. This study for 2040: 123.0 mgd

The demands estimated for the 2040 land uses are approximately 60 percent lower than the demands from the COSMUD WMP.

#### Water Storage Capacity

Required storage volume decreases are based on decreased need for operational and emergency storage due to the lower projected demands. Required fire flow storage would not change with the decrease in demands. The operational storage requirement is 25 percent of maximum day demands. The emergency storage requirement is 100 percent of the average day demands.

Based on the COSMUD WMP (based on the 2035 General Plan buildout):

- The current total available storage is 33.7 mg, according to the COSMUD WMP.
- The required total storage at buildout of the 2035 General Plan is 142.9 mg.
- The required new storage is 109.2 mg.

Based on the current GPU 2040 land use demands:

- The current total available storage is 33.7 mg (according to the COSMUD WMP).
- The required total storage for the 2040 development is 58.6 mg.
- The required new storage is 24.9 mg.

Thus, the required new storage for 2040 development is 24.9 mg, which is a reduction of 84.3 mg from the storage needed for buildout of the 2035 General Plan.



### Pumping Facility Capacity

Sufficient water system pumping capacity should be provided to meet the greater of these two demand conditions:

1. A maximum day demand concurrent with a maximum fire flow event with the largest pump at each booster pump station in standby mode with well pumps assumed to operate at firm groundwater pumping capacity.
2. A peak hour demand with the largest pump at each booster pump station in standby mode with well pumps assumed to operate at firm groundwater pumping capacity,

Given that the peak hour demands are significantly larger than the maximum fire flow demands, the second set of conditions will control the decrease in required pumping facility capacity.

Based on the COSMUD WMP (based on the 2035 General Plan buildout):

- The current total available pumping capacity is 88,592 gpm (according to the COSMUD WMP).
- The required total pumping capacity at buildout of the 2035 General Plan is 238,679 gpm.
- The required new pumping capacity is 150,087 gpm.

Based on the GPU 2040 land use demands:

- The current total available pumping capacity is 88,592 gpm (according to the COSMUD WMP).
- The required total pumping capacity for the 2040 development is 85,416 gpm.
- As the current pumping capacity exceeds the required pumping capacity, no new pumping capacity may be needed. However, pumping capacity may be still needed if the existing booster pumps are not in the correct locations to effectively serve the 2040 development.

Thus, there is potentially no new required pumping capacity for 2040 development (unless additional pumping is needed based on the locations of the new development). This represents a reduction of 150,087 gpm from the pumping capacity needed for buildout of the 2035 General Plan.

### Distribution Pipeline Capacity

The COSMUD distribution system is split into the North and South areas. Each area was evaluated separately regarding the effect of the lower projected demands for the 2040 land uses. The COSMUD WMP does not provide specific projected demands for each study area or development project, which means that direct comparisons of the demands for specific areas are not possible. However, qualitative assessments have been made of the difference in required distribution and transmission pipelines within these areas by comparing the land uses. The areas where significant differences have been identified are discussed below.

- Within Study Area 1, the Eight Mile Road Area, the 2040 land uses show no new development north of Eight Mile Road. The COSMUD WMP was based on all of this area developing by 2035. It can be assumed that most of the distribution and transmission pipelines within Study Area 1 (north of Eight Mile Road) will not be needed. No specific amount of pipelines or dollar value was identified in the COSMUD WMP for this Study Area.
- Within Study Area 15, the South of French Camp Road Area, the 2040 land uses show this area as Open Space/Agriculture, whereas the 2035 land uses showed this area as Residential Estate. It can be assumed that all of the distribution and transmission pipelines within Study Area 15 shown in the COSMUD WMP will not be needed. No specific amount of pipelines or dollar value was identified in the COSMUD WMP for this Study Area.
- Within Study Area 16, the East of French Camp Road Area, the 2040 land uses show this area as Open Space/Agriculture, whereas the 2035 land uses showed this area as Residential Estate. It can be assumed that all of the distribution and transmission pipelines within Study Area 15 shown in the COSMUD WMP will not be needed. No specific amount of pipelines or dollar value was identified in the COSMUD WMP for this Study Area.
- For the Tra Vigne development project, the 2040 land uses show this area as Residential Estate, whereas the 2035 land uses showed this area with portions of higher density housing land uses. It can be assumed that the lower housing density for the 2040 land uses will result in lower demands. The developed area will not change, meaning that there would be no expected change in the extent of the distribution and transmission pipeline network planned for this area. However, the lower demands could result in smaller diameter pipelines being needed throughout this area.

Other changes in land uses within Study Areas or development areas are not expected to result in significant changes in the required COSMUD distribution or transmission pipelines planned for these areas.

### **Cal Water Infrastructure Evaluation**

The decrease in projected demands within the Cal Water Service Area change the infrastructure needs for water storage capacity, pumping facility capacity, and distribution pipeline capacity.

- Average Day Demand – 2035 WMP: 35.1 mgd. This study for 2040: 26.4 mgd
- Maximum Day Demand – 2035 WMP: 63.1 mgd. This study for 2040: 46.4 mgd
- Peak Hour Demand – 2035 WMP: 87.7 mgd. This study for 2040: 73.2 mgd

### Water Storage Capacity

Required storage volume decreases are based on decreased need for operational and emergency storage due to the lower projected demands. Required fire flow storage would not change with the decrease in demands. The operational storage requirement is 25 percent of maximum day demands. The emergency storage requirement is 100 percent of the average day demands.

Based on the Cal Water WMP (based on the 2035 General Plan buildout):

- The current total available storage is 38.4 mg (according to the Cal Water WMP).
- The required total storage at buildout of the 2035 General Plan is 51.9 mg.
- The required new storage is 13.5 mg.

Based on the current GPU 2040 land use demands:

- The current total available storage is 38.4 mg (according to the Cal Water WMP).
- The required total storage for the 2040 development is 38.9 mg.
- The required new storage is 0.5 mg.

Thus, the required new storage for 2040 development is 0.5 mg, which is a reduction of 13.0 mg from the storage needed for buildout of the 2035 General Plan.

#### Pumping Facility Capacity

Sufficient water system pumping capacity should be provided to meet the greater of these two demand conditions:

1. A maximum day demand concurrent with a maximum fire flow event with the largest pump at each booster pump station in standby mode with well pumps assumed to operate at firm groundwater pumping capacity.
2. A peak hour demand with the largest pump at each booster pump station in standby mode with well pumps assumed to operate at firm groundwater pumping capacity.

Given that the peak hour demands are significantly larger than the maximum fire flow demands, the second conditions will control the decrease in required pumping facility capacity.

Based on the Cal Water WMP (based on the 2035 General Plan buildout):

- The current total available pumping capacity is 47,012 gpm (according to the Cal Water WMP).
- The required total pumping capacity at buildout of the 2035 General Plan is 60,937 gpm.
- The required new pumping capacity is 13,925 gpm.

Based on the GPU 2040 land use demands:

- The current total available pumping capacity is 47,012 gpm (according to the Cal Water WMP)
- The required total pumping capacity for the 2040 development is 50,069 gpm
- The required new pumping capacity is 3,057 gpm.

Thus, the required new pumping capacity for 2040 development is 3,057 gpm, which is a reduction of 10,868 gpm from the pumping capacity needed for buildout of the 2035 General Plan.

#### Distribution Pipeline Capacity

The Cal Water distribution system generally covers the downtown area of the City with a well-looped, grid system that provides adequate capacity in the inner downtown area where most of the changes in development are expected to occur. Cal Water has been and will continue to upgrade their distribution system. These upgrades will help Cal Water supply the future water demand. The projects that are included in the Cal Water WMP are expected to be adequately sized to support the 2040 land uses, as there is no change expected in the fire flow demands, and there is relatively little change in the peak hour demands. No changes to the pipeline CIP are expected.

The infrastructure analyses presented in this TM are based on generalized land use data and preliminary engineering evaluations. All these analyses should be refined and updated through detailed evaluations of each specific development project.

### **COST EVALUATIONS BY SERVICE AREA**

Preliminary infrastructure cost estimates for water storage facilities and booster pumping facilities were developed for the COSMUD and Cal Water Service Areas. The cost analyses presented in this TM are based on generalized land use data and preliminary engineering evaluations. All these analyses should be refined and updated through detailed evaluations of each specific development project.

#### **COSMUD**

The COSMUD costs for water storage for the 2040 land uses are estimated to decrease from the costs for buildout of the 2035 General Plan, as summarized below:

- The 2035 General Plan buildout new storage is 109.2 mg, which has an estimated cost of \$166.4 million (based on \$1.52 per gallon of storage).
- The 2040 GPU required new storage is 24.9 mg, which has an estimated cost of \$37.9 million (based on \$1.52 per gallon of storage).
- The reduction in estimated storage costs from 2035 buildout to 2040 development land uses is \$128.5 million.

The COSMUD costs for pumping capacity for the 2040 land uses are estimated to decrease from the costs for buildout of the 2035 General Plan, as summarized below:

- The 2035 General Plan buildout new pumping capacity is 150,087 gpm, which has an estimated cost of \$65.5 million (based on \$303,000 per mgd of pumping capacity).
- The 2040 GPU required new pumping capacity is 0 gpm, which has no cost.
- The reduction in estimated pumping capacity costs from 2035 buildout to 2040 development land uses is \$65.5 million.

Costs were taken from the COSMUD WMP, which were developed with a July 2008 ENR index of 8293, and then adjusted to current dollars using a December 2016 ENR index of 10530.

The infrastructure evaluation also showed an expected reduction of required pipeline projects within certain study areas. As these pipeline projects are not listed in the COSMUD WMP by the study areas, it is not possible to estimate the amount of reduction in pipeline projects, or the associated costs from the available information.

## **Cal Water**

The Cal Water costs for water storage for the 2040 land uses are estimated to decrease from the costs for buildout of the 2035 General Plan, as summarized below:

- The 2035 General Plan buildout new storage is 13.5 mg, which has an estimated cost of \$21.5 million (based on \$1.60 per gallon of storage).
- The 2040 GPU required new storage is 0.5 mg, which has an estimated cost of \$0.8 million (based on \$1.60 per gallon of storage).
- The reduction is estimated storage costs from 2035 buildout to 2040 development land uses is \$20.7 million.

The Cal Water costs for pumping capacity for the 2040 land uses are estimated to decrease from the costs for buildout of the 2035 General Plan, as summarized below:

- The 2035 General Plan buildout new pumping capacity is 13,925 gpm, which has an estimated cost of \$9.8 million (based on \$490,000 per mgd of pumping capacity).
- The 2040 GPU required new pumping capacity is 3,057 gpm, which has an estimated cost of \$2.2 million (based on \$490,000 per mgd of pumping capacity).
- The reduction is estimated pumping capacity costs from 2035 buildout to 2040 development land uses is \$7.7 million.

Costs were taken from the Cal Water WMP, which were developed with an ENR CCI of 8549 (20 Cities Average), and then adjusted to current dollars using a December 2016 ENR index of 10530.

## **RECOMMENDED FUTURE ACTIONS**

The recommended actions to address potable water infrastructure needs are addressed in this section.

### **Water Distribution Systems**

The projected land uses for 2040 are different that the buildout land uses from the 2035 General Plan. Consequently, the water infrastructure identified in the previous master plans (City and Cal Water) may no longer be appropriate. This could result in some water infrastructure being undersized, which could lead to inadequate water deliveries or inadequate water pressures. Some water infrastructure could be oversized, which could lead to operational problems and unnecessary infrastructure capital and operation & maintenance expenditures.

The previous water master plans (City and Cal Water) and associated water system models should be updated based on the 2040 land uses, and appropriately sized infrastructure should be developed and included in the City's and Cal Water's Capital Improvement Plans. The City's and Cal Water's Development Impact Fees should be revised based on the updated water master plans to ensure the City and Cal Water collect enough money to construct the required infrastructure.

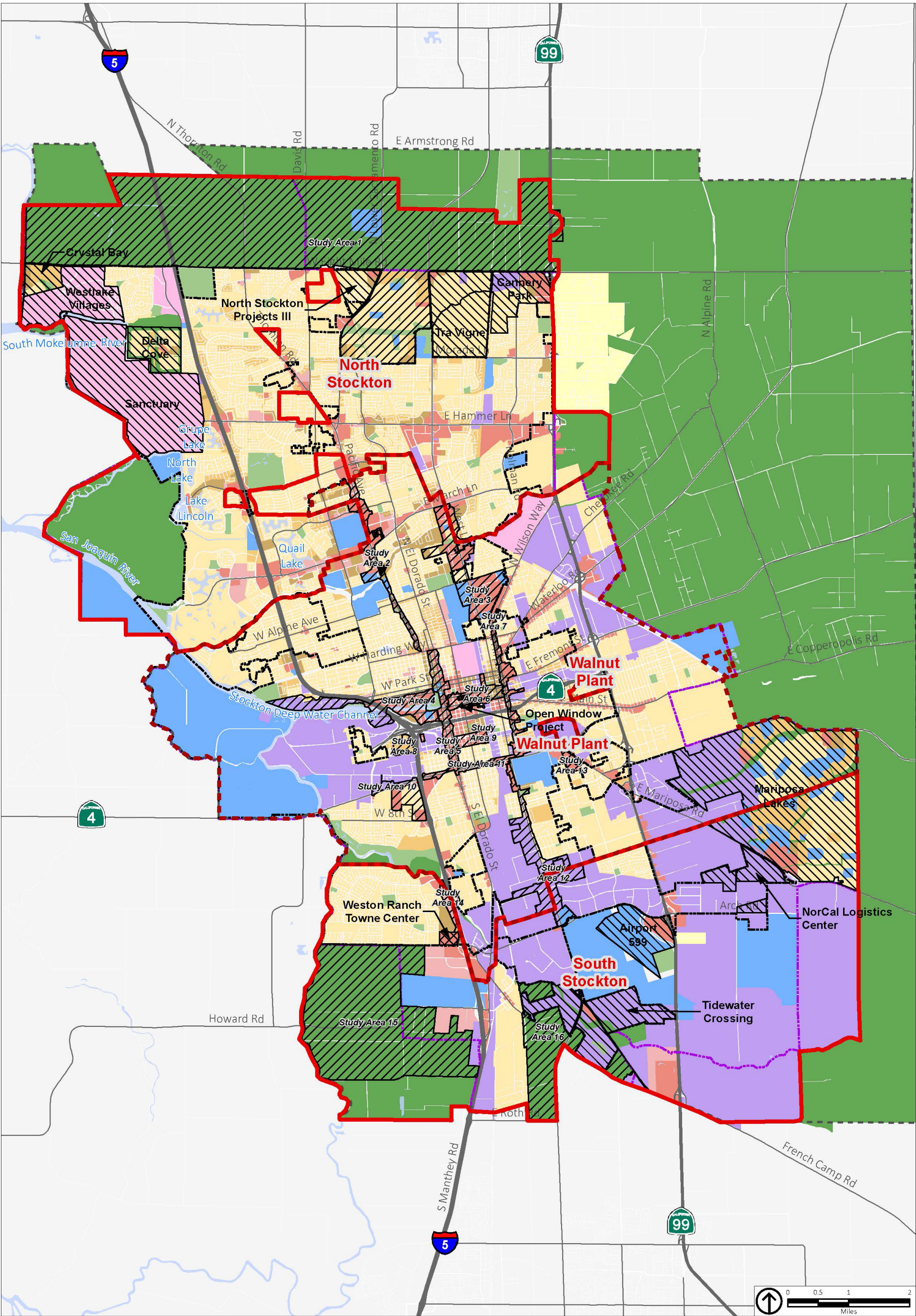
### **COSMUD Northern and Southern Systems**

The COSMUD water system includes a northern system and a southern system, essentially separated by the Cal Water system serving the center of the City. Since the completion of the Delta Water Treatment Project, COSMUD operates the two systems essentially as two separate, distinct systems. There is an eastern connection between the two systems, but the connection is kept closed. Evaluating the northern and southern COSMUD systems as if they were operated as a single system would allow the storage and pumping facilities to be evaluated collectively. However, additional studies of the potential benefits and impacts of connecting the north and south systems would need to be prepared.

### **Future Development-Specific Potable Water Improvements**

This TM is a high-level assessment of required potable water facilities for the Study Areas and Approved/Pending Development Projects. These water demands and associated facility requirements are sized based on generalized land use data and preliminary engineering evaluations. These evaluations do not assess specific facilities needed for the Study Areas and Pending/Approved Development Projects. It is difficult to size potable water facilities without knowing the layout of the development and site-specific constraints. As specific developments occur, the specific potable water infrastructure serving the developments should be reviewed and verified using the updated water system models. The required infrastructure should be evaluated and identified as needed for the specific development projects.





Source: City of Stockton, June & August 2017.



Figure 1  
2017 Preferred 2040 Land Uses  
and Development Areas



# **ATTACHMENT A**

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Land Use Data Received from Placeworks



Acreage Gross or Net	Study Area Name	Single Family Net New 2040	Single Family Net New 2040	Single Family Net New 2040 + Existing	Single Family Net New 2040 + Existing	Multi Family Net New 2040	Multi Family Net New 2040	Multi Family Net New 2040 + Existing	Multi Family Net New 2040 + Existing	Commercial Net New 2040	Commercial Net New 2040	Commercial Net New 2040	Commercial Net New 2040	Commercial Net New 2040	Commercial Net New 2040	Commercial Net New 2040	Commercial Net New 2040 + Existing	Commercial Net New 2040 + Existing	Industrial Net New 2040	Industrial Net New 2040 + Existing
		Units	Acres	Units	Acres	Units	Acres	Units	Acres	Total Square Feet	0.3 FAR Sq Ft	0.5 FAR Sq Ft	5.0 FAR Sq Ft	0.3 FAR Acres	0.5 FAR Acres	5.0 FAR Acres	Sq Ft	Acres	Sq Ft	Sq Ft
Gross	Study Area 1 - Eight Mile Rd Area	1,379	646	1,500	663	1,198	209	1,294	217	39,408	39,408	0	0	15	0	0	241,408	20	0	105,400
Net	Study Area 2 - Pacific Ave Corridor	0	0	22	4	110	19	224	22	93,961	93,961	0	0	17	0	0	1,560,846	103	0	1,980
Net	Study Area 3 - West Ln and Alpine Rd Area	77	13	285	52	680	120	774	125	323,399	323,399	0	0	102	0	0	975,325	163	0	1,423,576
Net	Study Area 4 - Port/Waterfront	17	3	71	11	1,770	33	2,058	42	2,040,010	6,100	0	2,033,911	2	0	31	2,865,512	62	580,859	1,739,495
Net	Study Area 5 - El Dorado/Center Corridors	0	0	45	6	1,196	22	1,555	30	1,310,216	0	0	1,310,216	0	0	21	2,158,663	53	0	258,300
Net	Study Area 6 - Miner/Weber Corridors <sup>(a)</sup>	0	0	47	4	1,248	22	1,467	27	1,463,025	0	0	1,463,025	0	0	14	2,152,972	33	0	187,300
Net	Study Area 7 - Wilson Way Corridor	0	0	12	2	234	27	240	28	606,716	103,753	0	502,963	19	0	5	1,321,076	65	0	390,342
Net	Study Area 8 - I-5/Highway 4 Interchange	0	0	8	1	659	47	660	48	388,671	0	0	388,671	0	0	4	388,671	4	0	344,300
Net	Study Area 9 - Railroad Corridor at California St	0	0	19	2	1,340	24	1,363	25	1,299,279	0	0	1,299,279	0	0	24	1,365,999	26	0	182,658
Net	Study Area 10 - I-5 and Charter Way Area	86	15	314	58	98	42	127	46	133,864	133,864	0	0	42	0	0	377,363	77	83,678	203,939
Net	Study Area 11 - Charter Way/MLK Jr Blvd Corridor	0	0	5	0	396	15	396	15	323,733	9,597	0	314,135	6	0	7	703,670	38	0	0
Net	Study Area 12 - Airport Way Corridor	0	0	53	7	108	19	112	19	205,461	135,225	70,236	0	14	4	0	272,544	48	1,368,744	3,709,140
Net	Study Area 13 - Mariposa and Charter Area	0	0	12	4	0	0	77	6	80,944	80,944	0	0	25	0	0	93,560	28	0	0
Net	Study Area 14 - East Weston Ranch <sup>(b)</sup>	0	0	1	1	0	0	0	0	430,677	0	430,677	0	0	26	0	430,677	26	0	0
Net	Study Area 15 - South of French Camp Rd	0	0	89	76	0	0	9	6	0	0	0	0	0	0	0	0	0	0	1,700
Net	Study Area 16 - E French Camp Rd Area	0	0	59	123	0	0	4	9	0	0	0	0	0	0	0	5,100	17	0	4,900
Net	Outside of Study Areas <sup>(c)</sup>	1,501	246	77,964	14,117	0	0	33,183	1,916	0	0	0	0	0	0	0	23,811,089	1,607	0	46,620,901
	Grand Total	3,059	923	80,505	15,131	9,036	600	43,542	2,583	8,739,364	926,252	500,913	7,312,200	242	31	105	38,724,475	2,371	2,033,281	55,173,931
<sup>(a)</sup> Excludes Open Window approved project.																				
<sup>(b)</sup> Excludes Weston Ranch Town Center approved project.																				
<sup>(c)</sup> Excludes approved/pending projects.																				

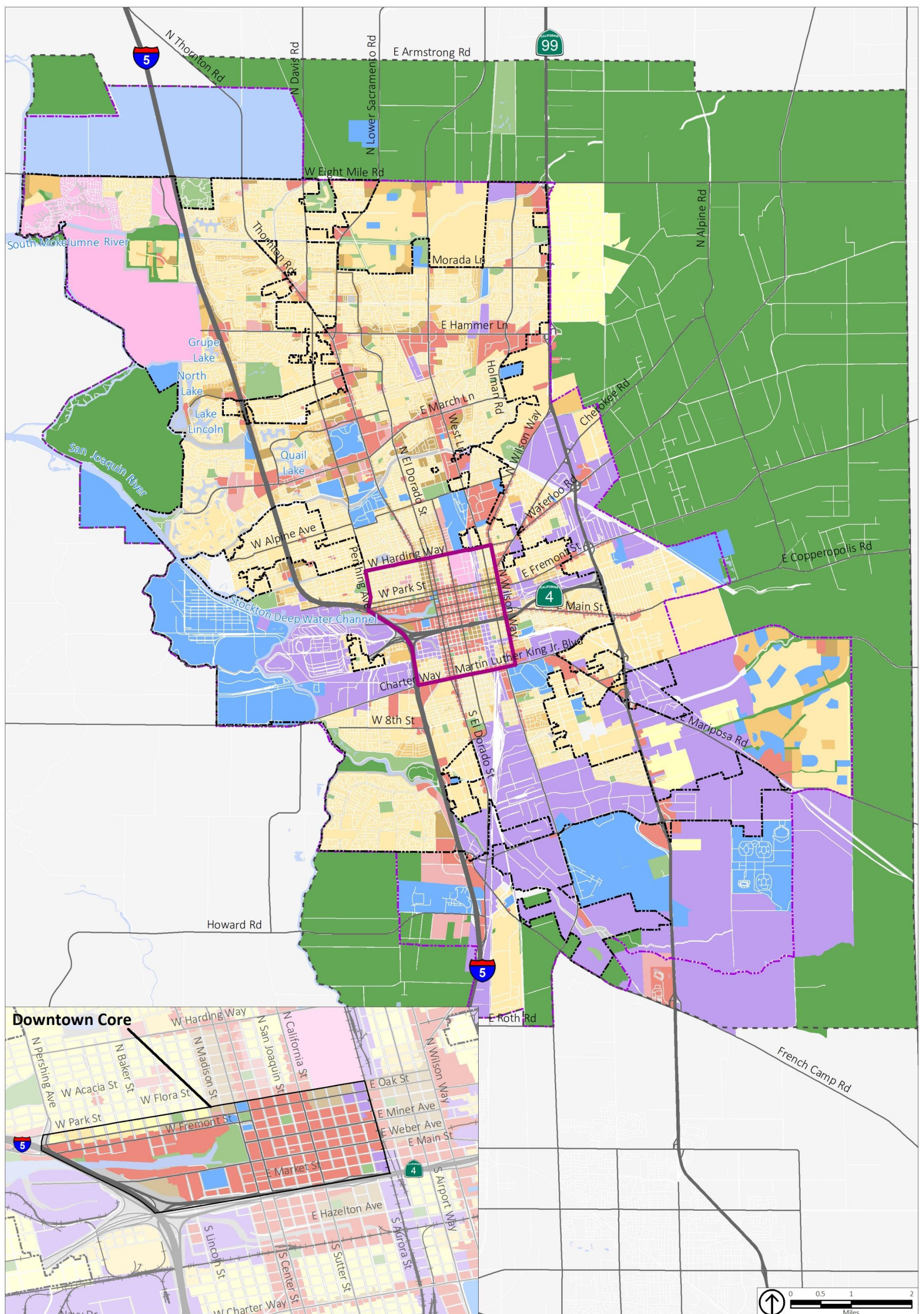
Acreage Gross or Net	Approved/Pending Projects Details	Net New						Full Build (2040)					
		Single Family Units	Single Family Acres	Multi-Family Units	Multi-Family Acres	Commercial Square Feet	Commercial Acres	Single Family Units	Single Family Acres	Multi-Family Units	Multi-Family Acres	Commercial Square Feet	Commercial Acres
Approved within city limit													
Gross	Westlake Villages	2,630	680	0		0		2,630	680	0		0	
Gross	Delta Cove	1,164	133	381	48	31,000	3	1,164	133	381	48	31,000	2.6
Gross	North Stockton Projects III	2,220	355	0		0		2,455	393	0		0	
Gross	Cannery Park	981	272	210	16	1,078,762	104	981	272	210	16	1,078,762	104
Gross	Nor Cal Logistics Center	0	0	0	0	0	0	0	0	0	0	0	0
Gross	Crystal Bay	951	19	392	79	0		951	19	392	79	0	0
Gross	Sanctuary	5,452	1,026	1,618	67	692,256	36	5,452	1,026	1,618	67	692,256	36
Gross	Tidewater Crossing	-310	-870	0		186,200	16	0	0	0		186,200	16
Net	Open Window <sup>(a)</sup>	0	0	1,391	12	-68,800	-1	0	0	1,400	12	290,000	12
Gross	Weston Ranch Town Center	0	0	0	0	481,000	41	0	0	0	0	481,000	41
Approved/pending outside city limit, inside SOI													
Gross	Mariposa Lakes	8,955	939	1,553	585	1,009,503	150	8,960	1,090	1,556	585	1,009,503	150
Gross	Airpark 599	0	0	0	0	1,678,500	128	0	0	0	0	1,678,500	128
Gross	Tra Vigne <sup>(b)</sup>	1,244	846	0	0	0	0	1,244	846	0	0	0	0
<sup>(a)</sup> The Master Development Plan for Open Window is approved for 1,034 units, with an option to expand the capacity to 1,400 units if the General Plan Update increases the maximum densities in the Downtown, which is being considered as part of this General Plan Update.													
<sup>(b)</sup> Pending; not approved.													

2040 Development Study Area												
	Net New Single Family Units (full buildout)	Percent applied to 2040	Net New Single Family Units (2040)	Net New Multi-Family Units (full buildout)	Percent applied to 2040	Net New Multi-Family Units (2040)	Net New Commercial Square Feet (full buildout)	Percent applied to 2040	Net New Commercial Square Feet (2040)	Net New Industrial Square Feet (full buildout)	Percent applied to 2040	Net New Industrial Square Feet (2040)
Study Area 1 – Eight Mile Rd Area	3,940	35%	1,380	3,420	35%	1,200	197,000	20%	39,000	0	0%	0
Study Area 2 – Pacific Ave Corridor	0	0%	0	440	25%	110	188,000	50%	94,000	0	0%	0
Study Area 3 – West Ln and Alpine Rd Area	80	100%	80	2,720	25%	680	1,294,000	25%	323,000	0	0%	0
Study Area 4 – Port/Waterfront	20	100%	20	2,210	80%	1,770	6,800,000	30%	2,040,000	2,323,000	25%	581,000
Study Area 5 – El Dorado/Center Corridors	0	0%	0	1,500	80%	1,200	4,367,000	30%	1,310,000	0	0%	0
Study Area 6 – Miner/Weber Corridors <sup>(a)</sup>	0	0%	0	1,560	80%	1,250	2,926,000	50%	1,463,000	0	0%	0
Study Area 7 – Wilson Way Corridor	0	0%	0	940	25%	230	1,213,000	50%	607,000	0	0%	0
Study Area 8 – I-5/Highway 4 Interchange	0	0%	0	820	80%	660	777,000	50%	389,000	0	0%	0
Study Area 9 – Railroad Corridor at California St	0	0%	0	1,680	80%	1,340	5,197,000	25%	1,299,000	0	0%	0
Study Area 10 – I-5 and Charter Way Area	90	100%	90	980	10%	100	535,000	25%	134,000	98,000	85%	84,000
Study Area 11 – Charter Way/MLK Jr Blvd Corridor	0	0%	0	790	50%	400	1,619,000	20%	324,000	0	0%	0
Study Area 12 – Airport Way Corridor	0	0%	0	430	25%	110	274,000	75%	205,000	5,475,000	25%	1,369,000
Study Area 13 – Mariposa and Charter Area	0	0%	0	570	0%	0	324,000	25%	81,000	0	0%	0
Study Area 14 – East Weston Ranch <sup>(b)</sup>	0	0%	0	610	0%	0	574,000	75%	431,000	0	0%	0
Study Area 15 – South of French Camp Rd	0	0%	0	0	0%	0	0	0%	0	0	0%	0
Study Area 16 – E French Camp Rd Area	0	0%	0	0	0%	0	0	0%	0	0	0%	0
Outside of Study Areas <sup>(c)</sup>	16,360	9%	1,500	29,810	0%	0	19,487,000	0%	0	126,805,000	0%	0
Grand Total <sup>(d)</sup>	20,480		3,060	48,470		9,040	45,773,000		8,739,000	134,701,000		2,033,000
<div><div><sup>(a)</sup></div><div>Excludes Open Window approved project.</div></div> <div><div><sup>(b)</sup></div><div>Excludes Weston Ranch Town Center approved project.</div></div> <div><div><sup>(c)</sup></div><div>Excludes approved/pending projects</div></div> <div><div><sup>(d)</sup></div><div>Numbers do not always add up due to rounding.</div></div> <div>The “full buildout” of the proposed General Plan assumes the maximum development of every parcel, combined with approved and pending developments throughout the Planning Area. The 2040 land uses are based on realistic land use demand projections. The full buildout of the General Plan would result in almost three times more new housing units and over 24 times more new non-residential development than estimated for 2040. Therefore, it is extremely unlikely that the full buildout would occur by the year 2040. Full buildout may not occur until well beyond the useful lifespan of the proposed infrastructure (for example, the lifespan of concrete structures is typically 50 to 75 years). Consequently, this infrastructure planning was based on the estimated 2040 level of development. This table is included in this TM to document the relationship between the buildout land uses and the 2040 land uses.</div>												

Source: PlaceWorks, 2017.



**Figure 2-8**  
**General Plan Land Use Map**



Source: City of Stockton, 2017; PlaceWorks, 2017.





**ATTACHMENT 2**

**REVISED SEWER MASTER PLAN SUPPLEMENT**



## **TECHNICAL MEMORANDUM**

DATE: December 13, 2017 Project No.: 425-10-16-04.006  
SENT VIA: EMAIL  
TO: City of Stockton, Municipal Utilities Department  
FROM: Jeffrey D. Pelz, PE, RCE #46088  
REVIEWED BY: Douglas T. Moore, PE, RCE #58122  
SUBJECT: Stockton General Plan Update – Sewer Master Plan Supplement

This Technical Memorandum (TM) presents the Sewer Master Plan Supplement for the Stockton General Plan Update (GPU). This TM is based on the 2035 Wastewater Master Plan (2035 WWMP) prepared in 2008, with updated flows using GPU land uses. This TM includes the following Sections:

- Summary
  - Existing Sewer and Wastewater Treatment Facilities
  - Flow Projection Summary by Development Area
  - Flow Projection Summary by System
  - Required New Infrastructure Evaluations Summary
  - Approximate Regional Wastewater Control Facility Flows
  - Infrastructure Cost Evaluation Summary
- Existing Sewer and Wastewater Treatment Facilities
  - Sewer System
  - Regional Wastewater Control Facility
- Wastewater Flow Estimates by Development Area
  - GPU Land Uses by Development Area
  - Wastewater Flow Factors
  - Average Dry Weather Flows by Development Area
  - Peak Hour Wet Weather Flows by Development Area
- Comparison of GPU 2040 and 2035 WWMP Flows and Costs
- Regional Wastewater Control Facility Flows and Costs
- Recommended Future Actions
  - Sewer System
  - Regional Wastewater Control Facility

The analyses and conclusions presented in this TM are based on generalized land use data and preliminary engineering evaluations. All these evaluations should be refined and updated through detailed evaluations of each specific development project.

## **SUMMARY**

Figure 1 shows the 2040 land uses based on the GPU. Figure 2 shows the City's wastewater sub-collection system boundaries, and Figure 3 show the existing pipelines and pump stations that comprise the wastewater collection systems. The basis of the summary data is presented in the sections following the summary, and the General Plan Update buildout land use map is provided in Attachment A.

## **Existing Sewer and Wastewater Treatment Facilities**

The City's sewer system is shown on Figure 3 and includes approximately 914 miles of gravity sewers and force mains (pressure pipelines) ranging from less than 6-inches to 72-inches in diameter and 28 sewer pump stations<sup>1</sup>. The sewer system generally flows from the north, east, and south to the Stockton Regional Wastewater Control Facility (RWCF), where it is treated and discharged to the San Joaquin River.

## **Flow Projection Summary by Development Area**

The estimated average dry weather flow (ADWF) and peak hour wet weather flow (PHWWF) for the collection system are summarized in Table 1. Based on land use information from the GPU and standard flow factors, the total estimated ADWF used for collection system planning is estimated to increase from about 37 million gallons per day (mgd) for existing land uses to 60 mgd for the 2040 land uses. The total PHWWF used for collection system planning is estimated to increase from about 80 mgd for existing land uses to 132 mgd for the 2040 land uses. The total of all flows used for planning collection system facilities is substantively higher than actual existing flows at the RWCF due to the need for conservative planning of collection system flows to minimize the potential for wastewater overflows.

## **Flow Projection Summary by System**

As described in the 2035 WWMP, the City's sewer system was divided into 10 existing sub-collection systems (Systems 1 through 10) and four future sub-collection systems (Systems 12 through 15). The Systems are shown on Figure 2. Improvements were identified for each of the Systems. In general, the 2040 ADWF for each System is lower than the ADWFs developed for the 2035 WWMP, which were based on buildout of the 2035 General Plan. There are three exceptions where the 2040 flows are higher than those projected in the 2035 WWMP (System 5 – serving the downtown area, System 10, and System 12). No flow from System 15 is anticipated by 2040, and about half the previously planned flow is anticipated in Systems 9, and 13.

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<sup>1</sup> City of Stockton Sewer System Management Plan 2016-2020; January 2016, City of Stockton.

<b>Table 1. Summary of Wastewater Flow Estimates for Collection System Planning</b>			
Land Use	Flow, mgd		
	Existing	Net New	2040
<b>Average Dry Weather Flow</b>			
Study Areas	1.4	3.6	5.1
Approved/Pending Development Projects Within City Limit	0.1	7.1	7.2
Approved/Pending Development Projects Outside City Limit but Within Sphere of Influence	0.0	8.3	8.3
Remaining City Outside of Study Areas and Outside of Approved/Pending Projects	35.6	3.6	39.1
<b>Total</b>	<b>37.1</b>	<b>22.5</b>	<b>59.7</b>
<b>Peak Hour Wet Weather Flow</b>			
Study Areas	8.3	10.1	18.4
Approved/Pending Development Projects Within City Limit	2.6	18.0	20.6
Approved/Pending Development Projects Outside City Limit but Within Sphere of Influence	0.0	19.0	19.0
Remaining City Outside of Study Areas and Outside of Approved/Pending Projects	68.6	5.6	74.2
<b>Total</b>	<b>79.5</b>	<b>52.7</b>	<b>132.1</b>

## Required New Infrastructure Evaluations Summary

The infrastructure evaluations were developed by:

- Estimating the ADWFs for the GPU 2040 level of development by sewer sub-collection system.
- Comparing the 2040 estimated ADWFs with the ADWFs in the 2035 WWMP, which were based on full buildout the 2035 General Plan.
- Using changes in projected flows for each sub-collection system as an indicator of how costs associated with the required infrastructure needed for the 2040 level of development would compare to the infrastructure identified in the 2035 WWMP, adjusted based on the nature of growth and planned infrastructure for each area.

The improvements anticipated within existing Systems 1, 2, 4, and 7, and future System 12 are not expected to change as a result of the GPU. Improvements needed within the other systems are expected to change as follows:

- System 3: Slightly fewer trunk sewer improvements are likely to be needed as the projected flows are reduced. The Smith Canal Pump Station, which is shared with Systems 2 and 9, will still require capacity upgrades and force main improvements. While the ultimate design flow may be slightly lower, this is unlikely to significantly reduce the cost of the needed improvements.
- System 5: The projected flows are about 30 percent higher, which may affect the size of some future improvements. The future Lincoln Street Pump Station and force main will also need to have a slightly higher capacity than previously planned.
- System 6: Lower projected flows will result in some reduction in future costs for planned upsizing and sewer extensions. The planned pump station needed for the eastern portion of System 6 would be slightly larger.
- System 8: Fewer trunk sewer upsizing projects and extensions into new service area will be needed by 2040 than previously identify for 2035 buildout.
- System 9: Some of the planned trunk sewer extensions into new service area may not be needed, and it is likely that none of the previously identified upsizing projects will be needed by 2040. The future Newton Road Pump Station would be somewhat smaller.
- System 10: Many of the previously identify trunk sewer extension have been constructed, so the projected costs will be lower. System 10 shares the 14-Mile Slough Pump Station with Systems 1, 2 and 15. Due to changes in growth planned for Systems 10 and 15, the 2040 capacity required at 14-Mile Slough Pump Station would be about 65 percent of the previously identified build-out flow. (No flow is anticipated from System 15 by 2040.)



- System 13: New pipelines and pump stations are required to serve this new service area. 2040 flows are about one half of the previously projected buildout flows, so the size of pump stations and some pipelines improvements will be less. The quantity (and cost) of infrastructure will be related to the size of new service area being added, and to the relative timing of development in the western portion versus the eastern portion. Development to the east in advance of development in the western portion will have disproportionately higher sewer infrastructure improvements due to the need to extend the collection system into the new service area.
- System 14: Most previously anticipated growth will not occur by 2040, and the infrastructure already constructed will not require improvements. The relevant facilities include the Weston Ranch Pump Station and force mains, which are shared with a portion of System 8.
- System 15: System 15 is not expected to require any sewer service by 2040, so no improvements will be needed.

### Approximate Regional Wastewater Control Facility Flows

The three-month average influent flow entering the RWCF is reported to be 27.0 mgd for May through July 2017<sup>2</sup>. The ADWF and Annual Average flow in 2016 were both 29 mgd, and the maximum month and maximum week flow were 37.7 mgd and 42.1 mgd, respectively<sup>3</sup>. These flow records compare to an ADWF of 37 mgd estimated using land uses and flow factors (above). The flow rate of 37 mgd is intended to be relatively high to reduce potential wastewater overflows in the collection system. Also, the lower reported ADWF from 2016 and 2017 reflect significant reductions from water conservation as well as areas counted as “developed” that are not currently occupied. In the absence of City-wide flow monitoring and additional analysis, adjustments to collection system flow projections are not recommended. For treatment plant planning, the City has adopted a predicted ADWF of 40.2 mgd for 2035 and 46.3 mgd for 2045<sup>4</sup>. The actual ADWF at 2040 will vary depending on the pace of development and changes in water conservation activities.

### Infrastructure Cost Evaluation Summary

Costs presented in the 2008 WWMP were adjusted based on the estimated reduction or increase in flow for each sub-collection system. Collection system total project costs associated with growth are predicted to be about \$727 million in 2007 dollars, with an additional \$67 million in 2007 dollars to address existing deficiencies. Costs for improvements at the RWCF through 2040 were not adjusted from the estimate prepared in 2011 for the Capital Improvement and Energy Management Plan, which totaled \$221 million in 2011 dollars. All costs estimates are planning level estimates based on broad assumptions and limited information, and do not necessarily reflect the economic conditions at the time a project is constructed.

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<sup>2</sup> Source: State of California CIWQS Data (self-monitoring reports); <http://ciwqs.waterboards.ca.gov>

<sup>3</sup> Source: Stockton RWCF Design Build Project; “Advanced Package 3a & 3b” of the Basis of Design Report; AECOM, October 2017.

<sup>4</sup> Ibid.

## EXISTING SEWER AND WASTEWATER TREATMENT FACILITIES

These descriptions of the existing sewer system and RWCF are based on the 2035 Wastewater Master Plan (2035 WWMP), which was prepared to identify how to collect and treat the wastewater flows from buildout of the 2035 General Plan. Additionally, these descriptions are updated based on discussions with City staff.

### Sewer System

As described in the 2035 WWMP, the City's sewer system is divided into 10 existing sub-collection systems (Systems 1 through 10) and four future sub-collection systems (Systems 12 through 15). There is no System 11. A System comprises a relatively large area that is generally tributary to a single major trunk sewer or flow route to the RWCF. System 15 will remain undeveloped at 2040, based on the GPU. The boundaries of the Systems referenced throughout this TM are shown on Figure 2.

The area labeled as System 90 is not served by the City's sewer system. Collection system planning does not incorporate flows from the area as there is no plan to connect it to the City's sewer in the future.

The City's wastewater collection infrastructure is shown on Figure 3. The sewer system generally flows from the north, east, and south toward the RWCF located on Navy Drive adjacent to the San Joaquin River. The City's sewer system, based on GIS mapping includes approximately 30 miles of force mains (pressure sewers) and 884 miles of gravity sewers<sup>5</sup>. The gravity sewers receive flow from approximately 554 miles of services laterals currently in use. The gravity sewers and force mains range in size from less than 6 inches to 72 inches in diameter. There are 28 pump stations (also shown on Figure 3) that range in capacity from 0.46 to 21.6 mgd. The capacity of each pump station is normally expressed in terms of firm capacity, which is the capacity with the largest pump on standby as a backup pump.

The wastewater infrastructure is of various ages and conditions. The City conducts regular inspection, maintenance and repairs to address deterioration and keep the system operational. Maintenance practices for the collection system are documented in the Sewer System Management Plan 2016-2020, prepared by the City in compliance with the requirements of the State Water Resources Control Board (SWRCB) Order No. 2006-003-DWQ, Statewide General Waste Discharge Requirement (WDR), dated May 2, 2006.

### Regional Wastewater Control Facility

Figure 3 depicts the location of the RWCF in relation to the collection systems. The RWCF is located on the San Joaquin River and consists of the main treatment plant, which has a design ADWF of 48 mgd, and the tertiary treatment plant, which has a designed ADWF and permitted capacity of 55 mgd. The tertiary treatment plant includes approximately 630 acres of facultative oxidation ponds surrounded by distribution canals and groundwater interceptor ditches; an engineered wetland; disinfection facilities; and a river outfall discharge system<sup>6</sup>. Solids are treated by anaerobic digestion,

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<sup>5</sup> City of Stockton Sewer System Management Plan 2016-2020; January 2016, City of Stockton.

<sup>6</sup> Ibid.

dewatered, and disposed of off-site. Effluent is discharged into the San Joaquin River adjacent to the RWCF.

Past and current flows to the RWCF are summarized below:

- 1997 ADWF: 28.4 mgd
- 2000 ADWF: 31.6 mgd
- 2005 ADWF: 35.0 mgd
- 2016 ADWF: 29.0 mgd
- 2017 ADWF (based on May, June, July): 27.0 mgd (a recent decrease in wastewater flows has occurred in many cities in California and is generally attributed to the recent drought, associated mandated water conservation, and the economic recession).

The RWCF discharges treated water to the Sacramento/San Joaquin River Delta in accordance with National Pollutant Discharge Elimination System (NPDES) permit No. CA0079138, State Water Resources Control Board Order R5-2014-0070-03. A major upgrade to the RWCF is currently in design that will improve the headworks and secondary treatment system as part of a long-term plan to address rehabilitation and replacement needs while improving treatment reliability and upgrading to provide the currently permitted capacity of 55 mgd.

## **WASTEWATER FLOW ESTIMATES BY DEVELOPMENT AREA**

Wastewater flow projections were calculated using two different methodologies. The first was based on summary data tables developed by Placeworks listing the land uses in each GPU Study Area and planned development projects (Development Areas). Projections were also developed for each wastewater collection System, as described later in this TM, to facilitate an update to the 2035 WWMP infrastructure cost analysis.

### **GPU Land Uses by Development Area**

The land use data provided by Placeworks is presented in Attachment A (including the buildout land use map, dwelling unit data, acreage data, and 2040 percent development data). The land use data was reorganized to facilitate application of wastewater flow factors. The reorganized data is provided in Table 2, which includes existing land use, net new land use for 2040, and 2040 land use. For single family and multi-family residential land uses, Table 2 includes both dwelling unit data and acreage data. For commercial and industrial land uses, Table 2 includes only acreage data.

### **Wastewater Flow Factors**

The 2035 WWMP provided flow factors for both existing land uses (Table 2-10 of the WWMP) and for future land uses (Table 2-11 of the WWMP) for use in estimating flow in the sewer system. Flow factors used for estimating sewer system flows are intentionally conservative, meaning they are intended to result in predicted flows that are higher than the corresponding actual flows, to allow for a range of different flow rates within a land use category. For example, actual commercial flows will generally range from very low for rental storage units to very high for restaurants. To allow for this range of actual flows, conservative (high) flow factors are used for estimating collection system flows in order to reduce the risk of undersized sewers and associated wastewater outflows.

Table 2. Land Use Data																					
Study Area or Development Name	Single Family (Dwelling Units)			Single Family (Gross Acres)			Multi Family (Dwelling Units)			Multi Family (Gross Acres)			Commercial (Gross Acres)			Industrial (Gross Acres)			Total Area (Gross Acres)		
	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040
Study Areas																					
Study Area 1 - Eight Mile Rd Area	121	1,379	1,500	17.2	232.1	249.3	96	1,198	1,294	8.4	73.2	81.6	17.9	0.6	18.5	4.0	0.0	4.0	48	306	353
Study Area 2 - Pacific Ave Corridor	22	0	22	5.8	0.0	5.8	114	110	224	4.3	5.9	10.3	114.9	4.5	119.4	0.1	0.0	0.1	125	10	136
Study Area 3 - West Ln and Alpine Rd Area	208	77	285	51.6	68.8	120.3	94	680	774	7.3	37.4	44.7	66.9	7.7	74.6	68.1	6.9	68.1	194	114	308
Study Area 4 - Port/Waterfront	54	17	71	10.6	15.0	25.6	288	1,770	2,058	10.7	33.4	44.2	9.5	3.7	13.2	55.4	6.9	62.4	86	59	145
Study Area 5 - El Dorado/Center Corridors	45	0	45	7.4	0.0	7.4	359	1,196	1,555	10.3	21.5	31.9	7.7	2.3	9.9	12.4	0.0	12.4	38	24	62
Study Area 6 - Miner/Weber Corridors	47	0	47	5.9	0.0	5.9	219	1,248	1,467	6.0	22.5	28.5	5.7	4.2	9.9	9.0	0.0	9.0	27	27	53
Study Area 7 - Wilson Way Corridor	12	0	12	2.2	0.0	2.2	6	234	240	0.3	8.6	8.9	0.8	6.4	7.2	18.7	0.0	18.7	22	15	37
Study Area 8 - I-5/Highway 4 Interchange	8	0	8	1.4	0.0	1.4	1	659	660	0.2	47.5	47.7	0.7	1.1	1.8	16.5	0.0	16.5	19	49	67
Study Area 9 - Railroad Corridor at California St	19	0	19	3.1	0.0	3.1	23	1,340	1,363	1.7	24.1	25.7	4.4	1.9	6.3	8.7	0.0	8.7	18	26	44
Study Area 10 - I-5 and Charter Way Area	228	86	314	57.1	77.2	134.3	29	98	127	5.1	5.3	10.4	25.7	3.2	28.9	5.8	3.4	9.2	94	89	183
Study Area 11 - Charter Way/MLK Jr Blvd Corridor	5	0	5	0.4	0.0	0.4	0	396	396	0.0	9.7	9.7	2.8	0.5	3.3	0.0	0.0	0.0	3	10	13
Study Area 12 - Airport Way Corridor	53	0	53	9.6	0.0	9.6	4	108	112	0.4	5.9	6.3	4.3	12.7	17.0	111.9	16.4	128.3	126	35	161
Study Area 13 - Mariposa and Charter Area	12	0	12	5.3	0.0	5.3	77	0	77	7.4	0.0	7.4	5.2	1.9	7.2	0.0	0.0	0.0	18	2	20
Study Area 14 - East Weston Ranch	1	0	1	1.5	0.0	1.5	0	0	0	0.0	0.0	0.0	1.2	18.5	19.8	0.0	0.0	0.0	3	19	21
Study Area 15 - South of French Camp Rd	89	0	89	100.9	0.0	100.9	9	0	9	7.6	0.0	7.6	0.0	0.0	0.0	0.1	0.0	0.1	109	0	109
Study Area 16 - E French Camp Rd Area	59	0	59	163.6	0.0	163.6	4	0	4	11.4	0.0	11.4	0.1	0.0	0.1	0.2	0.0	0.2	175	0	175
Subtotal (Study Areas)	983	1,558	2,541	443.4	393.0	836.5	1,323	9,036	10,359	81.4	294.8	376.2	267.8	69.3	337.1	310.8	26.7	337.5	1,103	784	1,887
Approved/Pending Development Projects Within City Limit																					
Westlake Villages	0	2,630	2,630	0.0	680.0	680.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	680	680
Delta Cove	0	1,164	1,164	0.0	132.7	132.7	0	381	381	0.0	47.6	47.6	0.0	2.6	2.6	0.0	0.0	0.0	0	183	183
North Stockton Projects III	235	2,220	2,455	38.0	355.0	393.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38	355	393
Cannery Park	0	981	981	0.0	272.0	272.0	0	210	210	0.0	16.0	16.0	0.0	104.0	104.0	0.0	0.0	0.0	0	392	392
Nor Cal Logistics Center	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
Crystal Bay	0	951	951	0.0	19.4	19.4	0	392	392	0.0	78.7	78.7	0.0	0.0	0.0	0.0	0.0	0.0	0	98	98
Sanctuary	0	5,452	5,452	0.0	1,026.0	1,026.0	0	1,618	1,618	0.0	67.4	67.4	0.0	35.5	35.5	0.0	0.0	0.0	0	1,129	1,129
Tidewater Crossing	310	-310	0	869.6	-869.6	0.0	0	0	0	0.0	0.0	0.0	0.0	16.0	16.0	0.0	0.0	0.0	870	-854	16
Open Window	0	0	0	0.0	0.0	0.0	11	1,739	1,750	0.0	14.9	14.9	16.1	-1.3	14.9	0.0	0.0	0.0	16	14	30
Weston Ranch Town Center	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	41.5	41.5	0.0	0.0	0.0	0	41	41
Subtotal (Approved/Pending Projects Within City Limit)	545	13,088	13,633	907.6	1,615.5	2,523.1	11	4,340	4,351	0.0	224.6	224.6	16.1	198.3	214.4	0.0	0.0	0.0	924	2,038	2,962
Approved/Pending Development Projects Outside City Limit but Within Sphere of Influence																					
Mariposa Lakes	5	8,955	8,960	151.0	939.3	1,090.3	3	1,553	1,556	0.0	585.0	585.0	0.0	150.0	150.0	0.0	0.0	0.0	151	1,674	1,825
Airpark 599	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	128.0	128.0	0.0	0.0	0.0	0	128	128
Tra Vigne	0	1,244	1,244	0.0	846.4	846.4	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	846	846
Subtotal (Approved/Pending Projects Outside City Limit but Within Sphere of Influence)	5	10,199	10,204	151.0	1,785.7	1,936.7	3	1,553	1,556	0.0	585.0	585.0	0.0	278.0	278.0	0.0	0.0	0.0	151	2,649	2,800
Remaining City Outside of Study Areas and Outside of Approved/Pending Projects	76,463	1,501	77,964	18,494	1,694	20,188	33,183	0	33,183	2,395	0	2,395	683	0	683	2,230	0	2,230	23,802	1,694	25,496
Grand Total	77,996	26,346	104,342	19,996	5,488	25,484	34,520	14,929	49,449	2,476	1,104	3,581	967	546	1,513	2,541	27	2,567	25,980	7,165	33,145

The flow factors used in this GPU wastewater estimate are summarized in Table 3, and include factors for single family residential, multi-family residential, commercial, and industrial for both existing land uses and for future land uses. Flow projected for 2040 is based on both sets of factors, those listed under “Flow Factors for Existing Development Areas” are applied to currently developed areas, and those listed under “Flow Factors for Areas Planned for Future Development” are applied to currently undeveloped areas where growth is planned. A limited number of industries that produce flows well in excess of the flow that would be predicted using the standard flow factors are considered on a case-by-case basis in the 2035 WWMP.

### **Average Dry Weather Flows by Development Area**

The ADWF estimates for the Development Areas are calculated in Table 4. The ADWFs are calculated by multiplying the land use (in terms of acres or residential dwelling units) by the appropriate flow factor. The following ADWFs are calculated for existing, net new, and 2040 flows using the land use data and flow factors adopted for collection system planning:

- ADWF from exiting land uses: 37.1 mgd
- ADWF from net growth between 2017 and 2040: 22.5 mgd
- ADWF from 2040 land uses: 59.7 mgd

The average of the actual May, June, and July 2017 daily flows entering the RWCF was 27.0 mgd<sup>7</sup>. The ADWF estimated using land use data and flow factors of 37.1 mgd is 37 percent higher than the actual flow into the RWCF. As discussed above, the flow factors used in estimating the ADWFs for sewer system planning and sizing are intentionally conservative (high). It is likely that flows observed in the summer of 2017 reflect substantive residual water conservation efforts that were initiated during the recent drought and continue to result in lower than historical wastewater flows. To the extent such conservation efforts are not permanent, flows from existing users can be expected to rebound to higher values in the future, even in the absence of growth. In addition, it is likely that a portion of the areas identified as “developed” are not fully occupied. Therefore, the ratio of the total of estimated flows used in collection system planning compared to actual current dry weather flow at the treatment plant is appropriate and expected.

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<sup>7</sup> California Integrated Water Quality System Project (CIWQS); State of California ([https://www.waterboards.ca.gov/water\\_issues/programs/ciwqs/publicreports.shtml](https://www.waterboards.ca.gov/water_issues/programs/ciwqs/publicreports.shtml)).

Table 3. Sewer Flow Factors for Existing and Future Development <sup>(a)</sup>		
Land Use Category	Flow Factor	Units
Flow Factors for Existing Development Areas from Table 2-10 from City of Stockton 2035 Wastewater Master Plan (West Yost, October 2008)		
Single Family Residential	240	gpd/DU
Multi-Famly Residential	5,568	gpd/acre
Commercial	1,100	gpd/acre
Industrial	1,400	gpd/acre
Flow Factors for Areas Planned for Future Development Table 2-11 from City of Stockton 2035 Wastewater Master Plan (West Yost, October 2008)		
Land Use Category	Flow Factor	Units
Single Family Residential	2,100	gpd/acre
Multi-Famly Residential	6,800	gpd/acre
Multi-Famly Residential (Downtown)	20,400	gpd/acre
Commercial	2,000	gpd/acre
Industrial	3,000	gpd/acre
<sup>(a)</sup> Flow projected for 2040 is based on both sets of factors, those listed under "Flow Factors for Existing Development Areas" are applied to currently developed areas, and those listed under "Flow Factors for Areas Planned for Future Development" are applied to currently undeveloped areas where growth is planned.		

Table 4. Average Dry Weather Flows

Study Area Name	Single Family, gpd			Multi Family, gpd			Commercial, gpd			Industrial, gpd			Total, gpd		
	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040
Study Areas															
Study Area 1 - Eight Mile Rd Area	29,040	487,393	516,433	46,908	497,555	544,462	19,657	1,206	20,863	5,646	0	5,646	101,250	986,154	1,087,404
Study Area 2 - Pacific Ave Corridor	5,280	0	5,280	24,200	40,178	64,378	126,441	8,988	135,429	133	0	133	156,053	49,166	205,220
Study Area 3 - West Ln and Alpine Rd Area	49,920	144,416	194,336	40,643	254,176	294,819	73,591	15,467	89,058	95,319	0	95,319	259,473	414,059	673,532
Study Area 4 - Port/Waterfront	12,960	31,467	44,427	59,819	568,150	627,969	10,468	7,354	17,822	77,579	20,835	98,415	160,827	627,806	788,633
Study Area 5 - El Dorado/Center Corridors	10,800	0	10,800	57,590	243,022	300,612	8,421	4,512	12,933	17,295	0	17,295	94,106	247,534	341,640
Study Area 6 - Miner/Weber Corridors	11,280	0	11,280	33,641	305,728	339,369	6,255	8,397	14,652	12,541	0	12,541	63,717	314,125	377,842
Study Area 7 - Wilson Way Corridor	2,880	0	2,880	1,725	58,166	59,891	904	12,811	13,715	26,136	0	26,136	31,645	70,977	102,622
Study Area 8 - I-5/Highway 4 Interchange	1,920	0	1,920	952	322,974	323,926	736	2,231	2,967	23,053	0	23,053	26,662	325,204	351,866
Study Area 9 - Railroad Corridor at California St	4,560	0	4,560	9,306	163,656	172,962	4,848	3,728	8,577	12,230	0	12,230	30,945	167,385	198,329
Study Area 10 - I-5 and Charter Way Area	54,720	162,109	216,829	28,322	35,797	64,119	28,243	6,402	34,646	8,052	10,205	18,258	119,337	214,514	333,851
Study Area 11 - Charter Way/MLK Jr Blvd Corridor	1,200	0	1,200	0	65,753	65,753	3,057	1,088	4,146	0	0	0	4,257	66,842	71,099
Study Area 12 - Airport Way Corridor	12,720	0	12,720	2,450	39,984	42,434	4,687	25,449	30,135	156,707	49,097	205,804	176,564	114,530	291,094
Study Area 13 - Mariposa and Charter Area	2,880	0	2,880	41,329	0	41,329	5,746	3,871	9,617	0	0	0	49,955	3,871	53,826
Study Area 14 - East Weston Ranch	240	0	240	0	0	0	1,359	37,076	38,436	0	0	0	1,599	37,076	38,676
Study Area 15 - South of French Camp Rd	21,360	0	21,360	42,496	0	42,496	0	0	0	114	0	114	63,970	0	63,970
Study Area 16 - E French Camp Rd Area	14,160	0	14,160	63,629	0	63,629	161	0	161	328	0	328	78,278	0	78,278
Subtotal (Study Areas)	235,920	825,385	1,061,305	453,009	2,595,141	3,048,150	294,576	138,580	433,157	435,134	80,138	515,272	1,418,640	3,639,243	5,057,883
Approved/Pending Development Projects Within City Limit															
Westlake Villages	0	1,428,000	1,428,000	0	0	0	0	0	0	0	0	0	0	1,428,000	1,428,000
Delta Cove	0	278,733	278,733	0	323,612	323,612	0	5,160	5,160	0	0	0	0	607,505	607,505
North Stockton Projects III	56,400	745,500	801,900	0	0	0	0	0	0	0	0	0	56,400	745,500	801,900
Cannery Park	0	571,200	571,200	0	108,800	108,800	0	208,000	208,000	0	0	0	0	888,000	888,000
Nor Cal Logistics Center	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crystal Bay	0	40,740	40,740	0	535,160	535,160	0	0	0	0	0	0	0	575,900	575,900
Sanctuary	0	2,154,600	2,154,600	0	458,320	458,320	0	71,060	71,060	0	0	0	0	2,683,980	2,683,980
Tidewater Crossing	74,400	-74,400	0	0	0	0	0	32,000	32,000	0	0	0	74,400	-42,400	32,000
Open Window	0	0	0	0	101,162	101,162	17,739	-1,375	16,364	0	0	0	17,739	99,787	117,527
Weston Ranch Town Center	0	0	0	0	0	0	0	82,902	82,902	0	0	0	0	82,902	82,902
Subtotal (Approved/Pending Development Projects Within City Limit)	130,800	5,144,373	5,275,173	0	1,527,054	1,527,054	17,739	397,747	415,486	0	0	0	148,539	7,069,174	7,217,713
Approved/Pending Development Projects Outside City Limit but Within Sphere of Influence															
Mariposa Lakes <sup>(a)</sup>	0	1,972,530	1,972,530	0	3,978,000	3,978,000	0	300,000	300,000	0	0	0	0	6,250,530	6,250,530
Airpark 599	0	0	0	0	0	0	0	256,000	256,000	0	0	0	0	256,000	256,000
Tra Vigne	0	1,777,541	1,777,541	0	0	0	0	0	0	0	0	0	0	1,777,541	1,777,541
Subtotal (Approved/Pending Development Projects Outside City Limit but Within Sphere of Influence)	0	3,750,071	3,750,071	0	3,978,000	3,978,000	0	556,000	556,000	0	0	0	0	8,284,071	8,284,071
Remaining City Outside of Study Areas and Outside of Approved/Pending Projects	18,351,120	3,557,377	21,908,497	13,334,753	0	13,334,753	751,613	0	751,613	3,121,617	0	3,121,617	35,559,103	3,557,377	39,116,479
Grand Total	18,717,840	13,277,205	31,995,045	13,787,762	8,100,195	21,887,957	1,063,929	1,092,327	2,156,255	3,556,751	80,138	3,636,889	37,126,282	22,549,865	59,676,147

<sup>(a)</sup> Small amount of existing development accounts for zero flow since the collection system is not yet constructed.



## Peak Hour Wet Weather Flows by Development Area

The Peak Hour Wet Weather Flows estimates (PHWWFs) for sewer design purposes are the sum of the ADWF and the Infiltration and Inflow (I&I) multiplied by a peaking factor<sup>8</sup>.

- Derivation of ADWF was discussed above.
- I&I accounts for rainfall and groundwater that enters the sewer systems during storm events. The I&I is estimated by multiplying the land use area by the I&I factor (400 gallons per day per acre). The estimated I&I flows are presented in Table 5.
- The peaking factor is multiplied by the sum of the ADWF and I&I flows. The peaking factor accounts for variations in the flow during the daily cycle of activity. For example, on weekdays, the residential ADWFs are typically highest in the morning as people wake up and getting ready to go to work. Commercial and industrial ADWFs are often highest in the day time when many people are at work. The peaking factor accounts for the variation in flows during the daily cycle and the aggregate effect of differences in flow patterns from different land uses. The peaking factor is dependent on the total ADWF, and as the ADWF increases, the peaking factor decreases. Peaking factors are calculated in Table 6 using the equations from the City's design standards and reported on page 2-19 of the 2035 WWMP. The maximum allowed peaking factor is 5.0. Where a study area comprises multiple independent sewer sub-sheds, the listed aggregate peaking factor is lower than the peaking factor that would be applied to individual sub-sheds.
- The PHWWF presented in Table 7 is calculated by multiplying the peaking factor by the sum of the ADWF and I&I flows for the existing land uses and for the 2040 land uses. The net new PHWWFs are the difference between the 2040 values and the existing values. These PHWWFs are used to size sewer system pipelines and pump stations.

A more thorough flow study and calibrated model would be needed for a more reliable estimate of PHWWFs based on historical flow patterns and I&I measurements throughout the collection system. The City has projected that the PHWWF at the RWCF will be 104.5 mgd in 2035 and 120.5 mgd in 2045<sup>9</sup>. Assuming linear growth from 2035 to 2045, the corresponding PHWWF for 2040 would be 112.5 mgd.

As stated above, the flow estimates presented in this TM are based on generalized land use data and preliminary engineering evaluations. All these flow estimates should be refined and updated through detailed evaluations of each specific development project.

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<sup>8</sup> Standard Drawing No. S-1, City of Stockton, 2016.  
([http://www.stocktongov.com/files/Standard\\_Drawings\\_2016.pdf](http://www.stocktongov.com/files/Standard_Drawings_2016.pdf))

<sup>9</sup> Source: Stockton RWCF Design Build Project; "Advanced Package 3a & 3b" of the Basis of Design Report; AECOM, October 2017.



Table 5. Infiltration and Inflow

Study Area Name	Single Family, gpd			Multi Family, gpd			Commercial, gpd			Industrial, gpd			Total, gpd		
	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040
Study Areas															
Study Area 1 - Eight Mile Rd Area	6,887	92,837	99,723	3,370	29,268	32,638	7,148	241	7,389	1,613	0	1,613	19,018	122,346	141,363
Study Area 2 - Pacific Ave Corridor	2,315	0	2,315	1,738	2,363	4,102	45,979	1,798	47,776	38	0	38	50,070	4,161	54,231
Study Area 3 - West Ln and Alpine Rd Area	20,622	27,508	48,130	2,920	14,952	17,871	26,760	3,093	29,854	27,234	0	27,234	77,536	45,553	123,089
Study Area 4 - Port/Waterfront	4,243	5,994	10,237	4,297	13,368	17,666	3,807	1,471	5,277	22,166	2,778	24,944	34,513	23,611	58,123
Study Area 5 - El Dorado/Center Corridors	2,953	0	2,953	4,137	8,612	12,749	3,062	902	3,964	4,941	0	4,941	15,094	9,514	24,608
Study Area 6 - Miner/Weber Corridors	2,343	0	2,343	2,417	8,992	11,409	2,275	1,679	3,954	3,583	0	3,583	10,618	10,671	21,289
Study Area 7 - Wilson Way Corridor	879	0	879	124	3,422	3,545	329	2,562	2,891	7,468	0	7,468	8,799	5,984	14,783
Study Area 8 - I-5/Highway 4 Interchange	550	0	550	68	18,998	19,067	268	446	714	6,587	0	6,587	7,473	19,445	26,917
Study Area 9 - Railroad Corridor at California St	1,226	0	1,226	669	9,627	10,295	1,763	746	2,509	3,494	0	3,494	7,152	10,373	17,525
Study Area 10 - I-5 and Charter Way Area	22,849	30,878	53,727	2,035	2,106	4,140	10,270	1,280	11,551	2,301	1,361	3,661	37,455	35,625	73,080
Study Area 11 - Charter Way/MLK Jr Blvd Corridor	151	0	151	0	3,868	3,868	1,112	218	1,329	0	0	0	1,262	4,086	5,348
Study Area 12 - Airport Way Corridor	3,828	0	3,828	176	2,352	2,528	1,704	5,090	6,794	44,773	6,546	51,320	50,481	13,988	64,469
Study Area 13 - Mariposa and Charter Area	2,103	0	2,103	2,969	0	2,969	2,090	774	2,864	0	0	0	7,161	774	7,936
Study Area 14 - East Weston Ranch	606	0	606	0	0	0	494	7,415	7,910	0	0	0	1,100	7,415	8,515
Study Area 15 - South of French Camp Rd	40,351	0	40,351	3,053	0	3,053	0	0	0	33	0	33	43,436	0	43,436
Study Area 16 - E French Camp Rd Area	65,459	0	65,459	4,571	0	4,571	59	0	59	94	0	94	70,183	0	70,183
Subtotal (Study Areas)	177,364	157,216	334,580	32,544	117,927	150,471	107,119	27,716	134,835	124,324	10,685	135,009	441,351	313,544	754,895
Approved/Pending Development Projects Within City Limit															
Westlake Villages	0	272,000	272,000	0	0	0	0	0	0	0	0	0	0	272,000	272,000
Delta Cove	0	53,092	53,092	0	19,036	19,036	0	1,032	1,032	0	0	0	0	73,160	73,160
North Stockton Projects III	15,200	142,000	157,200	0	0	0	0	0	0	0	0	0	15,200	142,000	157,200
Cannery Park	0	108,800	108,800	0	6,400	6,400	0	41,600	41,600	0	0	0	0	156,800	156,800
Nor Cal Logistics Center	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crystal Bay	0	7,760	7,760	0	31,480	31,480	0	0	0	0	0	0	0	39,240	39,240
Sanctuary	0	410,400	410,400	0	26,960	26,960	0	14,212	14,212	0	0	0	0	451,572	451,572
Tidewater Crossing	347,848	-347,848	0	0	0	0	0	6,400	6,400	0	0	0	347,848	-341,448	6,400
Open Window	0	0	0	0	5,951	5,951	6,451	-500	5,951	0	0	0	6,451	5,451	11,901
Weston Ranch Town Center	0	0	0	0	0	0	0	16,580	16,580	0	0	0	0	16,580	16,580
Subtotal (Approved/Pending Projects Within City Limit)	363,048	646,204	1,009,252	0	89,827	89,827	6,451	79,324	85,775	0	0	0	369,499	815,355	1,184,854
Approved/Pending Development Projects Outside City Limit but Within Sphere of Influence															
Mariposa Lakes	60,400	375,720	436,120	0	234,000	234,000	0	60,000	60,000	0	0	0	60,400	669,720	730,120
Airpark 599	0	0	0	0	0	0	0	51,200	51,200	0	0	0	0	51,200	51,200
Tra Vigne	0	338,579	338,579	0	0	0	0	0	0	0	0	0	0	338,579	338,579
Subtotal (Approved/Pending Projects Outside City Limit but Within Sphere of Influence)	60,400	714,299	774,699	0	234,000	234,000	0	111,200	111,200	0	0	0	60,400	1,059,499	1,119,899
Remaining City Outside of Study Areas and Outside of Approved/Pending Projects	7,397,586	677,596	8,075,182	957,956	0	957,956	273,314	0	273,314	891,891	0	891,891	9,520,747	677,596	10,198,343
Grand Total	7,998,399	2,195,315	10,193,714	990,500	441,754	1,432,254	386,883	218,240	605,123	1,016,215	10,685	1,026,900	10,391,997	2,865,994	13,257,991

Table 6. Peaking Factors		
Study Area Name	Peaking Factor	
	Existing	2040
<b>Study Areas</b>		
Study Area 1 - Eight Mile Rd Area	5.0	2.5
Study Area 2 - Pacific Ave Corridor	4.3	3.9
Study Area 3 - West Ln and Alpine Rd Area	3.6	2.7
Study Area 4 - Port/Waterfront	4.2	2.6
Study Area 5 - El Dorado/Center Corridors	5.0	3.3
Study Area 6 - Miner/Weber Corridors <sup>(a)</sup>	5.0	3.2
Study Area 7 - Wilson Way Corridor	5.0	4.9
Study Area 8 - I-5/Highway 4 Interchange	5.0	3.3
Study Area 9 - Railroad Corridor at California St	5.0	4.0
Study Area 10 - I-5 and Charter Way Area	4.7	3.3
Study Area 11 - Charter Way/MLK Jr Blvd Corridor	5.0	5.0
Study Area 12 - Airport Way Corridor	4.1	3.5
Study Area 13 - Mariposa and Charter Area	5.0	5.0
Study Area 14 - East Weston Ranch <sup>(b)</sup>	5.0	5.0
Study Area 15 - South of French Camp Rd	5.0	5.0
Study Area 16 - E French Camp Rd Area	5.0	5.0
<b>Approved/Pending Development Projects Within City Limit</b>		
Westlake Villages	0.0	2.3
Delta Cove	0.0	2.8
North Stockton Projects III	5.0	2.6
Cannery Park	0.0	2.6
Nor Cal Logistics Center	0.0	0.0
Crystal Bay	0.0	2.8
Sanctuary	0.0	2.1
Tidewater Crossing	5.0	5.0
Open Window <sup>(a)</sup>	5.0	4.7
Weston Ranch Town Center	0.0	5.0
<b>Approved/Pending Development Projects Outside City Limit but Within Sphere of Influence</b>		
Mariposa Lakes	0.0	1.9
Airpark 599	0.0	3.6
Tra Vigne <sup>(b)</sup>	0.0	2.2
<b>Remaining City Outside of Study Areas and Outside of Approved/Pending Project</b>	1.5	1.5
<b>RWCF</b>	1.5	1.4
Note: A peaking factor of 0.0 is used for development areas with no existing wastewater flow. <sup>(a)</sup> Peaking factors based on City of Stockton 2016 Standard Drawing No. S-1. <sup>(b)</sup> As flows combine with flows from onther areas, the applicable peaking factor will be lower than listed.		

## COMPARISON OF GPU 2040 AND 2035 WWMP FLOWS AND COSTS

Wastewater collection infrastructure improvements were grouped by the numbered collection Systems identified in the 2035 WWMP. In order to assess potential changes to the planned facilities resulting from the GPU, it is useful to evaluate the change in projected flows for each System.

A summary of the ADWFs for the current GPU evaluations (2040 ADWF estimates, representing partial build-out) and the 2035 WWMP evaluation (2035 General Plan buildout) is provided in Table 8. As shown, there are significant differences between the 2040 projection and the 2035 WWMP buildout ADWFs. Some of the changes can be attributed to updated land use data and differing flow calculation methodologies, but they provide a reliable indication of the magnitude of differences associated with the new planning horizon and General Plan land use diagram. These differences potentially result in changes to the previously planned sewer system improvements. The changes are discussed in the following paragraphs by System. Costs are planning level estimates of construction cost without contingencies based on Table 8-2 of the 2035 WWMP. The adjusted costs applying the following changes are provided in Table 9:

- System 1: In this System, the change in ADWF is a decrease of 0.1 mgd out of a 2035 WWMP estimated flow of 3.0 mgd (a decrease of 3.0 percent). This small change results in no significant change in the planned sewer system infrastructure for this shed. Consequently, the estimated costs from the 2035 WWMP for this System are still appropriate.
- System 2: In this System, the change in ADWF is a decrease of 1.1 mgd out of a 2035 WWMP estimated flow of 13.6 mgd (a decrease of 7.8 percent). This small change results in no significant change in the planned sewer system infrastructure for this shed. Consequently, the estimated costs from the 2035 WWMP for this System are still appropriate.
- System 3: In this System, the change in ADWF is a decrease of 3.0 mgd out of a 2035 WWMP estimated flow of 10.3 mgd (a decrease of 29 percent). A significant portion of the apparent decrease in projected flow appears to be associated with a revision to the existing conditions land use data. Nevertheless, this change will likely result in a reduction of the planned sewer system improvements, including:
  - Trunk Sewers: All pipeline improvements comprised upsizing of existing pipelines. Approximately 20 percent of the previously estimated cost was associated with existing deficiencies. Based on the reduced estimate of existing flows, a relatively small reduction (10 percent) in the projected trunk sewer costs for this System is warranted.
  - Pump Stations: System 3 shares a major pumping facility with Systems 2 and 9, the Smith Canal Pump Station, which will require major upgrades in the future. One additional small pump station, Kirk and Del Rio (County) Pump Station, is also expected to require upgrades and eventual replacement to accommodate growth. Any change in cost to planned improvements at these pumping facilities attributable to changes in System 3 is expected to be minor and a change in the planning level estimate of costs is not warranted.

The costs associated with System 3 exclude the cost of improvements to Smith Canal Pump Station, which are accounted for separately as a shared facility, below.

Table 7. Peak Hour Wet Weather Flow

Study Area Name	Single Family, gpd		Multi Family, gpd		Commercial, gpd		Industrial, gpd		Total, gpd		
	Existing	2040	Existing	2040	Existing	2040	Existing	2040	Existing	Net New	2040
Study Areas											
Study Area 1 - Eight Mile Rd Area	178,413	1,512,761	249,680	1,416,872	133,116	69,365	36,048	17,822	597,257	2,419,562	3,016,820
Study Area 2 - Pacific Ave Corridor	32,588	29,707	111,288	267,837	739,769	716,544	731	667	884,377	130,377	1,014,754
Study Area 3 - West Ln and Alpine Rd Area	254,870	660,183	157,394	851,391	362,574	323,773	442,788	333,687	1,217,626	951,408	2,169,034
Study Area 4 - Port/Waterfront	73,062	143,852	272,306	1,699,033	60,627	60,789	423,620	324,626	829,615	1,398,686	2,228,300
Study Area 5 - El Dorado/Center Corridors	68,765	45,278	308,635	1,031,654	57,415	55,629	111,183	73,208	545,997	659,771	1,205,769
Study Area 6 - Miner/Weber Corridors	68,115	43,349	180,287	1,116,186	42,651	59,205	80,622	51,308	371,675	898,374	1,270,048
Study Area 7 - Wilson Way Corridor	18,796	18,584	9,245	313,600	6,164	82,092	168,019	166,121	202,224	378,172	580,396
Study Area 8 - I-5/Highway 4 Interchange	12,350	8,051	5,103	1,118,008	5,019	11,997	148,201	96,614	170,673	1,063,998	1,234,670
Study Area 9 - Railroad Corridor at California St	28,932	22,894	49,873	725,072	33,057	43,861	78,623	62,216	190,485	663,557	854,042
Study Area 10 - I-5 and Charter Way Area	364,398	897,701	142,604	226,484	180,925	153,279	48,636	72,727	736,562	613,628	1,350,190
Study Area 11 - Charter Way/MLK Jr Blvd Corridor	6,753	6,753	0	348,105	20,844	27,374	0	0	27,597	354,635	382,232
Study Area 12 - Airport Way Corridor	68,095	57,508	10,806	156,257	26,300	128,341	829,117	893,582	934,318	301,370	1,235,688
Study Area 13 - Mariposa and Charter Area	24,915	24,915	221,488	221,488	39,179	62,406	0	0	285,582	23,228	308,809
Study Area 14 - East Weston Ranch	4,228	4,228	0	0	9,269	231,726	0	0	13,497	222,457	235,954
Study Area 15 - South of French Camp Rd	308,553	308,553	227,745	227,745	0	0	732	732	537,030	0	537,030
Study Area 16 - E French Camp Rd Area	398,096	398,096	341,000	341,000	1,098	1,098	2,109	2,109	742,303	0	742,303
Subtotal (Study Areas)	1,910,929	4,182,412	2,287,455	10,060,733	1,718,006	2,027,478	2,370,429	2,095,417	8,286,818	10,079,222	18,366,041
Approved/Pending Development Projects Within City Limit											
Westlake Villages	0	3,935,207	0	0	0	0			0	3,935,207	3,935,207
Delta Cove	0	923,852	0	953,985	0	17,239			0	1,895,076	1,895,076
North Stockton Projects III	358,000	2,514,861	0	0	0	0			358,000	2,156,861	2,514,861
Cannery Park	0	1,744,182	0	295,485	0	640,217			0	2,679,884	2,679,884
Nor Cal Logistics Center	0	0	0	0	0	0			0	0	0
Crystal Bay	0	136,599	0	1,595,924	0	0			0	1,732,523	1,732,523
Sanctuary	0	5,378,573	0	1,017,588	0	178,808			0	6,574,969	6,574,969
Tidewater Crossing	2,111,240	0	0	0	0	192,000			2,111,240	-1,919,240	192,000
Open Window	0	0	0	505,792	120,951	105,373			120,951	490,214	611,165
Weston Ranch Town Center	0	0	0	0	0	497,410			0	497,410	497,410
Subtotal (Approved/Pending Projects Within City Limit)	2,469,240	14,633,274	0	4,368,774	120,951	1,631,047	0	0	2,590,191	18,042,904	20,633,095
Approved/Pending Development Projects Outside City Limit but Within Sphere of Influence											
Mariposa Lakes	0	4,548,083	0	7,953,220	0	679,762			0	13,181,066	13,181,066
Airpark 599	0	0	0	0	0	1,114,992			0	1,114,992	1,114,992
Tra Vigne	0	4,672,178	0	0	0	0			0	4,672,178	4,672,178
Subtotal (Approved/Pending Projects Outside City Limit but Within Sphere of Influence)	0	9,220,260	0	7,953,220	0	1,794,754	0	0	0	18,968,235	18,968,235
Remaining City Outside of Study Areas and Outside of Approved/Pending Projects	39,190,957	45,100,427	21,754,295	21,498,606	1,559,995	1,541,659	6,108,780	6,036,981	68,614,027	5,563,646	74,177,673
Estimated Total at RWCF									71,939,687	32,167,306	104,106,993

**Table 8. Summary of Flows by Sewer Shed**

Collection System	Current General Plan Update Evaluation	2035 WWMP Evaluation	Change in Estimated ADWF for 2040 versus 2035 Buildout	Change as a percent of the Estimated 2035 Buildout Flow <sup>(a)</sup>
	Estimated 2040 ADWF	Estimated 2035 Buildout ADWF		
1	2.9	3.0	(0.1)	-3.0%
2	12.6	13.6	(1.1)	-7.8%
3	7.3	10.3	(3.0)	-29.1%
4	2.4	2.5	(0.12)	-4.9%
5	3.7	2.8	0.91	32.6%
6	5.6	8.0	(2.5)	-30.6%
7	6.2	8.8	(2.6)	-29.2%
8	14.6	22.7	(8.0)	-35.5%
9	3.2	7.0	(3.7)	-53.4%
10	16.9	16.2	0.79	4.9%
12	10.4	9.7	0.69	7.1%
13	7.7	15.3	(7.6)	-49.8%
14	0.9	10.5	(9.6)	-91.4%
15 <sup>(b)</sup>	-	24.1	(24.1)	-100.0%

<sup>(a)</sup> Reductions or increases in predicted future flows do not change the analysis of existing flows and capacities. The analysis of existing pipes identified in the 2008 Master Plan with potential existing limitations has not changed as a result of changes in future development assumptions.

<sup>(b)</sup> System 15 will remain unserved at 2040.

Table 9. GPU Planning-Level Estimate of Collection System Cost for 2040					
Improvements	Existing Deficiencies <sup>(a)</sup>		Growth Related	Buildout	
	Comments	Budget Costs, dollars	Budget Costs, dollars	Comments	Budget Costs, dollars
COLLECTION SYSTEM 1 FACILITIES					
Improvements to Existing Gravity Sewers		\$ 138,000	\$ -		\$ 138,000
Future Gravity Sewers <sup>(b)</sup>		\$ -	\$ -		\$ -
Pump Stations					
<i>Plymouth &amp; 5 Mile Cr. P.S.</i>	Construct new pump station with required additional capacity	\$ 573,000	\$ 66,000	Construct new pump station with required additional capacity	\$ 639,000
<i>Cumberland &amp; 5 Mile Cr. P.S.</i>	No Upgrade	\$ -	\$ -	No Upgrade	\$ -
Subtotals		\$ 711,000	\$ 66,000	\$ 777,000	
COLLECTION SYSTEM 2 FACILITIES					
Existing Gravity Sewers		\$ 9,962,000	\$ 3,886,000		\$ 13,848,000
Future Gravity Sewers <sup>(b)</sup>		\$ -	\$ -		\$ -
Force Mains					
<i>Thornton &amp; Davis P.S. FM</i>		\$ 14,000	\$ -		\$ 14,000
Pump Stations					
<i>Kelly &amp; Mosher P.S.</i>	Replace pumps and controls	\$ 645,000	\$ -	Replace pumps and controls	\$ 645,000
<i>Thornton &amp; Davis P.S. (Stonewood)</i>	Construct new pump station with required additional capacity	\$ 847,000	\$ 154,000	Construct new pump station with required additional capacity	\$ 1,001,000
<i>Don Ave. &amp; Santiago L.S.</i>	Construct new pump station with required additional capacity	\$ 1,003,000	\$ 116,000	Construct new pump station with required additional capacity	\$ 1,119,000
<i>Swenson &amp; 5 Mile Cr. P.S. (North P.S.)</i>	Replace pumps and controls	\$ 5,155,000	\$ 839,000	Replace pumps and controls	\$ 5,994,000
<i>Blossom Ranch P.S.</i>	Replace pumps and controls	\$ 183,000	\$ 91,000	Replace pumps and controls	\$ 274,000
<i>Camanche P.S.</i>	Replace pumps and controls	\$ 467,000	\$ 321,000	Construct new pump station with required additional capacity	\$ 788,000
<i>Alexandria &amp; 14 Mile Sl. P.S. (Quail Lake)</i>	Replace pumps and controls	\$ 386,000	\$ 36,000	Replace pumps and controls	\$ 422,000
<i>March-Brookside &amp; I-5 P.S.</i>	No Upgrade. Monitor actual run-times and/or flows	\$ 25,000	\$ 199,000	Replace pumps and controls	\$ 224,000
Subtotals		\$ 18,687,000	\$ 5,642,000	\$ 24,329,000	
COLLECTION SYSTEM 3 FACILITIES					
Existing Gravity Sewers		\$ 9,221,000	\$ 39,929,000		\$ 49,150,000
Future Gravity Sewers <sup>(b)</sup>		\$ -	\$ -		\$ -
Pump Stations					
<i>Kirk &amp; Del Rio (County P.S.)</i>	Replace pumps and controls	\$ 291,000	\$ 700,000	Construct new pump station with required additional capacity	\$ 991,000
Subtotals		\$ 9,512,000	\$ 40,629,000	\$ 50,141,000	
COLLECTION SYSTEM 4 FACILITIES					
Existing Gravity Sewers		\$ 2,829,000	\$ 13,521,000		\$ 16,350,000
Future Gravity Sewers[b]		\$ -	\$ -		\$ -
Pump Stations					
<i>Waterloo &amp; Roosevelt/North P.</i>	No Upgrade	\$ -	\$ 366,000	Replace pumps and controls	\$ 366,000
<i>Drake &amp; Hwy. 99/South P.S.</i>	No Upgrade	\$ -	\$ -	No Upgrade	\$ -
Subtotals		\$ 2,829,000	\$ 13,887,000		\$ 16,716,000
COLLECTION SYSTEM 5 FACILITIES					
Existing Gravity Sewers		\$ 3,762,000	\$ 5,009,000		\$ 8,771,000
Future Gravity Sewers <sup>(b)</sup>		\$ -	\$ 61,000		\$ 61,000
Force Mains					
<i>Lincoln Street PS FM</i>		\$ -	\$ 1,274,000	Construct new force main to accommodate growth	\$ 1,274,000
Pump Stations					
<i>Lincoln Street PS</i>		\$ -	\$ 2,587,000	Construct new pump station to accommodate growth	\$ 2,587,000
Subtotals		\$ 3,762,000	\$ 8,931,000		\$ 12,693,000
COLLECTION SYSTEM 6 FACILITIES					
Existing Gravity Sewers		\$ 254,000	\$ 19,742,000		\$ 19,996,000
Future Gravity Sewers <sup>(b)</sup>		\$ -	\$ 7,800,000		\$ 7,800,000
Force Mains					
<i>System 6 North PS FM</i>		\$ -	\$ 937,000		\$ 937,000
<i>Backpressure Sustaining Facilities</i>		\$ -	\$ -		\$ -
Pump Stations					
<i>System 6 North PS</i>		\$ -	\$ 1,172,000	Future Pump Station	\$ 1,172,000
Crossings		\$ -	\$ 3,230,000		\$ 3,230,000
Subtotals		\$ 254,000	\$ 32,881,000		\$ 33,135,000
COLLECTION SYSTEM 7 FACILITIES					
Existing Gravity Sewers		\$ 12,000	\$ 5,591,000		\$ 5,603,000
Future Gravity Sewers <sup>(b)</sup>		\$ -	\$ 6,084,000		\$ 6,084,000
Pump Stations					
<i>Duck Creek PS</i>		\$ -	\$ 1,348,000	Future Pump Station	\$ 1,348,000
Crossings		\$ -	\$ 800,000		\$ 800,000
Subtotals		\$ 12,000	\$ 13,823,000		\$ 13,835,000
COLLECTION SYSTEM 8 FACILITIES					
Existing Gravity Sewers		\$ 125,000	\$ 25,173,000		\$ 25,298,000
Future Gravity Sewers <sup>(b)</sup>		\$ -	\$ 24,147,000		\$ 24,147,000
Force Mains					
<i>Arch Road PS FM</i>		\$ -	\$ -	Completed	\$ -
<i>Backpressure Sustaining Facilities</i>		\$ -	\$ -		\$ -
Pump Stations					
<i>Arch Road Industrial Park P.S</i>		\$ -	\$ -	Completed	\$ -
<i>County P.S. (Hospital)</i>	Monitor actual run-times and/or flows	\$ -	\$ -	Assume removed from service at buildout. Must confirm grades are adequate for gravity flow.	\$ -
Crossings		\$ -	\$ 3,440,000		\$ 3,440,000
Subtotals		\$ 125,000	\$ 52,760,000		\$ 52,885,000



Table 9. GPU Planning-Level Estimate of Collection System Cost for 2040					
Improvements	Existing Deficiencies <sup>(a)</sup>		Growth Related	Buildout	
	Comments	Budget Costs, dollars	Budget Costs, dollars	Comments	Budget Costs, dollars
COLLECTION SYSTEM 9 FACILITIES					
Existing Gravity Sewers		\$ -	\$ -		\$ -
Future Gravity Sewers <sup>(b)</sup>		\$ -	\$ 5,100,000		\$ 5,100,000
Force Mains					
Newton Road FM		\$ -	\$ 287,000		\$ 287,000
Backpressure Sustaining Facilities		\$ -	\$ -		\$ -
Pump Stations					
Origone PS	No Upgrade	\$ -	\$ -	Replace pumps and controls	\$ -
Sanguinetti PS	No Upgrade	\$ -	\$ -	Replace pumps and controls	\$ -
Newton Rd PS		\$ -	\$ 2,131,000	Future Pump Station	\$ 2,131,000
Crossings		\$ -	\$ 4,000,000		\$ 4,000,000
Subtotals		\$ -	\$ 11,518,000		\$ 11,518,000
COLLECTION SYSTEM 10 FACILITIES					
Existing Gravity Sewers		\$ 55,000	\$ 16,380,000		\$ 16,435,000
Future Gravity Sewers <sup>(b)</sup>		\$ -	\$ 21,368,000		\$ 21,368,000
Pump Stations					
Brookside Pumping Station	No Upgrade	\$ -	\$ -	No Upgrade	\$ -
Westlake P.S.	No Upgrade	\$ -	\$ -	No Upgrade	\$ -
Sanctuary PS		\$ -	\$ 2,094,000	Future Pump Station	\$ 2,094,000
Crossings		\$ -	\$ 8,585,000		\$ 8,585,000
Subtotals		\$ 55,000	\$ 48,427,000		\$ 48,482,000
COLLECTION SYSTEM 12 FACILITIES					
Existing Gravity Sewers		\$ -	\$ -		\$ -
Future Gravity Sewers <sup>(b)</sup>		\$ -	\$ 26,768,000		\$ 26,768,000
Force Mains					
Central Stockton FM		\$ -	\$ 23,232,000		\$ 23,232,000
Backpressure Sustaining Facilities		\$ -	\$ 500,000		\$ 500,000
Pump Stations					
Mariposa PS	Future Pump Station	\$ -	\$ 7,268,000	Future Pump Station	\$ 7,268,000
Crossings		\$ -	\$ 6,600,000		\$ 6,600,000
Subtotals		\$ -	\$ 64,368,000		\$ 64,368,000
COLLECTION SYSTEM 13 FACILITIES					
Existing Gravity Sewers		\$ -	\$ -		\$ -
Future Gravity Sewers <sup>(b)</sup>		\$ -	\$ 34,178,000		\$ 34,178,000
Force Mains					
System 13 East PS FM		\$ -	\$ 282,000		\$ 282,000
Tidewater PS FM		\$ -	\$ 7,765,000		\$ 7,765,000
Backpressure Sustaining Facilities		\$ -	\$ 800,000		\$ 800,000
Pump Stations					
System 13 East PS		\$ -	\$ 4,622,000	Future Pump Station	\$ 4,622,000
Tidewater PS		\$ -	\$ 7,168,000	Future Pump Station	\$ 7,168,000
Crossings		\$ -	\$ 9,760,000		\$ 9,760,000
Subtotals		\$ -	\$ 64,575,000		\$ 64,575,000
COLLECTION SYSTEM 14 FACILITIES					
Existing Gravity Sewers		\$ -	\$ -		\$ -
Future Gravity Sewers <sup>(b)</sup>		\$ -	\$ -	Area not developed by 2040	\$ -
Force Mains					
System 14 PS FM		\$ -	\$ -	Area not developed by 2040	\$ -
Backpressure Sustaining Facilities		\$ -	\$ -	Area not developed by 2040	\$ -
Pump Stations					
System 14 PS		\$ -	\$ -	Area not developed by 2040	\$ -
Crossings		\$ -	\$ -	Area not developed by 2040	\$ -
Subtotals		\$ -	\$ -		\$ -
COLLECTION SYSTEM 15 FACILITIES					
Existing Gravity Sewers		\$ -	\$ -		\$ -
Future Gravity Sewers <sup>(b)</sup>		\$ -	\$ -	Area not developed by 2040	\$ -
Force Mains					
Thompson PS FM		\$ -	\$ -	Area not developed by 2040	\$ -
System 15 East PS FM		\$ -	\$ -	Area not developed by 2040	\$ -
Gateway PS FM		\$ -	\$ -	Area not developed by 2040	\$ -
System 15 FM		\$ -	\$ -	Area not developed by 2040	\$ -
Backpressure Sustaining Facilities		\$ -	\$ -	Area not developed by 2040	\$ -
Pump Stations					
Thompson PS		\$ -	\$ -	Area not developed by 2040	\$ -
Gateway PS		\$ -	\$ -	Area not developed by 2040	\$ -
System 15 East PS		\$ -	\$ -	Area not developed by 2040	\$ -
Crossings		\$ -	\$ -	Area not developed by 2040	\$ -
Subtotals		\$ -	\$ -		\$ -
SHARED FACILITIES					
Force Mains					
Westside Parallel FM		\$ -	\$ -	Would have served System 15	\$ -
Smith Canal FM West		\$ 551,000	\$ 3,689,000	Primarily serve Systems 3 & 9	\$ 4,240,000
Smith Canal FM East		\$ 328,000	\$ 6,154,000	Primarily serve Systems 3 & 9	\$ 6,482,000
Weston Ranch P.S. FM	Exceeds capacity; however other FM facilities exist to address this issue	\$ -	\$ -	Serves Systems 8 and 14	\$ -
Backpressure Sustaining Facilities		\$ -	\$ -	Would have served System 15	\$ -

Table 9. GPU Planning-Level Estimate of Collection System Cost for 2040					
Improvements	Existing Deficiencies <sup>(a)</sup>		Growth Related	Buildout	
	Comments	Budget Costs, dollars	Budget Costs, dollars	Comments	Budget Costs, dollars
Pump Stations					
Smith Canal Pump Station	Monitor flow split. Adjust as appropriate	\$ -	\$ 9,885,000	Replace pumps and controls; primarily serve Systems 3 and 9	\$ 9,885,000
Weston Ranch P.S.	No Upgrade	\$ -	\$ -	Construct new pump station with required additional capacity; Serves Systems 8 and 14	\$ -
14 Mile Slough PS	No Upgrade	\$ -	\$ 11,362,000	Construct new pump station with required additional capacity; Serves Systems 10, 1, and 15	\$ 11,362,000
Crossings		\$ -	\$ 3,600,000		\$ 3,600,000
Subtotals		\$ 879,000	\$ 34,690,000		\$ 35,569,000
SUMMARY					
Existing Gravity Sewers		\$ 26,400,000	\$ 129,200,000		\$ 155,600,000
Future Gravity Sewers <sup>(b)</sup>		\$ -	\$ 125,500,000		\$ 125,500,000
Force Mains		\$ 900,000	\$ 44,900,000		\$ 45,800,000
Pump Stations		\$ 9,600,000	\$ 52,500,000		\$ 62,100,000
Crossings		\$ -	\$ 40,000,000		\$ 40,000,000
TOTAL (Construction Costs) <sup>(d)</sup>		\$ 36,900,000	\$ 392,100,000		\$ 429,023,000
Estimating Contingency (Level of Planning and Construction Contingency), 35%		\$ 12,900,000	\$ 137,200,000		\$ 150,100,000
TOTAL CONSTRUCTION BUDGET (2007 dollars)		\$ 49,800,000	\$ 529,300,000		\$ 579,123,000
Engineering, Administration and Other Project Costs, 35%		\$ 17,400,000	\$ 185,300,000		\$ 202,700,000
TOTAL PROJECT COSTS w/o Land (2007 dollars)		\$ 67,200,000	\$ 714,600,000		\$ 781,823,000
Property Acquisition Allowance (7% of bare growth pipeline construction)		\$ -	\$ 11,900,000		\$ 11,900,000
TOTAL PROJECT COSTS (2007 dollars)		\$ 67,200,000	\$ 726,500,000		\$ 793,723,000
(a) Only fractional quantities of each gravity sewer total are used for projecting CIP costs (2035 WWMP). Findings from the City's ongoing condition assessment activities and additional flow					
(b) Costs provided for gravity sewers 18 inches and larger only and for all force mains (irrespective of diameter).					



- System 4: In this System, the change in ADWF is a decrease of 0.12 mgd out of a 2035 WWMP estimated flow of 2.54 mgd (a decrease of 4.9 percent). This small change would result in no significant change in the planned sewer system infrastructure for this shed. Consequently, the estimated costs from the 2035 WWMP for this System are still appropriate.
- System 5: In this System, the change in ADWF is an increase of 0.91 mgd out of a 2035 WWMP estimated flow of 2.8 mgd (an increase of 33 percent). A portion of this increase may be attributed to an updated and improved identification of existing land uses; nevertheless, this change will likely result in some additional improvements being needed to accommodate the planned growth, including:
  - Trunk Sewers: Approximately 30 percent of the previously estimated cost was associated with existing deficiencies and the remainder is associated with growth. Several significant pipeline upsizing projects were predicted. It is assumed that the higher projected flows will result in a slight increase in a portion of the previously predicted upsizing projects resulting in an assumed 10 percent increase in the previously estimated cost. In addition, it is possible that some additional sewers will need to be upsized, so it is assumed that the previously estimated cost will increase an additional 10 percent, for a total increase of 20 percent.
  - Pump Stations: One new pump station, the Lincoln Street Pump Station, and an associated force main were planned to serve the downtown area only. Due to the apparent increase in buildout flows, it is assumed the cost of this pump station and force main project will increase approximately 10 percent.
- System 6: In this System, the change in ADWF is a decrease of 2.5 mgd out of a 2035 WWMP estimated flow of 8.0 mgd (a decrease of about 31 percent). This change will likely result in a reduction of the planned sewer system improvements, including:
  - Trunk Sewers: Pipeline improvements include upsizing of existing pipelines as well as extension of new sewers into the eastern portions of System 6 that are currently undeveloped. It is assumed about half of the future sewer extensions will be approximately 15 percent lower cost than previously estimated and that the cost of the remaining half will not be affected. For the upsizing of existing sewers, it is assumed the cost will be approximately 20 percent lower than previously estimated, based on the lower predicted flows.
  - Pump Stations: The eastern portions of System 6 will require a new pump station and force main. Any change in the cost of these new facilities attributable to the lower flow projections is expected to be small, so a five percent reduction in the planning level estimate of costs is assumed.
- System 7: In this System, the change in ADWF is a decrease of 2.6 mgd out of a 2035 WWMP estimated flow of 8.8 mgd (a decrease of about 29 percent). One major new trunk relief sewer was attributed to System 7, a 5,600 ft. long 54" diameter pipeline primarily located along Tillie Lewis Drive. In addition, some gravity sewer extensions into growth areas and one associated pump station at the eastern end of the System were identified, as well as improvements to existing sewers to correct apparent grade issues or localized capacity concerns. However, the apparent decrease in flows from the System are not expected to substantively affect the costs previously

identified improvements for System 7. Consequently, the estimated costs from the 2035 WWMP for this System are still appropriate.

- System 8: In this System, the change in ADWF is a decrease of 8.0 mgd out of a 2035 WWMP estimated flow of 22.7 mgd (a decrease of about 36 percent). Major costs associated with upsizing of existing sewers as well as major extensions east of State Highway 99 were identified. This reduction in planned flow is likely attributed to a decrease in the rate of development, and depending on the location of the development that occurs by 2040, it is likely that substantial portions of the future extensions will not be needed by 2040. The change will likely result in a reduction of the planned sewer system improvements, including:
  - Trunk Sewers: The need for both new sewer extensions and upsizing in existing sewers will likely be reduced, unless development begins at the eastern end of the System 8, requiring long extensions into those areas. Therefore, it is assumed that the cost of trunk sewer improvements will be reduced by approximately 20 percent.
  - Pump Stations: The Arch Road Industrial Park Pump Station identified in the 2035 WWMP has been constructed.
- System 9: In this System, the change in ADWF is a decrease of 3.7 mgd out of a 2035 WWMP estimated flow of 7.0 mgd (a decrease of about 53 percent). Costs associated with upsizing of existing sewers as well as major extensions into areas not currently served by the sewer system were identified. The reduction in planned flow is likely attributed to a decrease in the rate of development, and depending on the location of the development that occurs by 2040, it is likely that some of the future extensions will not be needed by 2040. The change will likely result in a reduction of the planned sewer system improvements, including:
  - Trunk Sewers: It is assumed the need for upsizing existing trunk sewers will be eliminated by the decrease in projected flow. The need for new sewer extensions might be reduced slightly; however, the new sewer extensions are primarily smaller diameter trunks necessary in each portion of the Shed that begins to develop. Therefore, costs reductions will only be realized where portions of the Shed do not develop. It is assumed that most or all areas of the Shed will begin to develop by 2035, and therefore no substantive reduction in the cost of new trunk sewer extensions is appropriate.
  - Pump Stations: It is assumed the need for upsizing existing pumps stations will be eliminated by the decrease in projected flow. A new pump station, the Newton Road Pump Station is needed to connect a significant portion of the Shed. The Pump Station would likely require smaller pumping equipment sized for lower flows early in its useful life, so a 10 percent reduction in the planning level estimate of costs is assumed.
- System 10: In this System, the change in ADWF is an increase of 0.79 mgd over a 2035 WWMP estimated flow of 16.2 mgd (an increase of about 5 percent). This change is not likely to result in a substantive reduction in the cost of the planned sewer system improvements. The following changes will likely affect the projected cost of improvements:

- Trunk sewers: Approximately 15 to 20 percent of trunk extensions planned in the 2035 WWMP have been completed since 2008, so the estimated cost of the future extensions should be reduced by about 15 percent. Improvements to existing trunk sewers are dominated by a large upsizing project along Whistler Way and extending east from Lower Sacramento Road along Bear Creek. The cost of this improvement or other upsizing projects is not likely to be affected.
- Pump Stations: System 10 shares the 14-Mile Slough Pump Station, which is discussed separately.
- System 12: In this System, the change in ADWF is an increase of 0.69 mgd out of a 2035 WWMP estimated flow of 9.7 mgd (an increase of about 7 percent). This small change is not likely to result in a substantive increase in the cost of planned sewer system infrastructure. Consequently, the estimated costs from the 2035 WWMP for this System are still appropriate.
- System 13: In this System, the change in ADWF is a decrease of 7.6 mgd out of a 2035 WWMP estimated flow of 15.3 mgd (a decrease of about 50 percent). New sewers and pump stations are required to serve the System 13 area. The reduction in projected flow may result in somewhat smaller sewer diameters and pump capacities; however, costs will primarily be related to the extent of new service area being added within the 2040 planning horizon. For example, if the eastern portion of the service area develops first, a disproportionate cost would be triggered to extend the collection system to the new service area. Therefore, for the purposes of this analysis, it is assumed that the cost of new trunk sewers and pump stations will be reduced by 20 percent, reflecting fewer facilities constructed than those identified for build out in the 2035 WWMP.
- System 14: In this System, the change in ADWF is a decrease of 9.6 mgd out of a 2035 WWMP estimated flow of 10.5 mgd (a decrease of about 91 percent). Most of this growth area has been eliminated from the 2040 sewer service area, and the planned trunk sewers for developing areas have already been constructed. Therefore, all planned costs for System 14 are eliminated.
- System 15: Nearly all of System 15 will remain undeveloped at 2040. A small area adjacent to the existing 14-Mile Slough Pump Station is planned for institutional land use; however, only a small diameter sewer would be needed to serve the area by connecting it to the pump station if the small area ever develops. It is assumed that the Delta Water Supply Project treatment facility will remain disconnected from the collection system, and that no other existing or future development will be served by 2040. Therefore, all costs associated with System 15 identified in the 2035 WWMP are eliminated.
- Shared Facilities: Each shared facility is critical component in more than one System. The largest shared facility is the RWCF. The GPU is expected to have the following impacts on shared facilities:

- 14-Mile Slough Pump Station: This pump station serves Systems 1, 2 and 10, and was designed for expansion to serve System 15. The modeled ratio of peak to average flow was about 2.4 in the 2035 WWMP. The revised 2040 average flow for Systems 1 and 10 is 19.2 mgd, and the peak flow can be estimated using the same 2.4 peaking factor to be 46 mgd, or about 65 percent of the buildout peak flow projected in the 2035 WWMP. The current peak flow capacity of the pump station is 14.5 mgd, so even though the future peak flow is substantially lower, a major upgrade will be necessary. For the purposes of this analysis, it is assumed that the cost of increased capacity will be 80 percent of the previously estimated cost for future expansion.
- Westside Parallel Force Main: The existing West Side Force Main receives flow from the 14-Mile Slough Pump Station as well as the Brookside Pump Station, and serves Systems 1, 2 and 10. A parallel force main was planned to serve System 15, but will not be needed for capacity reasons.
- Smith Canal Pump Station and Force Mains: Two force mains receive flow from the Smith Canal Pump Station, primarily serving Systems 3 and 9. Replacement and upsizing of the force mains, pumps and controls will be needed to serve planned growth. The required upsizing may be slightly reduced and is potentially deferred as a result of reduced growth planned for 2040; however, it is likely that most or all of the anticipated improvements will be needed by 2040 and for the purposes of this analysis no reduction in the planned cost is recommended.
- Weston Ranch Pump Station and Force Main: Pump station and force main improvements were identified in the 2035 WWMP primary triggered by planned development in System 14, which is no longer planned for 2040. It is assumed that no significant upgrade will be needed for serving growth within the existing pump station service area.

The adjusted costs are presented in Table 9 which is adapted from Table 8-2 of the 2035 WWMP. All costs estimates are planning level estimates based on broad assumptions and limited information, and do not necessarily reflect the economic conditions at the time a project is constructed.

The planning level estimate of construction costs (without contingencies, engineering, administration, land acquisition for pipeline extensions or other project costs) can be compared to the 2035 WWMP buildout estimates as follows in terms of 2007 dollars:

- Construction costs for existing deficiencies decreased slightly from \$38 million to \$36.9 million.
- Construction costs for growth-related improvements decreased from \$599 million to \$392 million.
- The corresponding updated planning level estimates of total project costs (total capital costs) are \$67.2 million to address existing deficiencies and \$727 million for growth-related improvements, as shown in Table 9.

## REGIONAL WASTEWATER CONTROL FACILITY FLOWS AND COSTS

As presented previously, actual flow to the RWCF in the summer of 2017 averaged about 27 mgd, and the ADWF for 2016 was 29 mgd. It is assumed these flows reflect significant water conservation originating from the recent drought conditions, which would be consistent with most other communities in California. Furthermore, it is assumed that flow would rebound upward over time, even in the absence of growth. Nevertheless, it is likely that standard flow factors used to predict flows for prudent collection system planning will over predict the aggregate combined flow at the RWCF. Indeed, the 2017 land uses with standard flow factors applied would generate an average flow of about 37 mgd.

The 2035 WWMP included a predicted buildout influent flow of 70 mgd, based on population of 580,717, a per capita flow of 112 gallons per day, and an analysis of industrial flows in excess of the per capita flow factor. (For treatment plant design purposes, plant recycle flows must also be considered.) The total estimated project cost to accommodate the buildout flow, based on very preliminary planning analysis was about \$417 million in 2007 dollars.

The City prepared a Capital Improvement and Energy Management Plan (CIEMP) for the RWCF in 2011 which predicted flows would reach 49.3 mgd by 2035, which did not represent a general plan buildout value<sup>10</sup>. The CIEMP is being implemented through a series of projects, and the projection of future flows was recently updated as part of the CIEMP implementation work. The adopted flow projection is based on a population of 401,961 (from the San Joaquin Council of Governments) and a per capita flow rate of 100 gallons per day for 2035<sup>11</sup>. As noted above, the revised projected ADWF is 40.2 mgd for 2035 and 46.3 mgd for 2045. Assuming linear growth from 2035 to 2045, the corresponding ADWF for 2040 would be 43.3 mgd.

Existing treatment facilities have a rated secondary ADWF treatment capacity of 48 mgd, and a rated tertiary treatment capacity of 55 mgd. Preparation of the CIEMP involved an extensive analysis of existing treatment facilities, both capacity and condition. The CIEMP recommended a series of short-term and long-term improvements to address rehabilitation and replacement needs while improving treatment reliability. The total project cost for the short and long-term projects, excluding energy-related projects, was about \$221 million, based on 2011 dollars<sup>12</sup>.

For the purposes of this analysis, the CIEMP estimate of costs to achieve a reliability at the permitted capacity should be used as the cost to accommodate flows at the 2040 planning horizon.

All costs estimates are planning level estimates based on broad assumptions and limited information, and do not necessarily reflect the economic conditions at the time a project is constructed.

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<sup>10</sup> City of Stockton RWCF Capital Improvement and Energy Management Plan; Carollo Engineers, August 2011.

<sup>11</sup> Information provided by City staff, and resulting 40.2 mgd ADWF for 2035 is reported in the Stockton RWCF Design Build Project; "Advanced Package 3a & 3b" of the Basis of Design Report; AECOM, October 2017.

<sup>12</sup> Ibid. (Table 19.2)

The infrastructure analyses and cost evaluations presented in this TM are based on generalized land use data and preliminary engineering evaluations. All these analyses should be refined and updated through detailed evaluations of each specific development project.

## **RECOMMENDED FUTURE ACTIONS**

The recommended actions to address wastewater infrastructure needs are addressed in this section.

### **Sewer System**

The projected land uses for 2040 are different than the buildout land uses from the 2035 General Plan. Consequently, the collection system improvements identified in the 2035 WWMP may no longer be appropriate. This could result in some sewer system infrastructure being undersized, which could lead to sanitary sewer overflows. Some sewer system infrastructure could be oversized, resulting in unnecessary capital expenditures and increased operations and maintenance efforts and costs. Therefore, it is recommended that an updated citywide collection system model and capital improvement plan be developed and periodically updated. The model and plan should,

- a) Incorporate industry standard calibration procedures, which will require additional flow monitoring throughout the collection system and peak wet weather flow analysis;
- b) Be based on field-verified sewer invert elevation data where existing data indicates anomalies such as pipes with adverse or unexpected slopes; and
- c) Use software capable of dynamic hydraulic computations so that surcharging conditions can be more accurately represented.

Routine inspection and maintenance should be conducted in order to maintain capacity and reliability in existing facilities. Such activities should include completion (and future updates) of ongoing efforts to assess the condition of gravity sewers, and a thorough condition assessment of pumping facilities. The condition assessment data should be used to quantify and prioritize rehabilitation needs, including an analysis of annual funding required to restore and maintain system reliability.

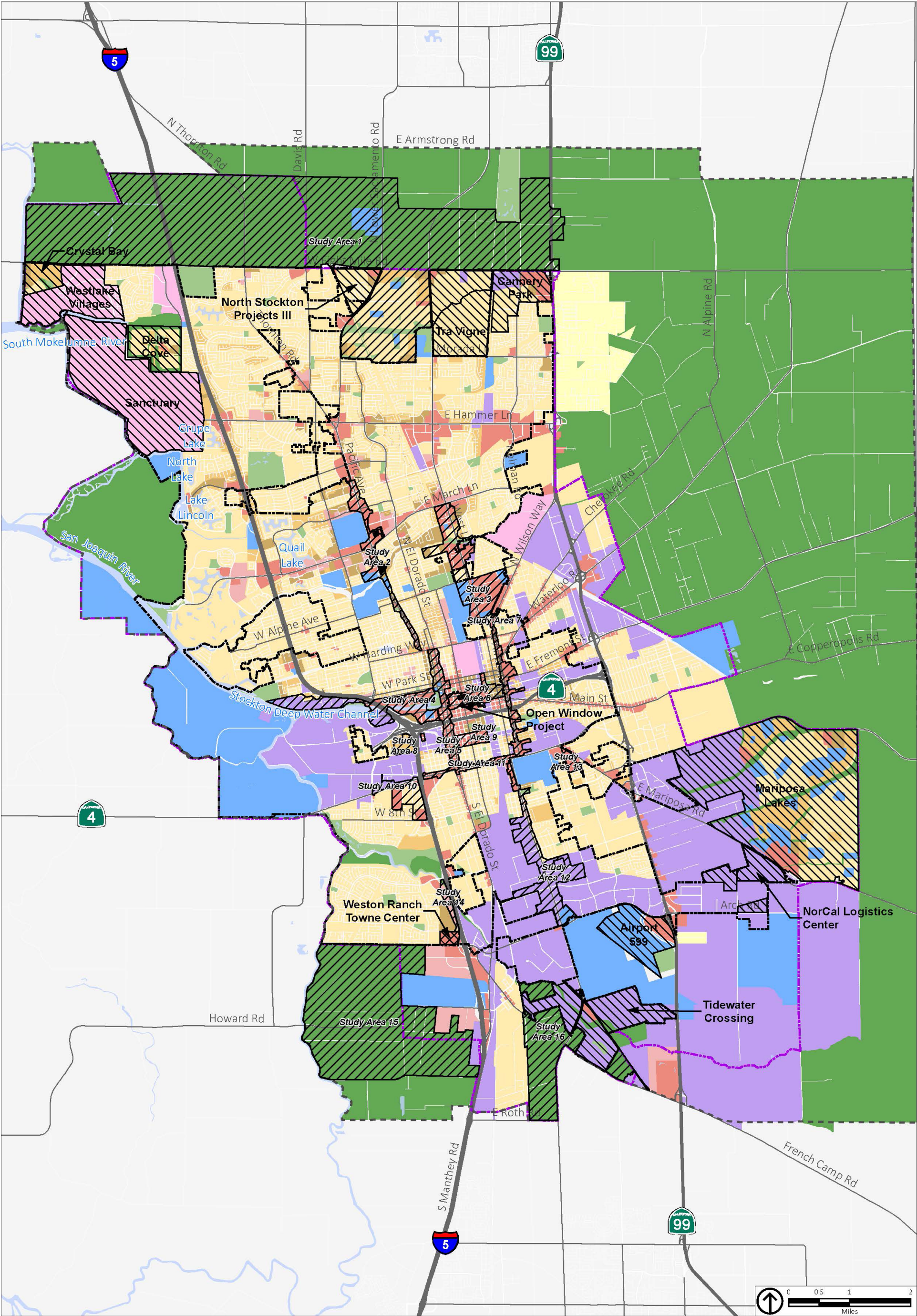
Beyond the need for collection system model calibration, a long-term program of wet and dry weather flow monitoring is recommended as a tool for detecting excessive infiltration and inflow problems that develop over time as pipelines deteriorate.

### **Regional Wastewater Control Facility**

Major improvements to the RWCF have been identified as necessary to address rehabilitation needs and provided sufficient capacity for the planned growth. Current RWCF planning is based on providing capacity for flows and loads predicted for partial buildout, which is appropriate. However, it is also recommended that as the layout and orientation of new or replacement facilities are designed, consideration is given to how the plant can be efficiently increased in the future. A plant layout reflecting flows at General Plan buildout should be configured to avoid unnecessarily increasing the cost of future improvements.

The CIEMP, which is serving as a long-term facilities plan for the RWCF, should be periodically updated to reflect actual flows and loads measured for existing conditions, operational experience with recently constructed facilities, and improvements in treatment and energy management technologies.





Source: City of Stockton, June & August 2017.



Figure 1  
2017 Preferred 2040 Land Uses  
and Development Areas



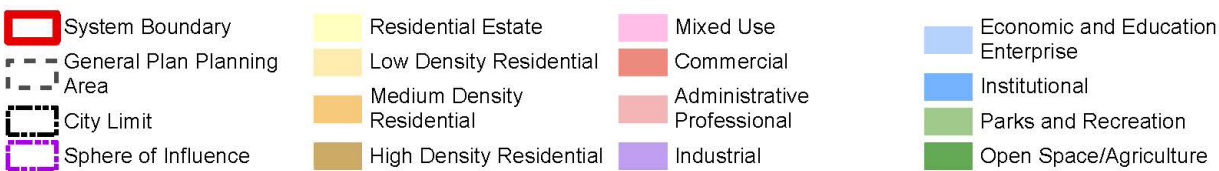
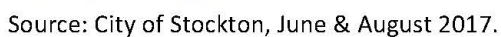
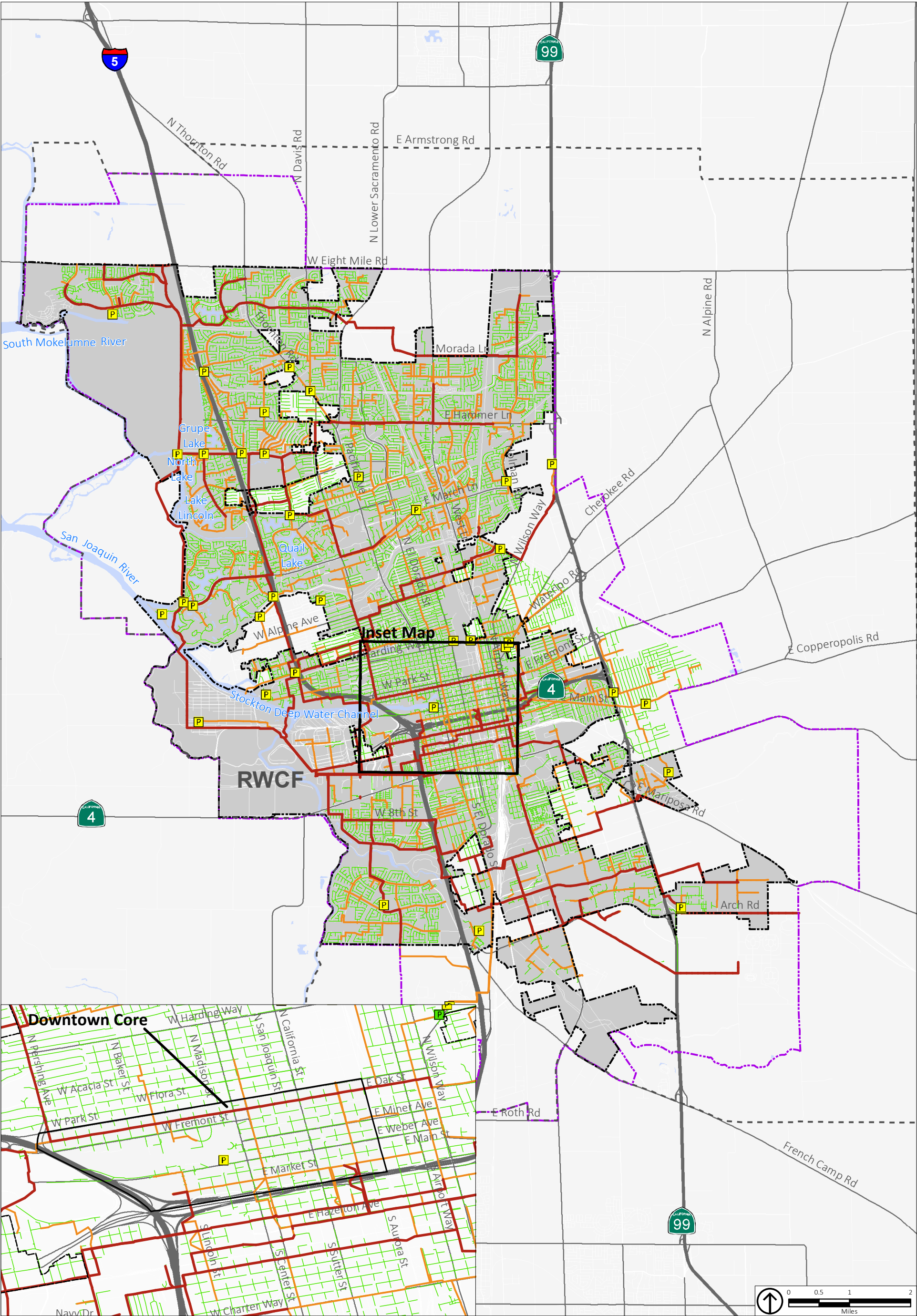


Figure 2  
2017 Preferred 2040 Land Uses and Sewer  
Sub - Collection System Boundaries





Source: City of Stockton, April 2016.

- Sanitary Pump Station
- General Plan Planning Area
- City Limit
- Existing Sewer Line (Diameter) < 8 Inches
- 10 - 18 Inches
- > 18 Inches
- Sphere of Influence

Figure 3  
Sewer System Facilities

## ATTACHMENT A

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Land Use Data Received from Placeworks and Buildout Land Use Map

Acreage Gross or Net	Study Area Name	Single Family Net New 2040	Single Family Net New 2040	Single Family Net New 2040 + Existing	Single Family Net New 2040 + Existing	Multi Family Net New 2040	Multi Family Net New 2040	Multi Family Net New 2040 + Existing	Multi Family Net New 2040 + Existing	Commercial Net New 2040	Commercial Net New 2040	Commercial Net New 2040	Commercial Net New 2040	Commercial Net New 2040	Commercial Net New 2040	Commercial Net New 2040	Commercial Net New 2040 + Existing	Commercial Net New 2040 + Existing	Industrial Net New 2040	Industrial Net New 2040 + Existing
		Units	Acres	Units	Acres	Units	Acres	Units	Acres	Total Square Feet	0.3 FAR Sq Ft	0.5 FAR Sq Ft	5.0 FAR Sq Ft	0.3 FAR Acres	0.5 FAR Acres	5.0 FAR Acres	Sq Ft	Acres	Sq Ft	Sq Ft
Gross	Study Area 1 - Eight Mile Rd Area	1,379	646	1,500	663	1,198	209	1,294	217	39,408	39,408	0	0	15	0	0	241,408	20	0	105,400
Net	Study Area 2 - Pacific Ave Corridor	0	0	22	4	110	19	224	22	93,961	93,961	0	0	17	0	0	1,560,846	103	0	1,980
Net	Study Area 3 - West Ln and Alpine Rd Area	77	13	285	52	680	120	774	125	323,399	323,399	0	0	102	0	0	975,325	163	0	1,423,576
Net	Study Area 4 - Port/Waterfront	17	3	71	11	1,770	33	2,058	42	2,040,010	6,100	0	2,033,911	2	0	31	2,865,512	62	580,859	1,739,495
Net	Study Area 5 - El Dorado/Center Corridors	0	0	45	6	1,196	22	1,555	30	1,310,216	0	0	1,310,216	0	0	21	2,158,663	53	0	258,300
Net	Study Area 6 - Miner/Weber Corridors <sup>(a)</sup>	0	0	47	4	1,248	22	1,467	27	1,463,025	0	0	1,463,025	0	0	14	2,152,972	33	0	187,300
Net	Study Area 7 - Wilson Way Corridor	0	0	12	2	234	27	240	28	606,716	103,753	0	502,963	19	0	5	1,321,076	65	0	390,342
Net	Study Area 8 - I-5/Highway 4 Interchange	0	0	8	1	659	47	660	48	388,671	0	0	388,671	0	0	4	388,671	4	0	344,300
Net	Study Area 9 - Railroad Corridor at California St	0	0	19	2	1,340	24	1,363	25	1,299,279	0	0	1,299,279	0	0	24	1,365,999	26	0	182,658
Net	Study Area 10 - I-5 and Charter Way Area	86	15	314	58	98	42	127	46	133,864	133,864	0	0	42	0	0	377,363	77	83,678	203,939
Net	Study Area 11 - Charter Way/MLK Jr Blvd Corridor	0	0	5	0	396	15	396	15	323,733	9,597	0	314,135	6	0	7	703,670	38	0	0
Net	Study Area 12 - Airport Way Corridor	0	0	53	7	108	19	112	19	205,461	135,225	70,236	0	14	4	0	272,544	48	1,368,744	3,709,140
Net	Study Area 13 - Mariposa and Charter Area	0	0	12	4	0	0	77	6	80,944	80,944	0	0	25	0	0	93,560	28	0	0
Net	Study Area 14 - East Weston Ranch <sup>(b)</sup>	0	0	1	1	0	0	0	0	430,677	0	430,677	0	0	26	0	430,677	26	0	0
Net	Study Area 15 - South of French Camp Rd	0	0	89	76	0	0	9	6	0	0	0	0	0	0	0	0	0	0	1,700
Net	Study Area 16 - E French Camp Rd Area	0	0	59	123	0	0	4	9	0	0	0	0	0	0	0	5,100	17	0	4,900
Net	Outside of Study Areas <sup>(c)</sup>	1,501	246	77,964	14,117	0	0	33,183	1,916	0	0	0	0	0	0	0	23,811,089	1,607	0	46,620,901
	Grand Total	3,059	923	80,505	15,131	9,036	600	43,542	2,583	8,739,364	926,252	500,913	7,312,200	242	31	105	38,724,475	2,371	2,033,281	55,173,931
<sup>(a)</sup> Excludes Open Window approved project.																				
<sup>(b)</sup> Excludes Weston Ranch Town Center approved project.																				
<sup>(c)</sup> Excludes approved/pending projects.																				

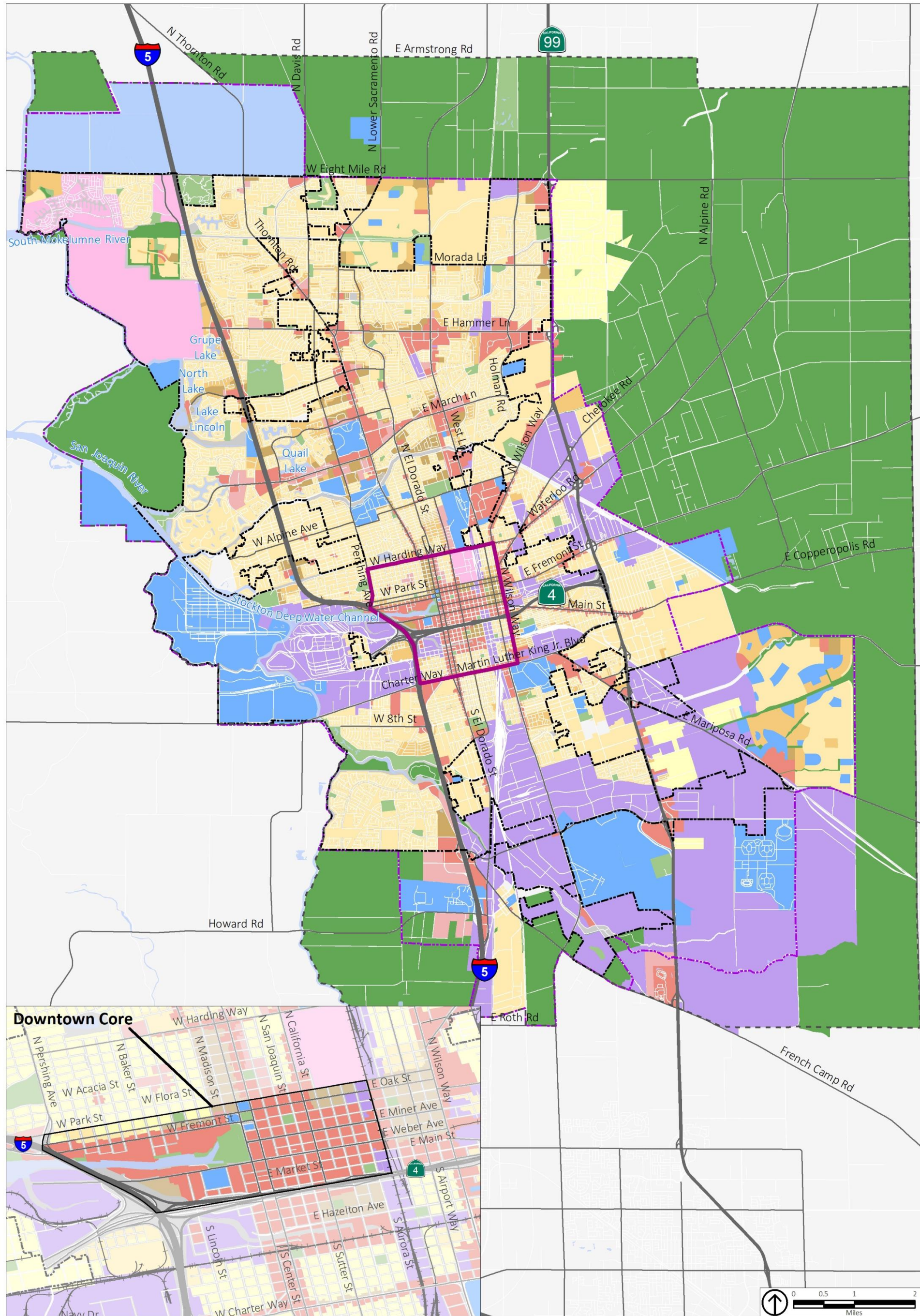
Acreage Gross or Net	Approved/Pending Projects Details	Net New						Full Build (2040)					
		Single Family Units	Single Family Acres	Multi-Family Units	Multi-Family Acres	Commercial Square Feet	Commercial Acres	Single Family Units	Single Family Acres	Multi-Family Units	Multi-Family Acres	Commercial Square Feet	Commercial Acres
Approved within city limit													
Gross	Westlake Villages	2,630	680	0		0		2,630	680	0		0	
Gross	Delta Cove	1,164	133	381	48	31,000	3	1,164	133	381	48	31,000	2.6
Gross	North Stockton Projects III	2,220	355	0		0		2,455	393	0		0	
Gross	Cannery Park	981	272	210	16	1,078,762	104	981	272	210	16	1,078,762	104
Gross	Nor Cal Logistics Center	0	0	0	0	0	0	0	0	0	0	0	0
Gross	Crystal Bay	951	19	392	79	0		951	19	392	79	0	0
Gross	Sanctuary	5,452	1,026	1,618	67	692,256	36	5,452	1,026	1,618	67	692,256	36
Gross	Tidewater Crossing	-310	-870	0		186,200	16	0	0	0		186,200	16
Net	Open Window <sup>(a)</sup>	0	0	1,391	12	-68,800	-1	0	0	1,400	12	290,000	12
Gross	Weston Ranch Town Center	0	0	0	0	481,000	41	0	0	0	0	481,000	41
Approved/pending outside city limit, inside SOI													
Gross	Mariposa Lakes	8,955	939	1,553	585	1,009,503	150	8,960	1,090	1,556	585	1,009,503	150
Gross	Airpark 599	0	0	0	0	1,678,500	128	0	0	0	0	1,678,500	128
Gross	Tra Vigne <sup>(b)</sup>	1,244	846	0	0	0	0	1,244	846	0	0	0	0
<sup>(a)</sup> The Master Development Plan for Open Window is approved for 1,034 units, with an option to expand the capacity to 1,400 units if the General Plan Update increases the maximum densities in the Downtown, which is being considered as part of this General Plan Update.													
<sup>(b)</sup> Pending; not approved.													

2040 Development Study Area												
	Net New Single Family Units (full buildout)	Percent applied to 2040	Net New Single Family Units (2040)	Net New Multi-Family Units (full buildout)	Percent applied to 2040	Net New Multi-Family Units (2040)	Net New Commercial Square Feet (full buildout)	Percent applied to 2040	Net New Commercial Square Feet (2040)	Net New Industrial Square Feet (full buildout)	Percent applied to 2040	Net New Industrial Square Feet (2040)
Study Area 1 – Eight Mile Rd Area	3,940	35%	1,380	3,420	35%	1,200	197,000	20%	39,000	0	0%	0
Study Area 2 – Pacific Ave Corridor	0	0%	0	440	25%	110	188,000	50%	94,000	0	0%	0
Study Area 3 – West Ln and Alpine Rd Area	80	100%	80	2,720	25%	680	1,294,000	25%	323,000	0	0%	0
Study Area 4 – Port/Waterfront	20	100%	20	2,210	80%	1,770	6,800,000	30%	2,040,000	2,323,000	25%	581,000
Study Area 5 – El Dorado/Center Corridors	0	0%	0	1,500	80%	1,200	4,367,000	30%	1,310,000	0	0%	0
Study Area 6 – Miner/Weber Corridors <sup>(a)</sup>	0	0%	0	1,560	80%	1,250	2,926,000	50%	1,463,000	0	0%	0
Study Area 7 – Wilson Way Corridor	0	0%	0	940	25%	230	1,213,000	50%	607,000	0	0%	0
Study Area 8 – I-5/Highway 4 Interchange	0	0%	0	820	80%	660	777,000	50%	389,000	0	0%	0
Study Area 9 – Railroad Corridor at California St	0	0%	0	1,680	80%	1,340	5,197,000	25%	1,299,000	0	0%	0
Study Area 10 – I-5 and Charter Way Area	90	100%	90	980	10%	100	535,000	25%	134,000	98,000	85%	84,000
Study Area 11 – Charter Way/MLK Jr Blvd Corridor	0	0%	0	790	50%	400	1,619,000	20%	324,000	0	0%	0
Study Area 12 – Airport Way Corridor	0	0%	0	430	25%	110	274,000	75%	205,000	5,475,000	25%	1,369,000
Study Area 13 – Mariposa and Charter Area	0	0%	0	570	0%	0	324,000	25%	81,000	0	0%	0
Study Area 14 – East Weston Ranch <sup>(b)</sup>	0	0%	0	610	0%	0	574,000	75%	431,000	0	0%	0
Study Area 15 – South of French Camp Rd	0	0%	0	0	0%	0	0	0%	0	0	0%	0
Study Area 16 – E French Camp Rd Area	0	0%	0	0	0%	0	0	0%	0	0	0%	0
Outside of Study Areas <sup>(c)</sup>	16,360	9%	1,500	29,810	0%	0	19,487,000	0%	0	126,805,000	0%	0
Grand Total <sup>(d)</sup>	20,480		3,060	48,470		9,040	45,773,000		8,739,000	134,701,000		2,033,000
<div><div><sup>(a)</sup></div><div>Excludes Open Window approved project.</div></div> <div><div><sup>(b)</sup></div><div>Excludes Weston Ranch Town Center approved project.</div></div> <div><div><sup>(c)</sup></div><div>Excludes approved/pending projects</div></div> <div><div><sup>(d)</sup></div><div>Numbers do not always add up due to rounding.</div></div> <div>The “full buildout” of the proposed General Plan assumes the maximum development of every parcel, combined with approved and pending developments throughout the Planning Area. The 2040 land uses are based on realistic land use demand projections. The full buildout of the General Plan would result in almost three times more new housing units and over 24 times more new non-residential development than estimated for 2040. Therefore, it is extremely unlikely that the full buildout would occur by the year 2040. Full buildout may not occur until well beyond the useful lifespan of the proposed infrastructure (for example, the lifespan of concrete structures is typically 50 to 75 years). Consequently, this infrastructure planning was based on the estimated 2040 level of development. This table is included in this TM to document the relationship between the buildout land uses and the 2040 land uses.</div>												

Source: PlaceWorks, 2017.



Figure 2-8  
General Plan Land Use Map



Source: City of Stockton, 2017; PlaceWorks, 2017.

- |                            |                            |                          |                                   |                        |
|----------------------------|----------------------------|--------------------------|-----------------------------------|------------------------|
| City Limit                 | Residential Estate         | High Density Residential | Administrative Professional       | Institutional          |
| Sphere of Influence        | Low Density Residential    | Mixed Use                | Industrial                        | Parks and Recreation   |
| General Plan Planning Area | Medium Density Residential | Commercial               | Economic and Education Enterprise | Open Space/Agriculture |
| Greater Downtown Boundary  |                            |                          |                                   |                        |



**ATTACHMENT 3**

**REVISED STORMWATER MASTER PLAN SUPPLEMENT**



## **TECHNICAL MEMORANDUM**

DATE: December 6, 2017 Project No.: 425-10-16-04.006  
SENT VIA: EMAIL  
TO: City of Stockton, Municipal Utilities Department  
FROM: Douglas T. Moore, PE, RCE #58122  
REVIEWED BY: Mark Kubik, PE, RCE #50963  
SUBJECT: Stockton General Plan Update – Stormwater Master Plan Supplement

This Technical Memorandum (TM) presents the Stormwater Master Plan Supplement for the Stockton General Plan Update (GPU). This TM includes the following sections:

- Summary
  - Existing Conditions Summary
  - Detention Storage and Pumping Requirements for the Study Areas Summary
  - Cost Evaluations Summary
  - Potential Environmental Impacts and Mitigation Measures Summary
- Existing Conditions
- Detention Storage and Pumping Requirements for the Study Areas
  - GPU Land Uses by Development Area
  - Assumptions and Methodology
  - Storage Requirements
  - Pump Station Requirements
- Detention Storage and Pumping Cost Evaluations
  - Detention Storage Construction Costs
  - Pumping Construction Costs
  - Total Capital Costs
- Recommended Future Actions
- Conclusions

The analyses and conclusions presented in this TM are based on generalized land use data and preliminary engineering evaluations. All these evaluations should be refined and updated through detailed evaluations of each specific development project.



## **SUMMARY**

A summary of this TM is presented below. The development of the summary data is presented in the following sections of this TM. The 2040 land uses are shown on Figure 1, and the General Plan Update buildout land use map is provided in Attachment A.

### **Existing Conditions Summary**

The City's storm drain system is shown on Figure 2. The storm drain system includes 620 miles of 4-inch to 96-inch storm drains and over 22,500 drain inlets. A total of 58 pump stations and 19 lift stations are used to pump drainage into receiving waters, as shown on Figure 2.

The City of Stockton (City) is characterized by flat topography with a complex network of streams and rivers running through it. The northern portion of the City is protected by levees, and drainage is typically pumped into receiving waters. The southern portion of the City does not have many levees and is characterized by various floodplain designations by FEMA (Peterson Brustad Inc., 2008). A few of the waterways in the central and northern parts of the City, namely Bear Creek, Pixley Slough, Mosher Slough, and the Calaveras River, have sufficient capacity to handle buildout flows based on the 1990 General Plan, but do not have capacity to handle additional development beyond that. The creeks in the southeast portion of the planning area, (North Littlejohns Creek, Weber Slough, South Littlejohns Creek, and Lone Tree Creek) do not have capacity to contain the existing 100-year flows, resulting in overbank flooding predicted in much of those watersheds (West Yost Associates [West Yost], 2004).

### **Detention Storage and Pumping Requirements for the Study Areas Summary**

Several development Study Areas were identified by Placeworks, as shown on Figure 2. Little infrastructure planning has been done for the Study Areas; consequently, detention storage and pumping requirements have been estimated for the Study Areas. Stormwater plans have been or will be prepared by others for the Approved/Pending Development Projects. To avoid conflicting infrastructure plans, no storage and pumping requirements have been estimated for the Approved/Pending Development Projects.

The detention storage volumes required per the City of Stockton's standards range from 0.5 to 50.4 acre-feet (ac-ft). The total new development tributary area that needs detention storage facilities is 547.8 acres of various land uses.

The San Joaquin County Improvement Standards requires that detention basins shall have outlet facilities providing terminal drainage capable of emptying a full basin in 24 hours in urban areas. Firm pumping capacity is the combined capacity of the individual pumps in the pump station, except the largest pump (assuming the largest pump is out of service). The firm pumping capacities for the Study Areas range from 0.3 to 25.4 cubic feet per second (cfs), and the combined firm capacity is 50.3 cfs. Total pumping capacity is the combined capacity of all the individual pumps in the pump station, including the largest pump (assuming the largest pump is in service). Total pumping capacity is included in this evaluation for estimating pump station costs. The total pumping capacities range from 0.5 to 38.1 cfs, and the combined total capacity is 88.0 cfs. The total tributary area is 547.8 acres of various land uses. On average, this results in about 0.09 cfs/acre of firm pumping capacity needed per acre of development.

## **Cost Evaluations Summary**

Capital costs range from approximately \$95,000 to \$5.8 million, with a total of \$12.2 million. Land costs make up approximately \$2.8 million of the \$12.2 million. The cost per acre of development is approximately \$22,400.

## **Potential Environmental Impacts and Mitigation Measures Summary**

This study is a high-level assessment to analyze detention basin and pumping capacity requirements based on increases in the volume of stormwater runoff resulting from development in the Study Areas. No hydraulic or hydrologic modeling was performed for this study, storm drainage pipe facilities were not sized, and water quality control measures were not considered. To address the potential impacts of development, a comprehensive City-wide storm drainage master plan should be completed. In addition, each development project should complete a drainage plan to appropriately size storm drainage facilities based on site specific constraints. Each drainage study should also consider stormwater quality control measures and trash control measures as applicable.

## **EXISTING CONDITIONS**

The City's storm drain system is shown on Figure 2. The storm drain system includes 620-miles of 4-inch to 96-inch storm drains. Multiple pump stations and lift stations are used to pump drainage into receiving waters. Figure 2 shows the locations of the 58 pump stations and the 19 lift stations, and various sizes of storm drain pipes.

Major receiving waters include Pixley Slough, Bear Creek, Mosher Slough, Five Mile Slough, Calaveras River, Fourteen Mile Slough, Smith Canal, Stockton Deep Water Ship Channel, San Joaquin River, Walker/French Camp Slough, Duck Creek, and North Littlejohns Creek.

The information for the existing condition storm drains is compiled from a 2008 Conceptual Storm Drain Master Plan by Peterson Brustad Inc. and a 2004 Conceptual Storm Drain Master Plan by West Yost. The City of Stockton is situated on the eastern boundary of the Sacramento/San Joaquin River Delta. The City is characterized by flat topography with a complex network of streams and rivers running through it. The northern portion of the City is protected by levees, and drainage is typically pumped into receiving waters. The southern portion of the City does not have many levees and is characterized by various floodplain designations by FEMA (Peterson Brustad Inc., 2008). A few of the waterways in the central and northern parts of the city, namely Bear Creek, Pixley Slough, Mosher Slough, and the Calaveras River, have sufficient capacity to handle buildout flows based on the 1990 General Plan, but do not have capacity to handle additional development beyond that. The creeks in the southeast portion of the planning area (North Littlejohns Creek, Weber Slough, South Littlejohns Creek, and Lone Tree Creek) do not have capacity to contain the existing 100-year flows, resulting in overbank flooding in much of those watersheds (West Yost, 2004).

## **DETENTION STORAGE AND PUMPING REQUIREMENTS FOR THE STUDY AREAS**

The development of the detention storage and pumping requirements are discussed below:

### **GPU Land Uses by Development Area**

The land use data for this evaluation was provided by Placeworks and is provided in Attachment A (including the buildout land use map, the dwelling unit data, acreage data, and 2040 percent development data). The land use data has been reorganized in Table 1 to be suitable for estimating the stormwater detention storage and pumping requirements. The reorganized land use data includes existing land use data, net new land use data for 2040, and 2040 land use data in terms of gross acreages. The 2040 land use data is shown on Figure 1, and the Study Areas and the Approved/Pending Development Projects are shown on Figure 2.

### **Assumptions and Methodology**

The following assumptions were made for this stormwater evaluation:

- Little infrastructure planning has been done for the Study Areas, consequently, detention storage and pumping requirements have been estimated for the Study Area.
- Stormwater plans have been or will be prepared by others for the Approved/Pending Development Projects. To avoid conflicting infrastructure plans, no storage and pumping requirements have been estimated for the Approved/Pending Development Projects.
- Without existing drainage models, it is not possible to accurately evaluate the need for detention storage and new pumping. Also, re-development projects will use the existing stormwater infrastructure, resulting in minimal new infrastructure requirements. Consequently, if the re-development project results in increased impervious coverage, detailed evaluations will need to be prepared in the future, including preparation of hydrologic and hydraulic models which can be used to accurately determine best drainage approach and size the required infrastructure.
  - Study areas that consisted primarily of new development or infill projects were assumed to need detention facilities if they did not already have detention basins.
  - Study areas that consisted primarily of re-development projects were assumed to not need detention facilities.
  - Study areas that had both re-development and infill projects were assumed to need detention facilities unless they already drained to a detention basin or if the receiving system appears to have adequate capacity for buildout conditions.
- Net new development areas were used to size stormwater facilities. Net new development areas do not include areas that are already developed and will not change as a result of new development.

The following methodology was used for evaluating the required stormwater detention storage and pumping requirements for the Study Areas.

Table 1. Land Use Data												
Study Area or Development Name	Single Family, Gross Acres			Multi Family, Gross Acres			Commercial, Gross Acres			Industrial, Gross Acres		
	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040	Existing	Net New	2040
Study Areas												
Study Area 1 - Eight Mile Rd Area	17.2	232.1	249.3	8.4	73.2	81.6	17.9	0.6	18.5	4.0	0.0	4.0
Study Area 2 - Pacific Ave Corridor	4.3	0.0	4.3	3.5	4.7	8.2	115.8	3.6	119.4	0.1	0.0	0.1
Study Area 3 - West Ln and Alpine Rd Area	38.7	51.6	90.2	5.8	29.9	35.7	68.4	6.2	74.6	54.5	0.0	54.5
Study Area 4 - Port/Waterfront	8.0	11.2	19.2	8.6	26.7	35.3	10.3	2.9	13.2	44.3	5.6	49.9
Study Area 5 - El Dorado/Center Corridors	5.5	0.0	5.5	8.3	17.2	25.5	8.1	1.8	9.9	9.9	0.0	9.9
Study Area 6 - Miner/Weber Corridors <sup>(a)</sup>	4.4	0.0	4.4	4.8	18.0	22.8	6.5	3.4	9.9	7.2	0.0	7.2
Study Area 7 - Wilson Way Corridor	1.6	0.0	1.6	0.2	6.8	7.1	2.1	5.1	7.2	14.9	0.0	14.9
Study Area 8 - I-5/Highway 4 Interchange	1.0	0.0	1.0	0.1	38.0	38.1	0.9	0.9	1.8	13.2	0.0	13.2
Study Area 9 - Railroad Corridor at California St	2.3	0.0	2.3	1.3	19.3	20.6	4.8	1.5	6.3	7.0	0.0	7.0
Study Area 10 - I-5 and Charter Way Area	42.8	57.9	100.7	4.1	4.2	8.3	26.3	2.6	28.9	4.6	2.7	7.3
Study Area 11 - Charter Way/MLK Jr Blvd Corridor	0.3	0.0	0.3	0.0	7.7	7.7	2.9	0.4	3.3	0.0	0.0	0.0
Study Area 12 - Airport Way Corridor	7.2	0.0	7.2	0.4	4.7	5.1	6.8	10.2	17.0	89.5	13.1	102.6
Study Area 13 - Mariposa and Charter Area	3.9	0.0	3.9	5.9	0.0	5.9	5.6	1.5	7.2	0.0	0.0	0.0
Study Area 14 - East Weston Ranch <sup>(b)</sup>	1.1	0.0	1.1	0.0	0.0	0.0	4.9	14.8	19.8	0.0	0.0	0.0
Study Area 15 - South of French Camp Rd	75.7	0.0	75.7	6.1	0.0	6.1	0.0	0.0	0.0	0.1	0.0	0.1
Study Area 16 - E French Camp Rd Area	122.7	0.0	122.7	9.1	0.0	9.1	0.1	0.0	0.1	0.2	0.0	0.2
Subtotal (Study Areas)	336.9	352.8	689.7	66.8	250.5	317.3	281.5	55.6	337.1	249.5	21.4	270.8
Approved/Pending Development Projects Within City Limit												
Westlake Villages	0.0	680.0	680.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delta Cove	0.0	132.7	132.7	0.0	47.6	47.6	0.0	2.6	2.6	0.0	0.0	0.0
North Stockton Projects III	38.0	355.0	393.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cannery Park	0.0	272.0	272.0	0.0	16.0	16.0	0.0	104.0	104.0	0.0	0.0	0.0
Nor Cal Logistics Center	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crystal Bay	0.0	19.4	19.4	0.0	78.7	78.7	0.0	0.0	0.0	0.0	0.0	0.0
Sanctuary	0.0	1,026.0	1,026.0	0.0	67.4	67.4	0.0	35.5	35.5	0.0	0.0	0.0
Tidewater Crossing	869.6	-869.6	0.0	0.0	0.0	0.0	0.0	16.0	16.0	0.0	0.0	0.0
Open Window <sup>(c)</sup>	0.0	0.0	0.0	0.0	11.9	11.9	12.9	-1.0	11.9	0.0	0.0	0.0
Weston Ranch Town Center	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.5	41.5	0.0	0.0	0.0
Subtotal (Approved/Pending Projects Within City Limit)	907.6	1,615.5	2,523.1	0.0	221.6	221.6	12.9	198.6	211.5	0.0	0.0	0.0
Approved/Pending Development Projects Outside City Limit but Within Sphere of Influence												
Mariposa Lakes	151.0	939.3	1,090.3	0.0	585.0	585.0	0.0	150.0	150.0	0.0	0.0	0.0
Airpark 599	0.0	0.0	0.0	0.0	0.0	0.0	0.0	128.0	128.0	0.0	0.0	0.0
Tra Vigne <sup>(d)</sup>	0.0	846.4	846.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal (Approved/Pending Projects Outside City Limit but Within Sphere of Influence)	151.0	1,785.7	1,936.7	0.0	585.0	585.0	0.0	278.0	278.0	0.0	0.0	0.0
Remaining City Outside of Study Areas and Outside of Approved/Pending Projects <sup>(e)</sup>	13,870.5	1,270.5	15,141.0	1,915.9	0.0	1,915.9	546.6	0.0	546.6	1,783.8	0.0	1,783.8
Grand Total	15,266.0	5,024.6	20,290.5	1,982.7	1,057.1	3,039.8	841.0	532.1	1,373.1	2,033.2	21.4	2,054.6
<sup>(a)</sup> Excludes Open Window approved project. <sup>(b)</sup> Excludes Weston Ranch Town Center approved project. <sup>(c)</sup> The Master Development Plan for Open Window is approved for 1,034 units, with an option to expand to 1,400 units if the General Plan Update increases the maximum densities in the Downtown, which is being considered as part of this General Plan Update. <sup>(d)</sup> Pending; not approved. <sup>(e)</sup> Excludes approved/pending projects.												

City of Stockton Standard Specifications, Section 77 requires:

- Detention basins be sized using the equation  $\text{Volume (acre-feet)} = C \cdot A \cdot R / 12$ , where
  - $C$  = runoff coefficient,
  - $A$  = area of the site (acres), and
  - $R$  = rainfall depth (inches). Rainfall depths are shown in Table 2 and differ between areas that have discharge limitations or not.
- Discharge limitations were explained in the 2008 Conceptual Storm Drain Master Plan as receiving waters that had discharge constraints based on the existing capacity of the channel. Many Study Areas do not have a known receiving water, and therefore, it was assumed they were discharge limited unless otherwise noted in the PBI report (2008).
- Runoff coefficients were obtained from City Standard Drawing Number 76, as shown in Table 3.

<b>Table 2. Rainfall Depth for Use in the Detention Basin Sizing Equation (above).</b>	
Receiving Water Status	Rainfall <sup>(a)</sup> , inches
No discharge limitations	3.12
Discharge limitations	Use safety factor of 1.5 applied to size calculated for No Discharge Limitations
<sup>(a)</sup> From City of Stockton Standard Specifications, Section 77m	

<b>Table 3. Runoff Coefficients<sup>(a)</sup></b>	
Land Use Category	C-Value
Single Family Residential	0.35
Multi-Family Residential	0.65
Commercial	0.90
Industrial	0.90
<sup>(a)</sup> From City of Stockton Standard Drawing Number 76.	

Neither the City's Specifications Section 74 nor 77 provided guidance on how to size pump stations to empty detention basins; therefore, guidance from San Joaquin County Improvement Standards were used. Section 3-4.05.C of the San Joaquin County Improvement Standards requires that detention basins shall have outlet facilities providing terminal drainage capable of emptying a full basin in 24 hours in urban areas. Although the San Joaquin County Improvement Standards encourage the use of gravity drained detention basins, it is difficult to know if a system will drain by gravity without additional modeling or design. Therefore, all detention basins were assumed to require pumping facilities.

## **Storage Requirements**

Using the methodology described above, the required detention storage volumes are summarized in Table 4 for the Study Areas. As shown, the required detention storage volumes range from 0.5 to 50.4 ac-ft. The total combined detention storage volume for all of the Study Areas is 99.8 ac-ft. Storage volume was also included in Table 4 for extended detention basins located with the flood control basin assuming there were no volume reduction measures implemented. The total new development tributary area that needs facilities is 547.8 acres of various land uses.

## **Pumping Requirements**

Using the methodology described above, the pumping requirements are summarized in Table 4. As shown, the firm pumping capacities range from 0.3 to 25.4 cfs, and the combined firm capacity is 50.3 cfs. The total pumping capacities range from 0.5 to 38.1 cfs, and the combined total capacity is 88.0 cfs. The total tributary area is 547.8 acres of various land uses. As stated above, the analyses and conclusions presented in this TM are based on generalized land use data and preliminary engineering evaluations. All these evaluations should be refined and updated through detailed evaluations of each specific development project.

Additionally, the pump stations that discharge into open channels, creek, or rivers may require acquisition of several permits such as Clean Water Act Section 401 and 404 permits/certification, California Department of Fish and Wildlife Stream Bed Alteration Agreement, Central Valley Flood Protection Board encroachment permit, and the San Joaquin County Flood Control and Water Conservation District permits.



Table 4. Detention Basin Volumes and Pump Station Capacities <sup>(f)</sup>														
Study Area Name	Location of Discharge	Limited or Unlimited Discharge	New Development, Re-development, or Infill	Facilities Needed? <sup>(d)</sup>	Single Family, acres	Multi Family, acres	Industrial, acres	Total Areas of Sudy Areas that Need Facilities, acres	Area Weighted C-Value	Extended Detention Basin Volume, ac-ft	Volume <sup>(c)</sup> (discharge limitations), ac-ft	Firm Pumping Capacity <sup>(b)</sup> for basins with discharge limitations, cfs	Total Pumping Capacity <sup>(b, e)</sup> for basins with discharge limitations, cfs	
				(Yes or No)	Net New	Net New	Net New	Net New	Net New	Net New	Net New	Net New	Net New	
Study Areas														
Study Area 1 - Eight Mile Rd Area	Pixley Slough	Limited	100% new development	Yes	232.1	73.2	0.0	305.9	0.42	5.6	50.4	25.4	38.1	
Study Area 2 - Pacific Ave Corridor	Unknown from PBI	Limited	100% re-development	No	0.0	4.7	0.0	0.0	--	--	--	--	--	
Study Area 3 - West Ln and Alpine Rd Area	Unknown from PBI	Limited	50% re-development, 50% infill	Yes	51.6	29.9	0.0	87.7	0.49	1.9	16.8	8.5	16.9	
Study Area 4 - Port/Waterfront	Unknown from PBI	Limited	60% re-development, 40% infill	Yes	11.2	26.7	5.6	46.5	0.62	1.3	11.3	5.7	11.4	
Study Area 5 - El Dorado/Center Corridors	Unknown from PBI	Limited	80% re-development, 20% infill	No	0.0	17.2	0.0	0.0	--	--	--	--	--	
Study Area 6 - Miner/Weber Corridors	Unknown from PBI	Limited	90% re-development, 10% infill	No	0.0	18.0	0.0	0.0	--	--	--	--	--	
Study Area 7 - Wilson Way Corridor	Unknown from PBI	Limited	90% re-development, 10% infill	No	0.0	6.8	0.0	0.0	--	--	--	--	--	
Study Area 8 - I-5/Highway 4 Interchange	Unknown from PBI	Limited	10% re-development, 90% infill	Yes	0.0	38.0	0.0	38.9	0.66	1.1	9.9	5.0	10.0	
Study Area 9 - Railroad Corridor at California St	Unknown from PBI	Limited	60% re-develoment, 40% infill	No	0.0	19.3	0.0	0.0	--	--	--	--	--	
Study Area 10 - I-5 and Charter Way Area	Unknown from PBI	Limited	60% re-development, 40% infill	Yes	57.9	4.2	2.7	67.4	0.41	1.2	10.8	5.5	10.9	
Study Area 11 - Charter Way/MLK Jr Blvd Corridor	Unknown from PBI	Limited	100% re-development	No	0.0	7.7	0.0	0.0	--	--	--	--	--	
Study Area 12 - Airport Way Corridor	Unknown from PBI	Limited	50% re-development, 50% infill	No	0.0	4.7	13.1	0.0	--	--	--	--	--	
Study Area 13 - Mariposa and Charter Area	Potentially Calaveras River	Limited	30% redevelopment, 70% infill	Yes	0.0	0.0	0.0	1.5	0.90	0.1	0.5	0.3	0.5	
Study Area 14 - East Weston Ranch	Unknown from PBI	Limited	100% infill	No	0.0	0.0	0.0	0.0	--	--	--	--	--	
Study Area 15 - South of French Camp Rd	San Joaquin River	Limited	95% new development, 5% re-development	Yes	0.0	0.0	0.0	0.0	--	--	--	--	--	
Study Area 16 - E French Camp Rd Area	Potentially French Camp Slough <sup>(a)</sup>	Limited	90% new development, 10% re-development	Yes	0.0	0.0	0.0	0.0	--	--	--	--	--	
Total					352.8	250.5	21.4	547.8		11.1	99.8	50.3	88.0	
<sup>(a)</sup> PBI concluded that no proper hydraulic modeling existed for this conveyance system and comprehensive flood management was recommended for this area, and thus discharge constraints could not be developed. A limited discharge was assumed for this Study Area.														
<sup>(b)</sup> Detention basins should have outlet faciitiies capable of draining a basin in 24 hours in urban areas (per San Joaquin County Improvement Standards, 2014)														
<sup>(c)</sup> Volume (in acre-feet) is calculated using V = C*A*R/12, where C = area weighted runoff coefficient, A = total area (acres), and R = rainfall depth (in)														
<sup>(d)</sup> Facilities are needed for areas where there is new development or infill with no existing facilities or capacity for buildout. Facilities are not needed if there is primarily re-development or the system already has the capacity for buildout conditions.														
<sup>(e)</sup> Total pumping capacity is included in this evaluation for estimating pump station costs.														
<sup>(f)</sup> The analyses and conclusions presented in this TM are based on limited land use data and preliminary engineering evaluations. All these evaluations should be refined and updated through detailed evaluations of each specific development project.														



## DETENTION STORAGE AND PUMPING COST EVALUATIONS

Approximate stormwater infrastructure unit costs are presented in Table 5 and discussed below. These unit costs were taken/developed from previous West Yost planning engineering studies, design, bid, construction projects, and general West Yost cost estimating experience from projects located in the California Central Valley for construction associated with medium to large development projects.

- The detention basin unit cost of \$28,000 per ac-ft is from actual construction costs for a detention basin project in the City of Dixon, but inflated from Spring 2005 to December 2016 (using the Engineering News Record 20 Cities Average). This unit cost includes detention basin excavation, an all-weather access road around the basin, inlet and outlet headwalls, and other facilities for a complete, urban detention basin. The basins are assumed to be 12 feet deep, with a water depth of 10 feet, a freeboard of 2 feet, and side slopes of 4H:1V.
- The pump station unit cost of \$37,000 per cfs is from actual construction costs for the Natomas Area of Sacramento, but inflated from October 1998 to December 2016.
- The land cost for detention basins was assumed to be \$200,000 per acre.
- The Engineering, Environmental, Administration, Construction Management, etc. multiplier of 40 percent is from West Yost Associates' experience with similar, typical projects.

<b>Table 5. Stormwater Infrastructure Unit Costs</b>		
<b>Facility Type</b>	<b>Unit</b>	<b>Cost per Unit, dollars</b>
Detention Basin (Storage Capacity)	Acre-feet	28,000
Pump Station (Total Pumping Capacity)	cfs	37,000
Land Acquisition	Acres	200,000
Engineering, Environmental, Administration, Construction Management, etc.	--	40 percent of construction cost

The estimated construction costs for the Study Areas are summarized in Table 6. The quantities for the cost calculations are also provided in Table 6. The construction costs are developed by multiplying the infrastructure quantities from Table 6 by the approximate unit costs from Table 5. The total capital costs additionally include the cost of Engineering, Environmental, Administration, Construction Management, etc., and the land acquisition for the detention basins.

Table 6. Estimated Stormwater Infrastructure Construction and Total Capital Costs										
Study Area	Volume of required water storage	Excavation Volume <sup>(a)</sup>	Area of Basin	Total Pumping Capacity	Detention Basin Cost	Pump Station Cost	Construction Cost	Land Cost	Engineering, Adminisration, CM	Total Capital Cost
<i>Units, Unit Costs, and Multipliers</i>	<i>ac-ft</i>	<i>ac-ft</i>	<i>ac</i>	<i>cfs</i>	<i>\$28,000/ac-ft</i>	<i>\$37,000/cfs</i>	<i>dollars</i>	<i>\$200,000/ac</i>	<i>40%</i>	<i>dollars</i>
Study Area 1 - Eight Mile Rd Area	56.0	66.1	5.9	38.1	\$1,851,737	\$1,411,396	\$3,263,000	\$1,185,678	\$1,305,000.00	\$5,754,000
Study Area 2 - Pacific Ave Corridor	--	--	--	--	--	--	--	--	--	--
Study Area 3 - West Ln and Alpine Rd Area	18.7	22.0	2.2	16.9	\$616,464	\$626,492	\$1,243,000	\$439,722	\$497,000.00	\$2,180,000
Study Area 4 - Port/Waterfront	12.5	14.8	1.6	11.4	\$414,630	\$421,375	\$836,000	\$311,814	\$334,000.00	\$1,482,000
Study Area 5 - El Dorado/Center Corridors	--	--	--	--	--	--	--	--	--	--
Study Area 6 - Miner/Weber Corridors	--	--	--	--	--	--	--	--	--	--
Study Area 7 - Wilson Way Corridor	--	--	--	--	--	--	--	--	--	--
Study Area 8 - I-5/Highway 4 Interchange	11.1	13.0	1.4	10.0	\$365,106	\$371,046	\$736,000	\$279,785	\$294,000.00	\$1,310,000
Study Area 9 - Railroad Corridor at California St	--	--	--	--	--	--	--	--	--	--
Study Area 10 - I-5 and Charter Way Area	12.0	14.2	1.5	10.9	\$397,379	\$403,844	\$801,000	\$300,694	\$320,000.00	\$1,422,000
Study Area 11 - Charter Way/MLK Jr Blvd Corridor	--	--	--	--	--	--	--	--	--	--
Study Area 12 - Airport Way Corridor	--	--	--	--	--	--	--	--	--	--
Study Area 13 - Mariposa and Charter Area	0.6	0.8	0.2	0.5	\$22,997	\$20,278	\$43,000	\$35,424	\$17,000.00	\$95,000
Study Area 14 - East Weston Ranch	--	--	--	--	--	--	--	--	--	--
Study Area 15 - South of French Camp Rd	--	--	--	--	--	--	--	--	--	--
Study Area 16 - E French Camp Rd Area	--	--	--	--	--	--	--	--	--	--
Total	110.9	131.0	12.8	88.0	\$3,668,312	\$3,254,432	\$6,922,000	\$2,553,116	\$2,767,000	\$12,243,000
<sup>(a)</sup> Excavation values based on: 1) San Joaquin County Improvement Standards requires the depth of basin to be 2 feet above groundwater, detention basin side slopes be at least 4H:1V, and that the water suraface be a minimum of 2-feet below all ground surface elevations upstream from the basin. 2) City of Stockton and County of San Joaquin Final Stormwater Quality Control Criteria Plan, March 2009. 3) Sizing assumptions include: A depth to groundwater of 12 feet, a square detention basin shape, and a maximum water depth of 10 feet.										

### **Detention Storage Construction Costs**

Detention basin construction costs range from approximately \$23,000 to \$1.8 million, with a total of \$3.7 million.

### **Pump Station Construction Costs**

Pump station construction costs range from approximately \$20,000 to \$1.4 million, with a total of \$3.3 million.

### **Total Capital Costs**

Capital costs range from approximately \$95,000 to \$5.8 million, with a total of \$12.2 million. Land costs make up approximately \$2.8 million of the \$12.2 million. The cost per acre of development is approximately \$22,400.

## **RECOMMENDED FUTURE ACTIONS**

The recommended actions to address stormwater infrastructure needs are addressed in this section.

### **City-Wide Stormwater Master Plan for the Existing City**

The City does not have a City-wide storm drainage master plan with hydrologic and hydraulic models. The previous storm drain master plans did not incorporate modeling and therefore lacked information critical to infrastructure planning for the existing City. Consequently, the storm drain system improvements for the existing City areas identified in previous storm drain master plans may no longer be appropriate. This could result in some storm drain infrastructure being undersized, which could lead to flooding, or oversized which could lead to unnecessary infrastructure capital expenditures and increased operations and maintenance efforts and costs.

The City should complete a City-wide storm drainage master plan, including hydrologic and hydraulic models for existing land use conditions. The master plan should identify the future stormwater infrastructure needs to solve existing stormwater system deficiencies. The City's current stormwater fee program is insufficient to fund the required operations and maintenance needs of the City's aging stormwater and flood control infrastructure and insufficient to fund the required future repairs and replacements for the existing facilities. The City stormwater fee program should be revised based on the updated storm drainage master plan, operations and maintenance requirements, and future repairs and replacements to ensure the City collects enough money to adequately operate and maintain the existing system and construct the required future repairs and replacements.

### **City-Wide Stormwater Master Plan for the Future Development**

The City does not have a City-wide storm drainage master plan with hydrologic and hydraulic models. The previous storm drain master plans did not incorporate modeling and therefore lacked information critical to infrastructure planning for future development. In addition, the projected land uses for 2040 are different than the buildout land uses from the 2035 General Plan. Consequently, the storm drain system improvements identified in previous storm drain master plans may no longer be appropriate. This could result in some storm drain infrastructure being

undersized, which could lead to flooding, or oversized which could lead to unnecessary infrastructure capital expenditures and increased operations and maintenance efforts and costs.

The City should complete a City-wide stormwater master plan, including hydrologic and hydraulic models for the 2040 land uses. The master plan should identify the future stormwater infrastructure needs and develop a capital improvement plan that is adequate to fund improvements needed for the City to serve the future development, including both infrastructure capital costs and future system operation and maintenance costs.

### **Future Development-Specific Stormwater Drainage and Flood Control Plans**

This stormwater study is a high-level assessment of required detention volume and pumping capacity for the Study Areas, and does not assess storm drainage piping facilities. These facilities are sized based on generalized land use data and preliminary engineering evaluations, and it is difficult to size stormwater facilities without knowing the layout of the development and site-specific constraints.

The City should require each new development to prepare a stormwater drainage and flood control plan covering drainage (storm drains, detention basins, pump stations, and associated hydrologic and hydraulic models *etc.*) and flood control. As development projects progress, the specific infrastructure serving the development should be reviewed and verified using the updated storm drain master plan models. The models should be used to identify both on-site and off-site development related infrastructure requirements. The development projects should be required to construct the identified on-site and to fund or construct the off-site infrastructure.

### **Future Development-Specific Stormwater Quality and Permitting Plans**

This study does not fully consider the sizing of detention basins or other facilities to address stormwater quality and stormwater pollution control measures. Stockton has a Phase 1 Municipal Separate Storm Sewer System permit that requires stormwater quality be considered. In addition, the State of California recently mandated that trash should be captured from stormwater runoff in high generating trash land use areas, including commercial, industrial, and high density residential areas. It is difficult to size these trash capture and stormwater quality systems without knowing the layout plan of the developing area.

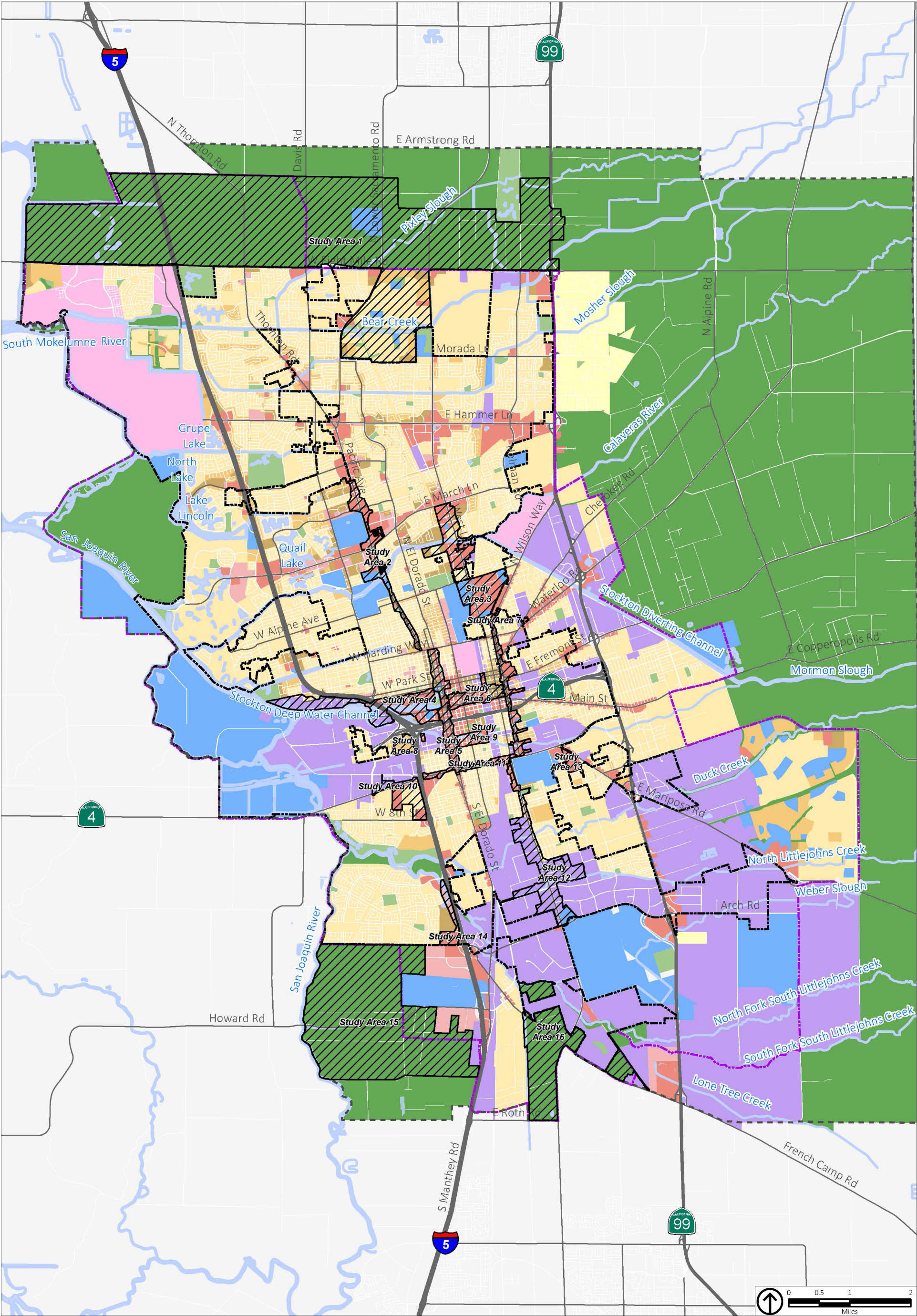
Each Study Area should develop a Stormwater Quality and Permitting Plan that is consistent with Stockton's Stormwater Quality Control Criteria Plan (March 2009) and is consistent with the City's trash control requirements. The Stormwater Quality and Permitting Plans could be combined with the Stormwater Drainage and Flood Control Plans into a single document.

## CONCLUSIONS

Stormwater infrastructure conclusions are provided below:

- Detention basins and pump stations were sized to account for the net increase in the Study Areas.
- Areas that are already developed and/or already have capacity for buildout conditions were assumed to not need additional detention facilities.
- The estimated total capital costs of storm drain detention basins and pump stations is \$11.8 million.
- The estimated cost of detention basins and pumping facilities for developing areas was estimated to be approximately \$21,600 /acre of development.
- The analyses and conclusions presented in this TM are based on generalized land use data and preliminary engineering evaluations. All these evaluations should be refined and updated through detailed evaluations of each specific development project.





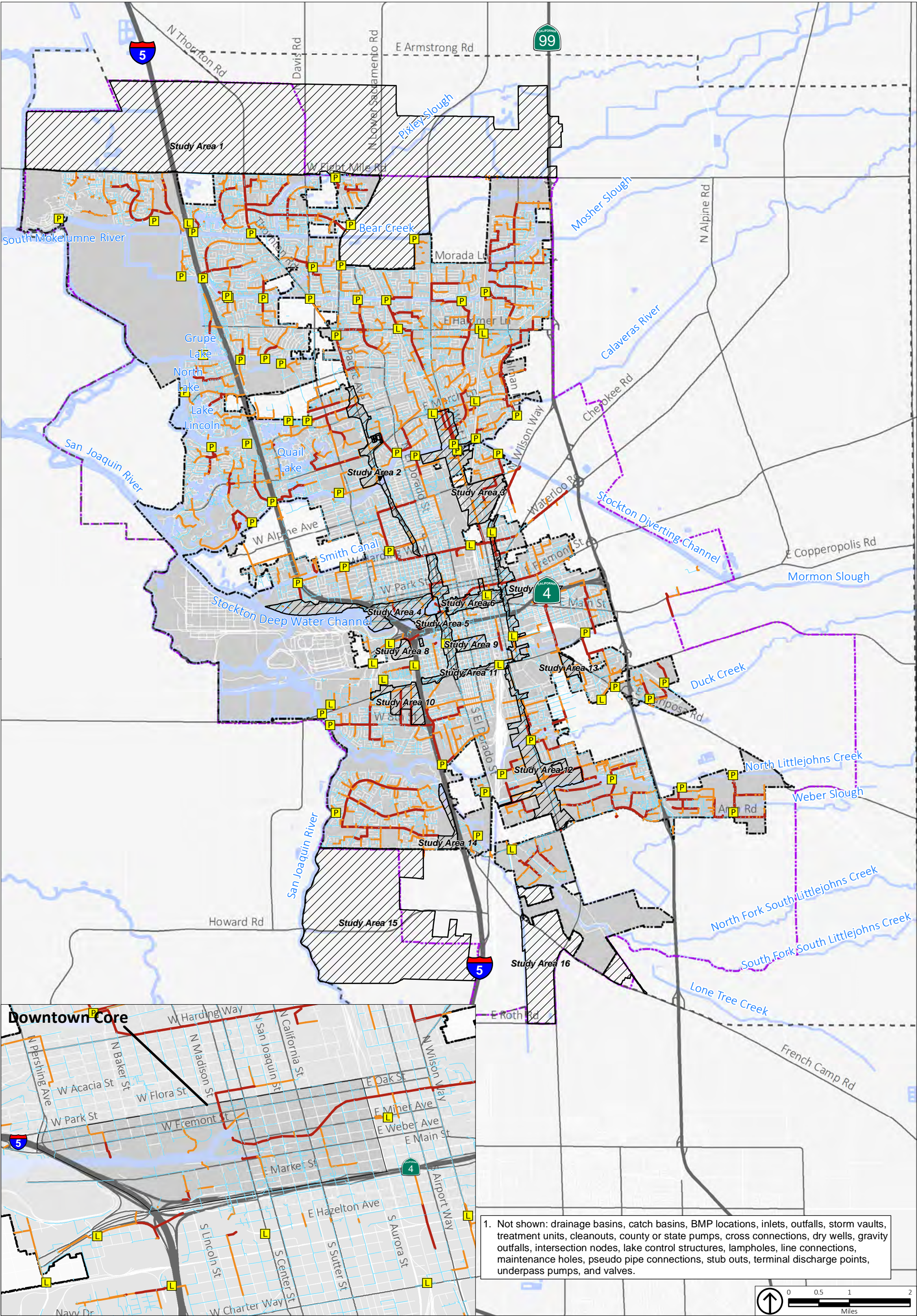
Source: City of Stockton, August 2017.

- |                                |                            |                             |                                   |
|--------------------------------|----------------------------|-----------------------------|-----------------------------------|
| --- General Plan Planning Area | Residential Estate         | Mixed Use                   | Economic and Education Enterprise |
| --- City Limit                 | Low Density Residential    | Commercial                  | Institutional                     |
| --- Sphere of Influence        | Medium Density Residential | Administrative Professional | Parks and Recreation              |
| --- MajorCreeksCAD             | High Density Residential   | Industrial                  | Open Space/Agriculture            |

Figure 1

2017 Preferred 2040 Land Uses





**Existing Storm Facility Existing Storm Drain (Diameter)**

Lift Station	< 22 Inches
Pump Station	24 - 36 Inches
Study Areas	>39 Inches
	MajorCreeksCAD

Figure 2  
Storm System Facilities



## **ATTACHMENT A**

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Land Use Data Received from Placeworks and Buildout Land Use Map

Acreage Gross or Net	Study Area Name	Single Family Net New 2040	Single Family Net New 2040	Single Family Net New 2040 + Existing	Single Family Net New 2040 + Existing	Multi Family Net New 2040	Multi Family Net New 2040	Multi Family Net New 2040 + Existing	Multi Family Net New 2040 + Existing	Commercial Net New 2040	Commercial Net New 2040	Commercial Net New 2040	Commercial Net New 2040	Commercial Net New 2040	Commercial Net New 2040	Commercial Net New 2040	Commercial Net New 2040 + Existing	Commercial Net New 2040 + Existing	Industrial Net New 2040	Industrial Net New 2040 + Existing
		Units	Acres	Units	Acres	Units	Acres	Units	Acres	Total Square Feet	0.3 FAR Sq Ft	0.5 FAR Sq Ft	5.0 FAR Sq Ft	0.3 FAR Acres	0.5 FAR Acres	5.0 FAR Acres	Sq Ft	Acres	Sq Ft	Sq Ft
Gross	Study Area 1 - Eight Mile Rd Area	1,379	646	1,500	663	1,198	209	1,294	217	39,408	39,408	0	0	15	0	0	241,408	20	0	105,400
Net	Study Area 2 - Pacific Ave Corridor	0	0	22	4	110	19	224	22	93,961	93,961	0	0	17	0	0	1,560,846	103	0	1,980
Net	Study Area 3 - West Ln and Alpine Rd Area	77	13	285	52	680	120	774	125	323,399	323,399	0	0	102	0	0	975,325	163	0	1,423,576
Net	Study Area 4 - Port/Waterfront	17	3	71	11	1,770	33	2,058	42	2,040,010	6,100	0	2,033,911	2	0	31	2,865,512	62	580,859	1,739,495
Net	Study Area 5 - El Dorado/Center Corridors	0	0	45	6	1,196	22	1,555	30	1,310,216	0	0	1,310,216	0	0	21	2,158,663	53	0	258,300
Net	Study Area 6 - Miner/Weber Corridors <sup>(a)</sup>	0	0	47	4	1,248	22	1,467	27	1,463,025	0	0	1,463,025	0	0	14	2,152,972	33	0	187,300
Net	Study Area 7 - Wilson Way Corridor	0	0	12	2	234	27	240	28	606,716	103,753	0	502,963	19	0	5	1,321,076	65	0	390,342
Net	Study Area 8 - I-5/Highway 4 Interchange	0	0	8	1	659	47	660	48	388,671	0	0	388,671	0	0	4	388,671	4	0	344,300
Net	Study Area 9 - Railroad Corridor at California St	0	0	19	2	1,340	24	1,363	25	1,299,279	0	0	1,299,279	0	0	24	1,365,999	26	0	182,658
Net	Study Area 10 - I-5 and Charter Way Area	86	15	314	58	98	42	127	46	133,864	133,864	0	0	42	0	0	377,363	77	83,678	203,939
Net	Study Area 11 - Charter Way/MLK Jr Blvd Corridor	0	0	5	0	396	15	396	15	323,733	9,597	0	314,135	6	0	7	703,670	38	0	0
Net	Study Area 12 - Airport Way Corridor	0	0	53	7	108	19	112	19	205,461	135,225	70,236	0	14	4	0	272,544	48	1,368,744	3,709,140
Net	Study Area 13 - Mariposa and Charter Area	0	0	12	4	0	0	77	6	80,944	80,944	0	0	25	0	0	93,560	28	0	0
Net	Study Area 14 - East Weston Ranch <sup>(b)</sup>	0	0	1	1	0	0	0	0	430,677	0	430,677	0	0	26	0	430,677	26	0	0
Net	Study Area 15 - South of French Camp Rd	0	0	89	76	0	0	9	6	0	0	0	0	0	0	0	0	0	0	1,700
Net	Study Area 16 - E French Camp Rd Area	0	0	59	123	0	0	4	9	0	0	0	0	0	0	0	5,100	17	0	4,900
Net	Outside of Study Areas <sup>(c)</sup>	1,501	246	77,964	14,117	0	0	33,183	1,916	0	0	0	0	0	0	0	23,811,089	1,607	0	46,620,901
	Grand Total	3,059	923	80,505	15,131	9,036	600	43,542	2,583	8,739,364	926,252	500,913	7,312,200	242	31	105	38,724,475	2,371	2,033,281	55,173,931
<sup>(a)</sup> Excludes Open Window approved project.																				
<sup>(b)</sup> Excludes Weston Ranch Town Center approved project.																				
<sup>(c)</sup> Excludes approved/pending projects.																				

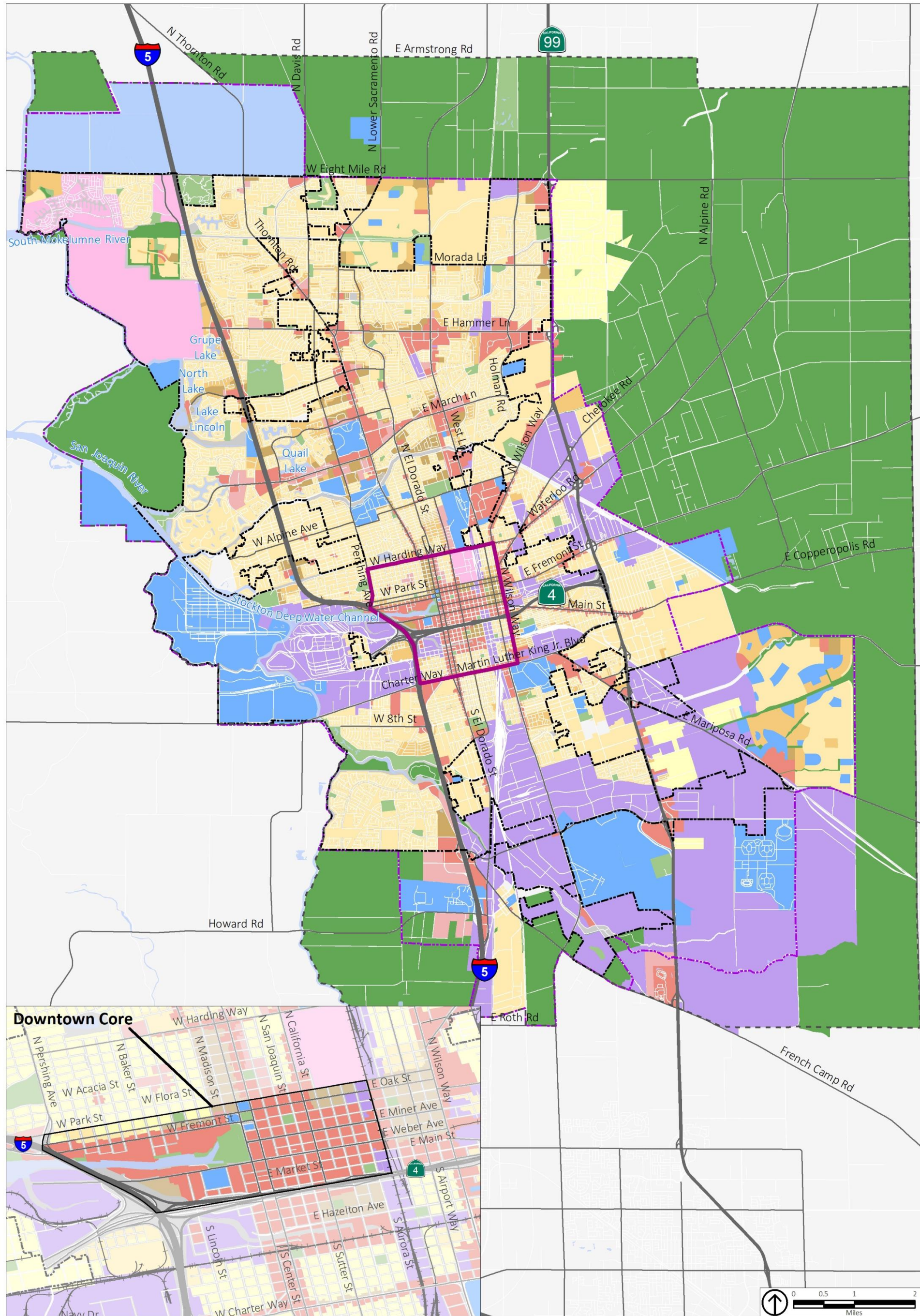
Acreage Gross or Net	Approved/Pending Projects Details	Net New						Full Build (2040)					
		Single Family Units	Single Family Acres	Multi-Family Units	Multi-Family Acres	Commercial Square Feet	Commercial Acres	Single Family Units	Single Family Acres	Multi-Family Units	Multi-Family Acres	Commercial Square Feet	Commercial Acres
Approved within city limit													
Gross	Westlake Villages	2,630	680	0		0		2,630	680	0		0	
Gross	Delta Cove	1,164	133	381	48	31,000	3	1,164	133	381	48	31,000	2.6
Gross	North Stockton Projects III	2,220	355	0		0		2,455	393	0		0	
Gross	Cannery Park	981	272	210	16	1,078,762	104	981	272	210	16	1,078,762	104
Gross	Nor Cal Logistics Center	0	0	0	0	0	0	0	0	0	0	0	0
Gross	Crystal Bay	951	19	392	79	0		951	19	392	79	0	0
Gross	Sanctuary	5,452	1,026	1,618	67	692,256	36	5,452	1,026	1,618	67	692,256	36
Gross	Tidewater Crossing	-310	-870	0		186,200	16	0	0	0		186,200	16
Net	Open Window <sup>(a)</sup>	0	0	1,391	12	-68,800	-1	0	0	1,400	12	290,000	12
Gross	Weston Ranch Town Center	0	0	0	0	481,000	41	0	0	0	0	481,000	41
Approved/pending outside city limit, inside SOI													
Gross	Mariposa Lakes	8,955	939	1,553	585	1,009,503	150	8,960	1,090	1,556	585	1,009,503	150
Gross	Airpark 599	0	0	0	0	1,678,500	128	0	0	0	0	1,678,500	128
Gross	Tra Vigne <sup>(b)</sup>	1,244	846	0	0	0	0	1,244	846	0	0	0	0
<sup>(a)</sup> The Master Development Plan for Open Window is approved for 1,034 units, with an option to expand the capacity to 1,400 units if the General Plan Update increases the maximum densities in the Downtown, which is being considered as part of this General Plan Update.													
<sup>(b)</sup> Pending; not approved.													

2040 Development Study Area												
	Net New Single Family Units (full buildout)	Percent applied to 2040	Net New Single Family Units (2040)	Net New Multi-Family Units (full buildout)	Percent applied to 2040	Net New Multi-Family Units (2040)	Net New Commercial Square Feet (full buildout)	Percent applied to 2040	Net New Commercial Square Feet (2040)	Net New Industrial Square Feet (full buildout)	Percent applied to 2040	Net New Industrial Square Feet (2040)
Study Area 1 – Eight Mile Rd Area	3,940	35%	1,380	3,420	35%	1,200	197,000	20%	39,000	0	0%	0
Study Area 2 – Pacific Ave Corridor	0	0%	0	440	25%	110	188,000	50%	94,000	0	0%	0
Study Area 3 – West Ln and Alpine Rd Area	80	100%	80	2,720	25%	680	1,294,000	25%	323,000	0	0%	0
Study Area 4 – Port/Waterfront	20	100%	20	2,210	80%	1,770	6,800,000	30%	2,040,000	2,323,000	25%	581,000
Study Area 5 – El Dorado/Center Corridors	0	0%	0	1,500	80%	1,200	4,367,000	30%	1,310,000	0	0%	0
Study Area 6 – Miner/Weber Corridors <sup>(a)</sup>	0	0%	0	1,560	80%	1,250	2,926,000	50%	1,463,000	0	0%	0
Study Area 7 – Wilson Way Corridor	0	0%	0	940	25%	230	1,213,000	50%	607,000	0	0%	0
Study Area 8 – I-5/Highway 4 Interchange	0	0%	0	820	80%	660	777,000	50%	389,000	0	0%	0
Study Area 9 – Railroad Corridor at California St	0	0%	0	1,680	80%	1,340	5,197,000	25%	1,299,000	0	0%	0
Study Area 10 – I-5 and Charter Way Area	90	100%	90	980	10%	100	535,000	25%	134,000	98,000	85%	84,000
Study Area 11 – Charter Way/MLK Jr Blvd Corridor	0	0%	0	790	50%	400	1,619,000	20%	324,000	0	0%	0
Study Area 12 – Airport Way Corridor	0	0%	0	430	25%	110	274,000	75%	205,000	5,475,000	25%	1,369,000
Study Area 13 – Mariposa and Charter Area	0	0%	0	570	0%	0	324,000	25%	81,000	0	0%	0
Study Area 14 – East Weston Ranch <sup>(b)</sup>	0	0%	0	610	0%	0	574,000	75%	431,000	0	0%	0
Study Area 15 – South of French Camp Rd	0	0%	0	0	0%	0	0	0%	0	0	0%	0
Study Area 16 – E French Camp Rd Area	0	0%	0	0	0%	0	0	0%	0	0	0%	0
Outside of Study Areas <sup>(c)</sup>	16,360	9%	1,500	29,810	0%	0	19,487,000	0%	0	126,805,000	0%	0
Grand Total <sup>(d)</sup>	20,480		3,060	48,470		9,040	45,773,000		8,739,000	134,701,000		2,033,000
<div><div><sup>(a)</sup></div><div>Excludes Open Window approved project.</div></div> <div><div><sup>(b)</sup></div><div>Excludes Weston Ranch Town Center approved project.</div></div> <div><div><sup>(c)</sup></div><div>Excludes approved/pending projects</div></div> <div><div><sup>(d)</sup></div><div>Numbers do not always add up due to rounding.</div></div> <div>The “full buildout” of the proposed General Plan assumes the maximum development of every parcel, combined with approved and pending developments throughout the Planning Area. The 2040 land uses are based on realistic land use demand projections. The full buildout of the General Plan would result in almost three times more new housing units and over 24 times more new non-residential development than estimated for 2040. Therefore, it is extremely unlikely that the full buildout would occur by the year 2040. Full buildout may not occur until well beyond the useful lifespan of the proposed infrastructure (for example, the lifespan of concrete structures is typically 50 to 75 years). Consequently, this infrastructure planning was based on the estimated 2040 level of development. This table is included in this TM to document the relationship between the buildout land uses and the 2040 land uses.</div>												

Source: PlaceWorks, 2017.



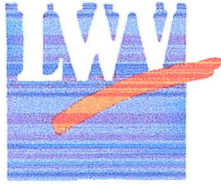
Figure 2-8  
General Plan Land Use Map



Source: City of Stockton, 2017; PlaceWorks, 2017.

- |                            |                            |                          |                                   |                        |
|----------------------------|----------------------------|--------------------------|-----------------------------------|------------------------|
| City Limit                 | Residential Estate         | High Density Residential | Administrative Professional       | Institutional          |
| Sphere of Influence        | Low Density Residential    | Mixed Use                | Industrial                        | Parks and Recreation   |
| General Plan Planning Area | Medium Density Residential | Commercial               | Economic and Education Enterprise | Open Space/Agriculture |
| Greater Downtown Boundary  |                            |                          |                                   |                        |





## League of Women Voters of San Joaquin County

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Post Office Box 4548 ■ Stockton, California 95204 ■ lwvsjc@gmail.com

October 8, 2018

Stockton Planning Commission  
Draft Envision Stockton 2040 General Plan.

Re: Adoption of Updated General Plan

Chairman Don Aguillard and Members of the Commission:

The League of Women Voters of San Joaquin County is opposed to housing and industrial development on the 3800 acres north of Eight Mile Road included in the proposed Envision Stockton 2040 General Plan Update.

A substantial amount of development is already approved and pending in North Stockton. According to General Plan Table 3-4, of the 29,300 housing units, 17,300 (59%) are in North Stockton- 12,700 in Northwest Stockton (Hammer to south of 8 Mile Road) and 4,600 in North Central and North East Stockton (Davis to Highway 99, south of 8 Mile Road). Additionally, there are 1,802,000 square feet of commercial space and 1,442,000 square feet of industrial space.

The area north of 8 Mile Road was added later in the planning process after discussion about locating a Stockton state university there. However the websites of several universities demonstrate that a university would consume very little of the 3800 acres:

- Chico, 119 acres
- Stanislaus, Turlock, 228 acres
- Stanislaus, Stockton, 102 acres
- Sacramento, 300 acres
- Fresno, 388 acres

Furthermore, the state's policy regarding enrollment growth is to maximize the capacity at existing campuses before adding new ones. (Legislative Analyst report, "Assessing UC and CSU Enrollment and Capacity", Jan 2017). The 102 acres in University Park is underutilized and, if the state's policy does not change, would be a candidate for future build out. It is interesting to note that the newest CSU-- Channel Islands-- was established on the grounds of the old Camarillo State Hospital. It replaced an off-campus center connected to CSU Northridge.

The League is of the opinion that the proposed 3800 acre addition will jeopardize growth and redevelopment in existing "infill" neighborhoods in other parts of Stockton. We support

reclassifying this to open space/agriculture with the idea of establishing a permanent buffer between Stockton and Lodi.

We appreciate the opportunity to submit our concerns for the updated Stockton General Plan and DEIR.

Sincerely yours

A handwritten signature in blue ink that reads "Kathy Casenave". The signature is fluid and cursive, with the first name "Kathy" and last name "Casenave" clearly distinguishable.

Kathy Casenave, President  
League of Women Voters of San Joaquin County

Cc: Stockton City Council  
Stockton Planning Department  
San Joaquin County Board of Supervisors

Resolution No.

## STOCKTON PLANNING COMMISSION

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### **RESOLUTION FORWARDING A RECOMMENDATION TO THE CITY COUNCIL TO APPROVE THE ENVISION STOCKTON 2040 GENERAL PLAN UPDATE, UTILITY MASTER PLAN SUPPLEMENTS, AND RELATED FINAL ENVIRONMENTAL IMPACT REPORT**

The City of Stockton has formulated a comprehensive, long-term General Plan Update, and related Utility Master Plan Supplements (UMPS) for the physical development of the City, which the General Plan contains each of the elements required by law to be a part of it; and

An update to the City's 2035 General Plan has been initiated to maintain compliance with State law; and

The Planning Commission held a duly noticed public hearing to consider the Envision Stockton 2040 General Plan Update, UMPS, and related Final Environmental Impact Report (FEIR) on October 25, 2018; now, therefore,

BE IT RESOLVED BY THE PLANNING COMMISSION OF THE CITY OF STOCKTON, AS FOLLOWS:

1. The Planning Commission hereby forwards a recommendation to the City Council to adopt the Envision Stockton 2040 General Plan Update, and UMPS, as set forth in Exhibit 1, attached hereto and incorporated by this reference, and related FEIR, based on the following findings. All findings below are supported by the corresponding evidence in the administrative record:

- a. The proposed Envision Stockton 2040 General Plan Update establishes appropriate goals, objectives, policies, and actions to address such issues as land use, housing, economic development, community health, community design, transportation and circulation, public facilities and services, recreation, safety, youth, education, and natural and cultural resources;
- b. The General Plan has been updated in conformity with the provisions of State law requirements of California Code Section 65300 et seq.
- c. The proposed amendment will not endanger, jeopardize, or otherwise constitute a hazard to the public convenience, health, interest, safety, or general welfare of persons residing or working in the City;
- d. The Planning Commission has reviewed and considered the FEIR for the Envision Stockton 2040 General Plan Update, and UMPS



and has recommended certification of the FEIR as being adequate under the California Environmental Quality Act (CEQA);

- e. The mitigation measures, the monitoring program to be implemented for each mitigation measure, the findings, and statement of overriding considerations as set forth in the Findings, Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Program documents on file at [www.stocktongov.com/envisionstockton](http://www.stocktongov.com/envisionstockton) are hereby recommended for adoption in relation to the proposed Envision Stockton 2040 General Plan Update and UMPS.

The statements, findings, and mitigation monitoring provisions are based on the above-referenced FEIR for the Envision Stockton 2040 General Plan Update and UMPS and other information available to the City Council are recommended for adoption in compliance with Sections 15091 and 15093 of the State CEQA Guidelines.

2. The Planning Commission hereby adopts a resolution recommending that the City Council approve:

- a. Certification of the Final Environmental Impact Report (FEIR);
- b. Envision Stockton 2040 General Plan Update;
- c. Utility Master Plan Supplements (UMPS).

PASSED, APPROVED, and ADOPTED: October 25, 2018.

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DON M. AGUILLARD, CHAIR  
CITY OF STOCKTON PLANNING COMMISSION

ATTEST:

\_\_\_\_\_  
DAVID KWONG, SECRETARY  
CITY OF STOCKTON PLANNING COMMISSION

Exhibit 1

[www.stocktongov.com/envisionstockton](http://www.stocktongov.com/envisionstockton)