

## **Section 1. INTRODUCTION**

*THE SACRAMENTO COUNTY WATER AGENCY (SCWA) ZONE 40 WATER SYSTEM INFRASTRUCTURE PLAN (WSIP) IS A STAFF LEVEL PLANNING TOOL THAT DESCRIBES THE FUTURE PLANNING ENVIRONMENT AND THE CHALLENGES THAT ARE CURRENTLY CONFRONTING SCWA IN PLANNING TO MEET CURRENT AND FUTURE WATER SUPPLY DEMANDS. THIS SECTION CONTAINS BACKGROUND INFORMATION INCLUDING A SYNOPSIS OF THE ZONE 40 WATER SUPPLY MASTER PLAN (WSMP) AND THE IMPORTANCE OF CURRENT PLANNING CONDITIONS ON THE DESIGN AND CONSTRUCTION OF WATER FACILITIES. THE DESCRIPTION OF SCWA ZONE 40 IS BUT A BRIEF BACKGROUND OF THE CURRENT PLANNING BOUNDARIES, HOW THEY CAME TO BE, AND THE RELATIONSHIPS WITH ADJOINING WATER PURVEYORS AND LAND AREAS.*

### **1.1 Purpose and Scope of the Water System Infrastructure Plan (WSIP)**

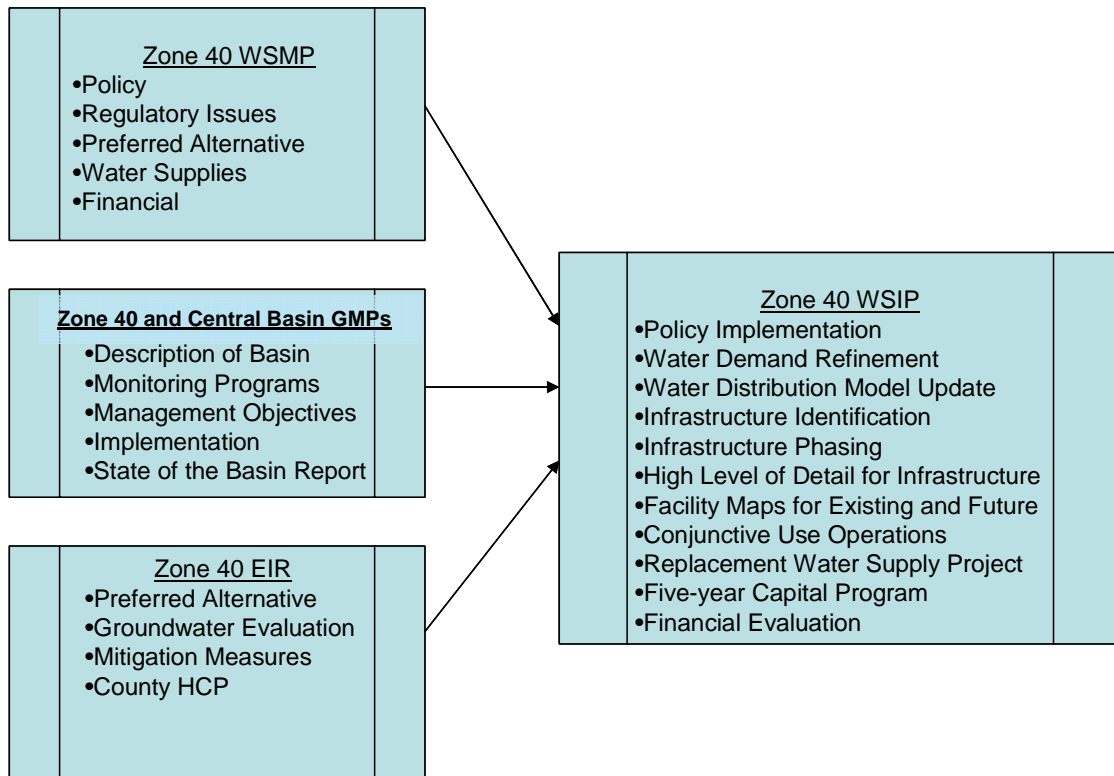
A Water System Infrastructure Plan (WSIP) is an important next step in the planning process for the Sacramento County Water Agency (SCWA) after completion and adoption of a Water Supply Master Plan (WSMP) for Zone 40. There are five primary documents, including the WSIP, that work together to form the planning basis for Zone 40. These are as follows:

- Draft Environmental Impact Report (EIR) for the Draft 2002 Zone 40 Water Supply Master Plan (EDAW, November 2003)
- Zone 40 Water Supply Master Plan (SCWA/MWH, February 2005)
- Zone 40 Groundwater Management Plan (SCWA/MWH, October 2004)
- Central Sacramento County Groundwater Management Plan (Central Basin GMP) (MWH, February 2006)
- Zone 40 Water System Infrastructure Plan (SCWA/MWH, November 2006)

**Figure 1-1** illustrates the relevant information contained in each document and how, when looked at together, form the basis for moving forward with a clear vision of what is needed from staff with the support of the SCWA Board of Directors.

**Figure 1-1. SCWA Document Information and Relationships**

SCWA Board Adopted Documents      Implementation Document for SCWA Staff



The WSMP provides policy and direction at a programmatic level that allows SCWA to move forward with an environmentally and socio-economically preferred major facility alternative for providing water supplies in Zone 40. The Zone 40 Groundwater Management Plan (GMP) is now superseded by the Central Basin GMP under the new governance structure of the Sacramento Central Groundwater Authority and sets forth objectives for managing the groundwater basin underlying Zone 40 and establishes

parameters for monitoring and reporting on the performance of the management strategies. The WSIP provides more project level detail that is necessary for implementation of the preferred alternative and fills in the gaps of associated smaller infrastructure requirements. This includes describing facility construction and phasing, including operational requirements from existing conditions through ultimate build-out of the water system.

It is intended that the WSIP be the most dynamic document and perhaps the most widely used by planners and designers of Zone 40 facilities. Very little overlap exists between the WSIP and the above referenced planning documents unless it is necessary for the purpose of updating or refining an element of the Zone 40 program or to provide context to a particular issue, facility, or facility phasing program.

The purpose of this WSIP is to describe and quantify the facilities necessary to extract, treat, convey, and retail/wholesale groundwater; purchase wholesale water from the City of Sacramento for the portion of Zone 40 within the City of Sacramento (City) American River Place of Use (POU) and retail to Zone 41 customers; and treat, convey, and retail/wholesale surface water at the future Vineyard Surface Water Treatment Plant (Vineyard SWTP) currently under design. It is not the intent of this document to reiterate what is provided in the above planning documents. The WSIP is intended to be a planning document for SCWA staff and design engineers for Zone 40 facilities. For instance, significant design issues related to the interaction of facilities and events such as the construction of the Vineyard SWTP or development within the wholesale area of the City's POU will be investigated and detailed to show sizing and timing of facilities throughout Zone 40.

Unlike other planning documents where build-out facilities are typically viewed as the "project", the WSIP describes four phases of demand growth that represent significant milestones in water supply development within Zone 40 and reflect the anticipated pattern of development through build-out of the 2030 study area as defined by the WSMP. These four phases represent existing conditions, 2010/11 conditions (first phase

of the Vineyard SWTP), 2020 conditions (second phase expansion of Vineyard SWTP), and 2030 conditions (build-out) with each year representing a specific level of water demand.

Both the water demand and the year are important to consider when using this document. For instance, some projects like the Vineyard SWTP are going to be constructed based on how much time it takes to plan, design, finance, and construct the facility regardless of demand. Whereas, other projects such as groundwater treatment plants or transmission pipelines, will be based on when development occurs and/or when demands reach a certain level. If growth slows down, the first phase of the Vineyard SWTP will still likely be constructed because of the need for conjunctive use of surface water in Zone 40, but the second phase expansion of the Vineyard SWTP and construction of other facilities may be delayed.

## **1.2 Background**

Detailed background information on Zone 40 is included in Section 1 of the WSMP. **Section 1.2** of the WSIP summarizes only portions of the WSMP where it provides beneficial context to the information presented herein.

In 1985, the SCWA Board of Directors formed Zone 40 as a special benefit zone in recognition of the need to supplement available groundwater supplies to support new and projected development in the Laguna area (immediately south of the current City Limit). The original water supply master plan (1987 Plan) established the framework for a conjunctive use program that utilized surface water from the City and underlying groundwater. This original concept of conjunctive use formed the basis for Zone 40's purpose to build the necessary infrastructure to effectuate conjunctive use in the region. SCWA Ordinance No. 18 was adopted in 1986 and authorized the collection of fees and a small component of user rates (special capital development fee) to pay for the proposed conjunctive use program. To date, much of the Zone 40 water distribution system, including transmission mains (T-mains) and distribution mains (D-mains), have been constructed based on the 1987 Plan.

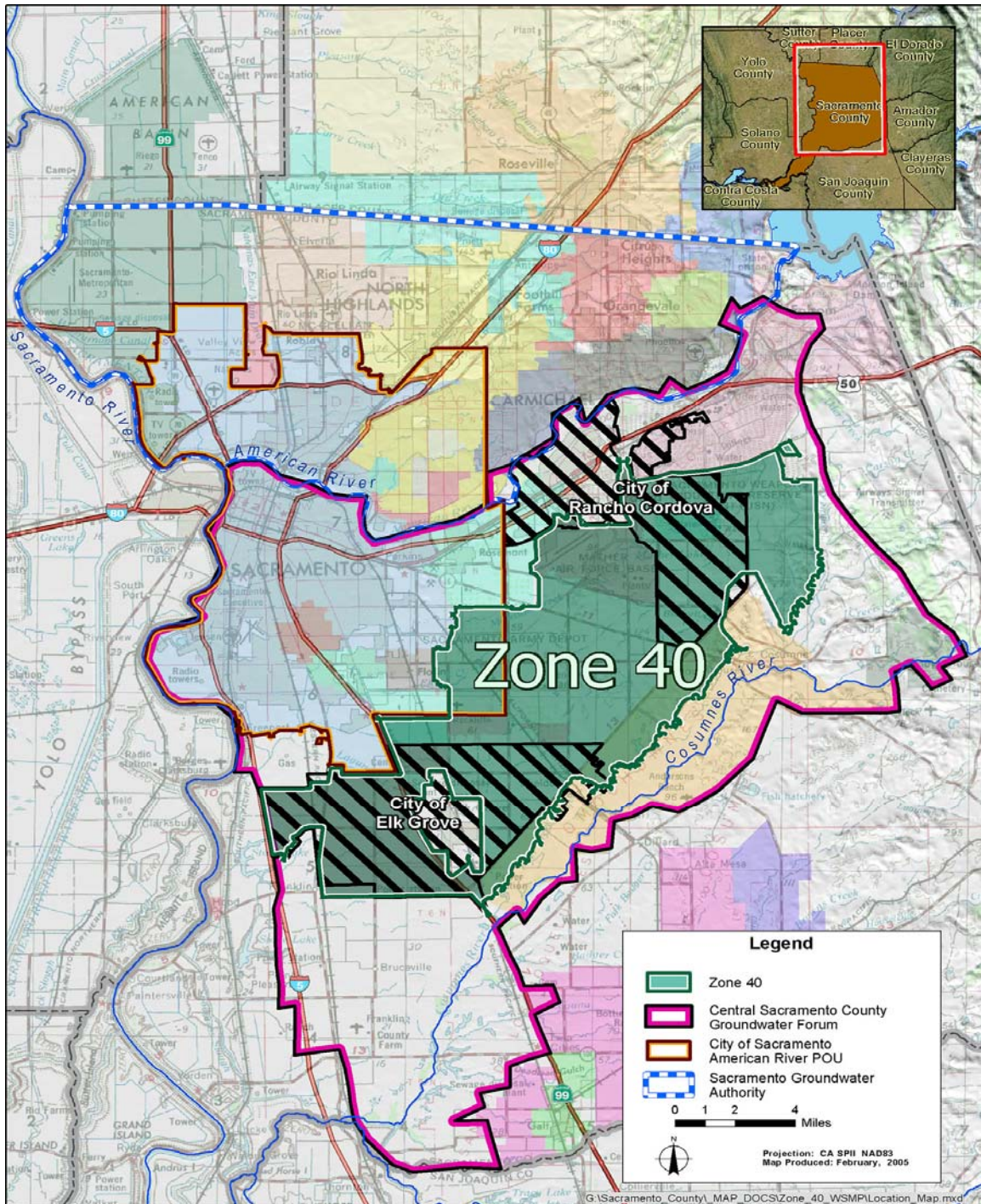
Several significant changes have occurred since the inception of the original 1987 Plan which have been addressed in the WSMP and in the WSIP. Some of the more significant challenges relate to changed conditions under the Water Forum Agreement (WFA). A brief description of each challenge, including its importance as it relates to the preparation of this document, is included below.

- **The Sacramento Area Water Forum (Water Forum) (see Section 1 of WSMP for a more detailed description) and its role in water supply planning in the Sacramento Region** – The Water Forum, through the Sacramento Area Water Forum Successor Effort takes the lead on monitoring, reporting and providing policy direction for water supply planning and implementation as it relates to compliance with the WFA and addressing changed conditions as they arise.
- **Conditions (see Section 1 of WSMP for list of conditions and Appendix A of WSMP for full copy) contained within the SCWA Water Forum Purveyor Specific Agreement (PSA)** – The SCWA PSA is part of the WFA and sets forth conditions on the use of surface water, groundwater, recycled water, and water conservation. These are included as set constraints within both the WSMP and WSIP.
- **A long term average sustainable yield of groundwater supplies as per the PSA** – The WSMP provides an estimate of the long-term average use of groundwater by SCWA within Zone 40. The groundwater underlying Zone 40 is part of a larger groundwater basin called the Central Sacramento County Groundwater Basin (Central Basin). In accordance with the Groundwater Element of the WFA, the Central Sacramento County Groundwater Forum (Groundwater Forum) negotiated a governance body known as the Sacramento Central Groundwater Authority and completed the development of the Central Basin GMP which contains a set of Basin Management Objectives (BMOs) with set trigger points that when exceeded, specific actions take place by the governance body to enforce the BMO or, in some cases, modify the BMO if it is deemed acceptable by the basin stakeholders. The BMOs provide a means to ensure a viable groundwater resource for all basin stakeholders.

SCWA adopted an interim Zone 40 GMP in October 2004 to operate under until the Central Basin GMP is formally adopted by the Sacramento Central Groundwater Authority estimated to take place in late 2006. The WSIP and its operations schema are in compliance with the Central Basin GMP and the adopted Zone 40 GMP.

- **An expanded SCWA Zone 40 and associated increased water demand** – The Zone 40 boundaries under the 1987 Plan were expanded in the late 1990’s to include new growth areas in the northeast portion of the Central Basin (see **Figure 1-2**). These boundaries now include portions of the City of Elk Grove and Rancho Cordova and the unincorporated County in between. Development of areas outside Zone 40’s 2030 study area increases projected water demands significantly beyond those identified in the WFA.

Figure 1-2. SCWA Zone 40 Location Map



- **Groundwater contamination reducing underlying groundwater yields for potable uses** – Groundwater contamination is a significant constraint in developing and maintaining groundwater production in the northeast portion of Zone 40. Significant groundwater remediation activities are underway in the Rancho Cordova area as a result of groundwater contamination caused by various military and rocket engine production activities. Over the past eight years, groundwater contamination resulting from previous operations at Aerojet and Boeing facilities have resulted in the loss of SCWA wells located in the Mather and Sunrise Corridor areas and continue to threaten operable wells in both SCWA and adjacent water purveyor service areas. This impact has resulted in more reliance on available surface water supplies or on treated groundwater supplies from Aerojet and Boeing’s cleanup operations (remediated water) that is discharged to surface water streams and rivers.
  
- **Agreements between SCWA and Aerojet and Boeing to recover lost groundwater supplies due to groundwater contamination** – Because of the loss of available groundwater supplies to the Central Basin as a result of groundwater contamination, SCWA entered into agreements with Aerojet and Boeing which gave ownership of the remediated groundwater to SCWA in exchange for SCWA’s commitment to meet certain replacement water supply obligations and potential new water supply requirements in the Rancho Cordova area. These water supply commitments are part of the East Sacramento County Replacement Water Supply Project (Replacement Water Supply Project). The Replacement Water Supply Project has been defined as remediated groundwater discharged at various points to surface water bodies that flow to the American River. Part of this water flows down the Folsom South Canal to meet replacement water supply needs in Rancho Cordova and environmental water supply needs on the Cosumnes River. The balance of the water flows down the American River and into the Sacramento River to be diverted by SCWA at the Freeport Regional Water Authority’s (FRWA) Freeport Diversion facility to be constructed in 2007/08. The WSIP will account for the portion of this water that will be diverted off the Sacramento River under the terms of the agreement.



**Replacement Water Supply Agreements** - On August 27, 2003, SCWA and Aerojet-General Corporation (Aerojet) executed an agreement titled, Agreement between Sacramento County, the Sacramento County Water Agency, and Aerojet-General Corporation with Respect to Groundwater and Related issues within the Eastern Portion of Sacramento County. On August 29, 2003, SCWA and McDonnell Douglas Corporation (MDC) executed an agreement titled, Agreement Between Sacramento County, the Sacramento County Water Agency, and McDonnell Douglas Corporation with Respect to Groundwater and Related issues within the Eastern Portion of Sacramento County. These two agreements are collectively labeled as the Aerojet Agreement.

The Aerojet Agreement grants all remediated groundwater (up to an approximate amount of 35,000 AF/year) to the SCWA and, by this act, provides for the replacement of water supplies lost due to groundwater contamination by SCWA, American States Water Company (now known as Golden State Water Company) and California American Water Company (Cal-Am). The Agreement is not specific on how these replacement water supplies will be delivered to the affected purveyors and places the responsibility upon SCWA in developing an Eastern Sacramento County Replacement Water Supply Project (RWSP) that will address these water supply needs.

At the time the Aerojet Agreement was executed, the plan included conveyance and discharge of the treated groundwater to either Alder Creek or the Lake Natoma stilling basin and diversion and treatment off the Folsom South Canal (FSC) with a surface water treatment plant (WTP) located near Douglas Road and Sunrise Boulevard. Capacity at the Douglas WTP was to be based on meeting replacement and new development (Rio Del Oro and Westborough) water demands as outlined in the Aerojet Agreement. Zone 40's conveyance system was also assumed to be modified such that it could convey the Lands of Aerojet water for new development, and replacement water to an agreed upon point of connection with the affected purveyor(s).

- **Role of the City in wheeling and wholesaling treated water supplies to Zone 40** – The City and SCWA currently have a wheeling agreement to treat and convey a portion of SCWA's Central Valley Project (CVP) contract water to Zone 40. This agreement is for non-dedicated capacity which could affect delivery of water during periods of maximum demand by having it shut off by the City due to low pressures in their service area. A portion of Zone 40 is located within the City's POU which

makes it eligible to receive treated American River water from the City on a permanent wholesale basis. The City would like to develop a master wheeling/wholesale agreement with SCWA that would supersede the existing agreement and include deliveries to the POU area. Water supply to the POU area of Zone 40 will ultimately be isolated by check valves from the rest of Zone 40 because of the need to keep the POU water within a specified area. The reason for the isolation is because there is no reasonable way to insure the proper volume of water is utilized in that area. The check valves will allow for Zone 40 water to meet water demands in the POU area of Zone 40 in the event City supplies are curtailed.

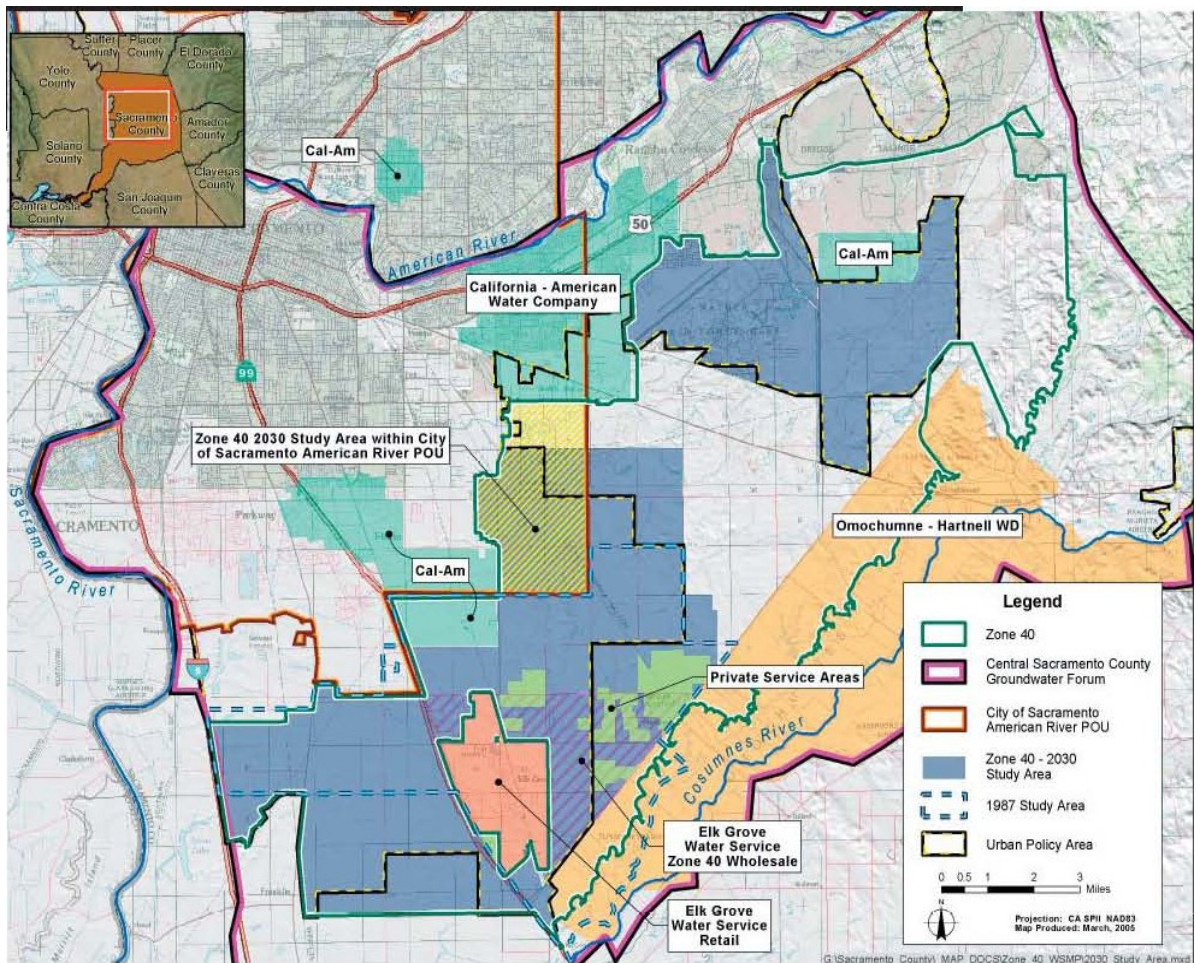
- **Wholesale delivery by SCWA to retail water purveyors that lie within and outside current Zone 40 boundaries** – Within Zone 40 there are water purveyors that have expressed a need to purchase water from SCWA on a wholesale basis. Some of this need is a result of groundwater contamination reducing or eliminating the purveyor’s ability to produce their own supply or from a need to participate in Zone 40’s conjunctive use program and not rely solely on groundwater as a source of supply. In either case, Zone 40 will need to plan the infrastructure necessary to produce and deliver treated water to designated points of connection with these water purveyors. Both cases are addressed in the WSIP. This will include looking at the incremental capacity needed to serve these areas and the timing of construction of necessary infrastructure to meet the water wholesale needs.
  
- **Availability of FRWA facilities (diversion structure and raw water pipeline) and the Vineyard Surface Water Treatment Plant (Vineyard SWTP)** – Much of the ability of SCWA to meet increasing water demands in Zone 40 is dependent on the availability of the FRWA and Vineyard SWTP facilities. The Vineyard SWTP is integral to the planning documents and financial programs that are currently in place and further evaluated as part of the WSIP (the location of these facilities are in **Section 6**. Issues related to the overall reliability of the Vineyard SWTP and the adsorption of the surface water supplies by the system over differing hydrologic conditions are but a few of the issues addressed in some detail within this WSIP.

- **Sacramento Regional County Sanitation District’s (SRCSD) Recycled Water Program** – The SRCSD is currently developing a recycled water master plan that may provide opportunities for expanded use of recycled water within Zone 40. A limited amount of recycled water is already being used in Zone 40, and expansion of this type of use is supported by SCWA. Due to uncertainties associated with the final outcome of the master plan, this WSIP only contemplates the use of recycled water but does not foresee it as a significant or growing source of supply other than what is already planned for. Several “white papers” have been included in the **Appendix A** to provide some detail on the use of recycled water in undeveloped and developing areas of Zone 40.

### **1.3 Description of Zone 40’s 2030 Study Area**

While much of Zone 40 still consists of rural land uses, (i.e., agricultural, agricultural/residential (Ag/res), and conservation reserve), urbanization has been occurring within the Cities of Elk Grove and Rancho Cordova, and in the Vineyard and Mather/Sunrise areas of the unincorporated County. The 2030 study area, as defined in the WSMP, consists of existing and developing industrial, commercial, office, and residential land uses within these urbanizing areas. The 2030 study area is approximately 46,600 acres and is shown as the gray area in **Figure 1-3**. Included in this figure are the areas of Zone 40 that lie within the City’s POU and areas where Zone 40 is a wholesaler to California American Water Company (Cal-Am) and Florin Resource Conservation District/Elk Grove Water Service (FRCD/EGWS). The study area boundaries generally coincide with the County’s Urban Policy Area (UPA), defined by the 1993 Sacramento County General Plan (County General Plan) as the area within which urban development and provision of infrastructure are expected to occur within the planning horizon of the County General Plan (2024). The 2030 study area also includes approximately 4,800 acres in four small areas that are outside the UPA to account for growth contemplated in the WFA from 2024 to 2030.

Figure 1-3. Zone 40 2030 Study Area



## 1.4 Report Overview

The following details the content of the various sections of the WSIP:

**Section 1. Introduction** – states the purpose and need for the WSIP, identifies and summarizes the primary planning documents for Zone 40, and describes the organization of this document.

**Section 2. Service Area Description** – provides a brief description and background of the Major Zone 40 Service Areas and existing and future land uses. This includes SCWA service to other water purveyors and adjacent areas.

**Section 3. Water Demand Evaluation** – includes a detailed breakdown of demands for each defined demand area of Zone 40 and provides the phasing of water demands over time.

**Section 4. Water Supply Availability** – fully describes each source of water and the reliability of existing and future water supplies including surface water, groundwater, and recycled water.

**Section 5. Water Distribution Model** – provides criteria identified by SCWA staff in the design and hydraulic modeling of the Zone 40 water system.

**Section 6. Infrastructure Requirements** – presents modeling results for a build-out water distribution system model, and a quantification of needed facilities and their operational criteria within the Study Area.

**Section 7. Conjunctive Use Operations** – provides a summary of the tools used and the thinking behind how the water distribution system and its many components can be operated to maximize surface water use and provide the highest level of reliability.

**Section 8. Financial Assessment** – provides a detailed accounting of infrastructure costs identified in the WSIP. This section also provides a 5-year Capital Improvement Program (CIP) and assesses the financing requirements to implement the CIP. This includes an evaluation of user rates and development fees for use in future rate and revenue bond studies for purposes of debt financing over the next 5 years.

**Section 9. Findings and Conclusions** – contains a brief primer on the WSIP's use by the water supply planner, designer, and operator, and contains recommendations for future facility planning, the frequency of updates to the WSIP, and criteria for refreshing the WSIP.

**SECTION 1. INTRODUCTION**  
**Sacramento County Water Agency Zone 40**  
**Zone 40 Water System Infrastructure Plan**

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