Salinas Valley: Langley Area Subbasin
Groundwater Sustainability Plan Amendment 1

VOLUME 1

Prepared for:

Salinas Valley Basin Groundwater Sustainability Agency

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ACRONYMS AND ABBREVIATIONS

AF ....acre-foot or acre-feet
AF/yr ....acre-feet per year
AEM..................airborne electromagnetic
Basin.................Salinas Valley Groundwater Basin
BLM ..................U.S. Bureau of Land Management
BMPs. ....Best Management Practices
Cal Water..........California Water Service Company
CASGEM ....California Statewide Groundwater Elevation Monitoring
CBI ....Consensus Building Institute
CCGC ....Central Coast Groundwater Coalition
CCRWQCB.......Central Coast Regional Water Quality Control Board
CCWG ....Central Coast Wetlands Group
CDFW...............California Department of Fish and Wildlife
CEQA ....California Environmental Quality Act
COC..................constituents of concern
CPE Actions .....Communication and Public Engagement Actions
CSD ....Castroville Community Services District
CSIP ....Castroville Seawater Intrusion Project
DACs ....Disadvantage Communities
DDW ....Division of Drinking Water
DEM..................Digital Elevation Model
DTSC................California Department of Toxic Substances Control
DWR ....California Department of Water Resources
EDAs ....Economically Distressed Areas
ET ....evapotranspiration
eWRIMS ....Electronic Water Rights Information Management System
GAMA ....Groundwater Ambient Monitoring and Assessment Program
GDE..................groundwater-dependent ecosystem
GEMS ....Monterey County Groundwater Extraction Monitoring System
GIS ....Geographic Information System
GMP ....Groundwater Management Plan
gpm ....gallons per minute
GSA ....Groundwater Sustainability Agency/Agencies
GSP or Plan......Groundwater Sustainability Plan
HCM ....hydrogeologic conceptual model
HCP ....Habitat Conservation Plan
ILRP..................Irrigated Lands Regulatory Program

IRWMP ....Integrated Regional Water Management Plan
ISW...................interconnected surface water
JPA...................Joint Powers Authority
MAR..................managed aquifer recharge
MCLs ....Maximum Contaminant Levels
MCWRA............Monterey County Water Resources Agency
NCCAG.............Natural Communities Commonly Associated with Groundwater
NCSS................National Cooperative Soil Survey
NHD..................National Hydrology Dataset
NRCS ....Natural Resources Conservation Service
OSWCR............Online System for Well Completion Report
RWMG..............Greater Monterey County Regional Water Management Group
SAGBI...............Soil Agricultural Groundwater Banking Index
SDACs..............Severely Disadvantaged Communities
SGMA...............Sustainable Groundwater Management Act
SMC..................Sustainable Management Criteria
SMCLs..............Secondary Maximum Contaminant Levels
SSURGO ....Gridded Soil Survey Geographic
Subbasin...........Langley Area Subbasin
SVBGSA...........Salinas Valley Basin Groundwater Sustainability Agency
SVIHM ....Salinas Valley Integrated Hydrologic Model
SVOM ....Salinas Valley Operational Model
SWRCB ....State Water Resources Control Board
TNC ....the Nature Conservancy
URCs................Underrepresented Communities
USFWS.............U.S. Fish and Wildlife Service
USGS ...............U.S. Geological Survey

1 INTRODUCTION TO THE LANGLEY AREA SUBBASIN GROUNDWATER SUSTAINABILITY PLAN AMENDMENT 1

1.1 Introduction and Purpose

The 2014 Sustainable Groundwater Management Act (SGMA) requires groundwater basins or subbasins that are designated as medium or high priority to be managed sustainably. In general, satisfying the requirements of SGMA involves 4 activities:

1. Forming 1 or more Groundwater Sustainability Agencies (GSAs) in the basin
2. Developing a Groundwater Sustainability Plan (GSP, or Plan)
3. Implementing the GSP and managing to measurable, quantifiable objectives
4. Providing regular reports to the California Department of Water Resources (DWR)

DWR has designated the Salinas Valley – Langley Area Subbasin (Subbasin, on Langley Subbasin) as a high-priority basin. The Langley Subbasin—1 of 9 subbasins in the Salinas Valley Groundwater Basin—is located along the northern edge of the Salinas Valley (Figure 1-1).

Recharge within the Langley Subbasin primarily occurs from percolation of precipitation along the small drainages within the area. However, groundwater extraction from numerous small water systems and domestic wells, as well as agriculture in the southern part of the Subbasin, puts pressure on maintaining groundwater elevations. This is compounded by the limited aquifer space due to the shallow granite bedrock of the Gabilan Range. The purpose of this GSP is to outline how the Salinas Valley Basin GSA (SVBGSA) will address the groundwater conditions and achieve groundwater sustainability in the Subbasin. Sustainability is the absence of undesirable results for any of the 6 sustainability indicators applicable in the Subbasin: chronic lowering of groundwater levels, groundwater storage reductions, seawater intrusion, degradation of groundwater quality degradation, land subsidence, and interconnected surface water (ISW) depletion. Sustainability must be achieved by 2042 and maintained for an additional 30 years.

In 2022, SVBGSA submitted the GSP for the Langley Subbasin (original GSP) that outlined how it would adaptively manage groundwater. Also in 2022, SVBGSA submitted GSPs or GSP Amendment for the 5 other Salinas Valley subbasins under its authority. The 6 GSPs are aligned in approach and timing for the 5-year periodic evaluations. This GSP Amendment 1 incorporates additional data about the groundwater basin, addresses recommended actions from DWR's review of the original GSP, and revises the goals for groundwater quality. This GSP Amendment 1 is submitted to DWR according to GSP Regulation § 355.10, and replaces the original GSP. GSP Amendment 1 will be referred to as the GSP or GSP Amendment 1 in this document. It continues to meet all of the GSP regulatory requirements and is submitted with the 2027 Periodic Evaluation of the GSP Amendment 1, meeting GSP Regulations § 356.4.

This GSP Amendment 1 first describes the stakeholders, plan area, geologic and hydrogeologic data, groundwater conditions, and water budgets necessary to develop an informed and robust plan. This GSP is based on best available data and analyses. As additional data are collected and analyses are refined, the GSP will be modified to reflect changes in the local understanding.

Following the foundational information, the GSP introduces the current agreed-to sustainability goal for the Subbasin. It also locally defines significant and unreasonable conditions, which underpin the quantifiable minimum thresholds, measurable objectives, and interim milestones for each of the corresponding sustainability indicators. Collectively, the sustainability goal, and how conditions are measured relative to the goal, are referred to as Sustainable Management Criteria (SMC). The final chapters detail projects and actions that should be implemented and provide an implementation plan for achieving sustainability. The GSP is intended to include adaptive management that will refine the implementation and direction of this GSP over time.

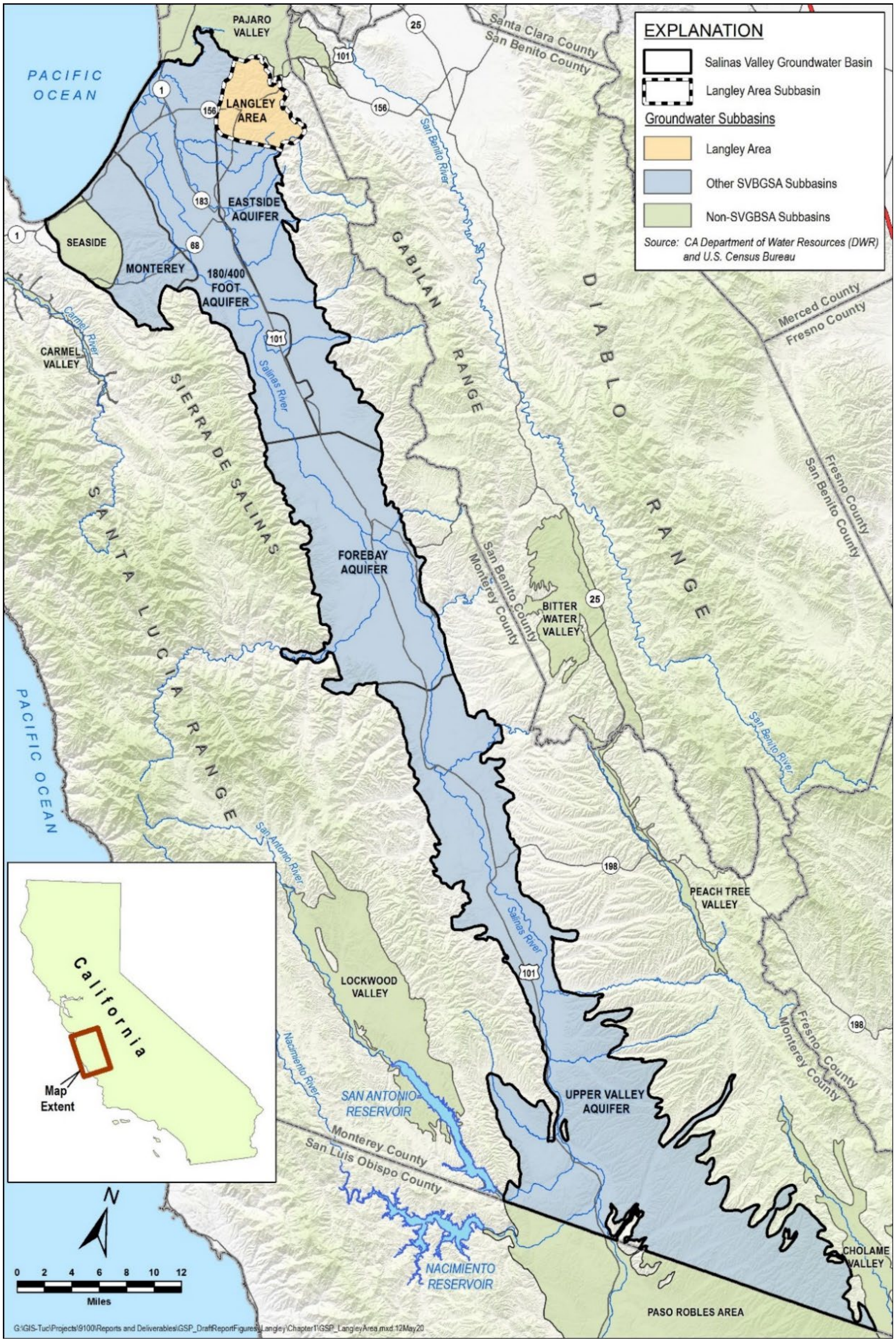

Figure 1-1. Langley Subbasin Location

1.2 Agency Information

The Langley Area Subbasin falls entirely within the jurisdiction of the SVBGSA. The Subbasin boundary is shown on Figure 1-2.

1.2.1 Agency Name, Mailing Address, and Plan Manager

Pursuant to California Water Code § 10723.8, the name and contact information for the SVBGSA are:

Salinas Valley Basin Groundwater Sustainability Agency
Attn.: Piret Harmon General Manager
1441 Schilling Place
Salinas, CA 93901
https://svbgsa.org

The Plan Manager and her contact information are:

Piret Harmon, General Manager
Salinas Valley Basin Groundwater Sustainability Agency
1441 Schilling Place
Salinas, CA 93901 | (831) 471-7518
harmonp@svbgsa.org
https://svbgsa.org

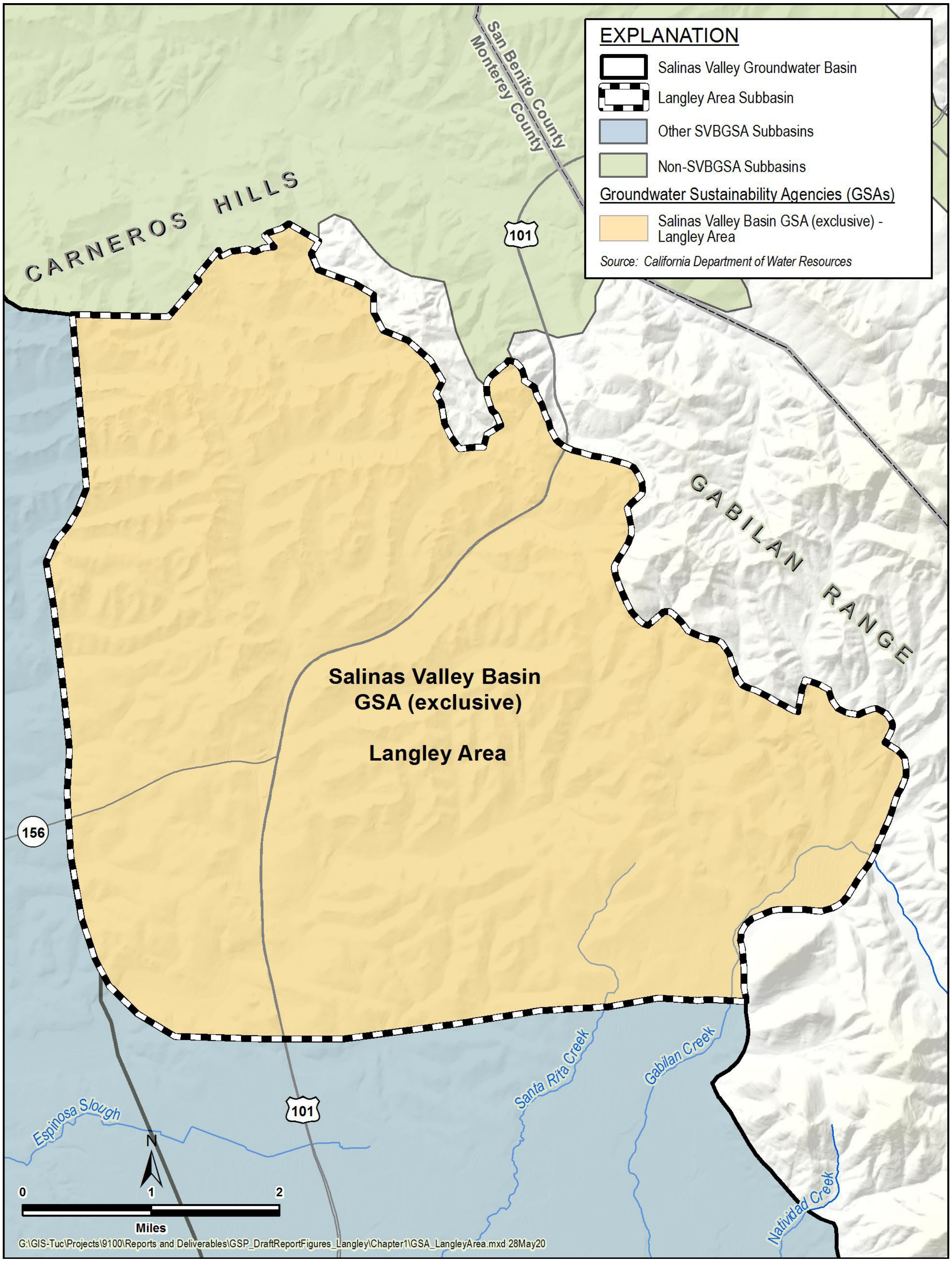

Figure 1-2. Map of Area Covered by the SVBGSA in the Langley Area Subbasin

1.2.2 SVBGSA

Local GSA-eligible entities formed the SVBGSA in 2017. The SVBGSA represents agriculture, public utility, municipal, county, and environmental stakeholders, and is partially or entirely responsible for developing GSPs in 6 of the Salinas Valley Groundwater Subbasins.

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SVBGSA is a Joint Powers Authority (JPA) that was formed for 6 subbasins within the Salinas Valley Groundwater Basin in accordance with the requirements of California Government Code § 6500 *et seq*. The JPA agreement is included in Appendix 1A. In accordance with California Water Code § 10723 *et seq.*, the JPA signatories are all local agencies under California Water Code § 10721 with water or land use authority that are independently eligible to serve as GSAs:

- County of Monterey
- City of Salinas
- City of Gonzales
- City of King
- Monterey County Water Resources Agency (MCWRA)
- City of Soledad
- Monterey One Water (M1W)
- Castroville Community Services District

1.2.2.1 SVBGSA Formation and Authority

The SVBGSA was formed in accordance with the requirements of California Water Code §10723 *et seq*. This section lists its specific authorities for GSA formation and groundwater management. Upon establishing itself as a GSA, the SVBGSA retains all the rights and authorities provided to GSAs under California Water Code § 10725 *et seq*. as well as the powers held in common by the members.

1.2.2.2 SVBGSA Governance

The SVBGSA is governed and administered by an 11-member Board of Directors (Board), representing public and private groundwater interests throughout the Valley, not limited to JPA members. The Board relies on robust science and public involvement for decision-making. Board seats include representatives from the City of Salinas (1), South County Cities (1), DACs/Small

Public Water Systems (1), California Public Utility Regulated Water Companies (1), Agriculture (4), Environment (1), and Public Member (1). The Board meets monthly and all meetings are open to the public. The Board is the final decision-making body for adoption and implementation of GSPs completed by the SVBGSA.

SVBGSA governance bodies include a Board of Directors, Budget and Finance Committee consisting of 5 Directors, an Executive Committee consisting of 5 Directors, a Planning Committee consisting of 5 Directors (not currently active), and an Advisory Committee. The SVBGSA's activities are coordinated by a general manager. This section provides an overview of SVBGSA governance.

For Board decision-making, when a quorum is present, a majority vote is required to conduct business. Some business items require a super majority vote or a super majority plus vote. A super majority requires an affirmative vote by 8 of the 11 Board members. A super majority vote is required for:

- GSP approval
- Budget amendment and transfer of appropriations
- Withdrawal or termination of Agency members

A super majority plus requires an affirmative vote by 8 of the 11 Board members, including an affirmative vote by 3 of the 4 agricultural representatives. A super majority plus vote is required for:

- Decisions to impose fees not requiring a vote of the electorate or property owners
- Proposals to submit to the electorate or property owners (as required by law) decisions to impose fees or taxes
- Limitations on well extractions (pumping limits)

In addition to the Board and its committees, SVBGSA has established Subbasin Committees to advise the Board of Directors on each of the 6 subbasins' respective GSPs under its jurisdiction.

Further, in the other subbasins, SVBGSA coordinates with other GSAs, including Marina Coast Water District GSA (MCWDGSA), Monterey County GSA (MCGSA), and Arroyo Seco Groundwater Sustainability Agency (ASGSA), as shown on Figure 1-3.

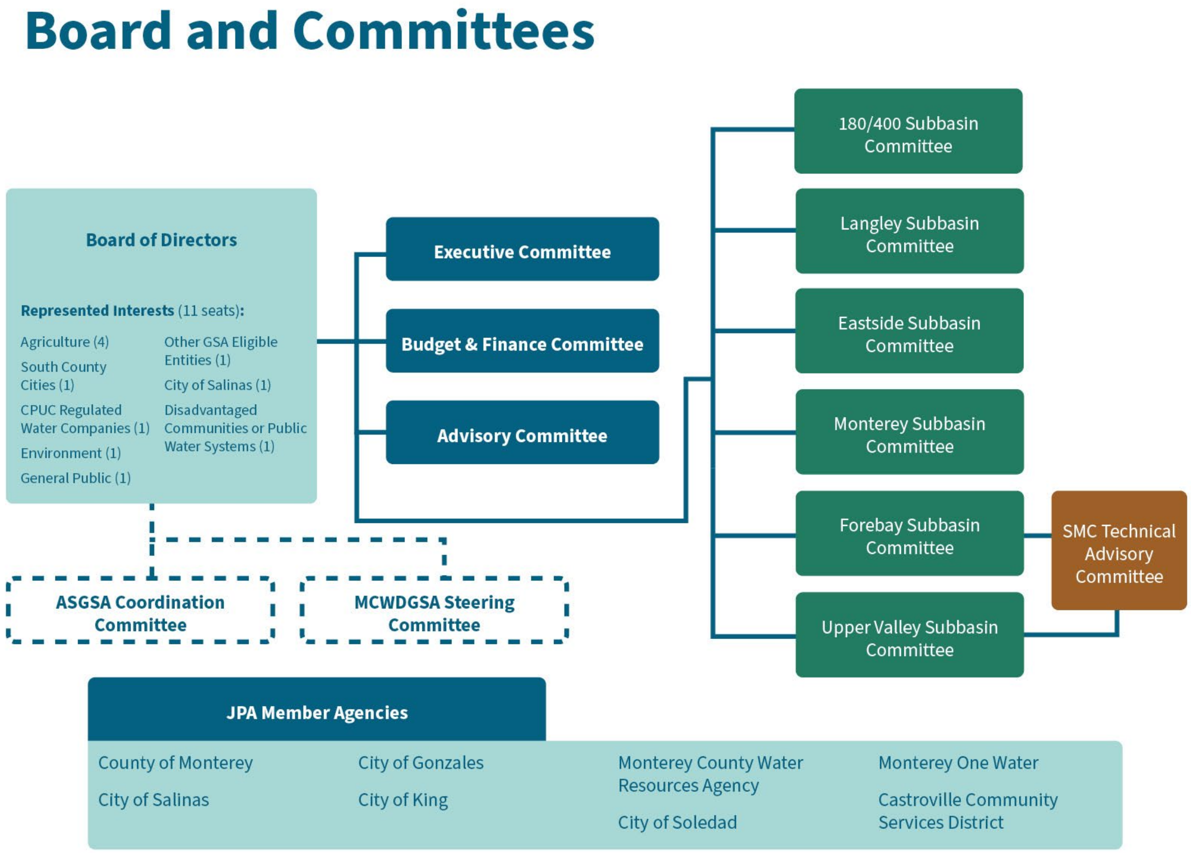


Figure 1-3. SVBGSA Board and Committees

The SVBGSA Advisory Committee provides input and recommendations to the SVBGSA Board. At the request of the Board, the Advisory Committee reviews and provides to them recommendations on groundwater-related issues. In 2025, the configuration and role of the Advisory Committee was updated. The Advisory Committee comprises 6 Subbasin Committee seats, 4 Partner Agency seats, and up to 3 of the Board-Designated seats. Collectively, members represent the diverse interests of groundwater users, partner agencies, and subbasin implementation areas. The Advisory Committee strives to include a range of interests in groundwater in the Salinas Valley and outlined in SGMA including:

- Subbasin Committees Representatives – Each subbasin implementation committee (e.g., 180/400, Eastside, Langley, Monterey, Forebay, and Upper Valley) nominates a single individual to serve as its representative on the Advisory Committee. The representative must demonstrate a record of involvement and interest in groundwater management or water-related issues in 1 of the subbasins and be endorsed by the respective subbasin committee.

- Partner Agency/Organization Representatives – The following agencies nominate and endorse 1 representative each:
    - MCWRA
    - Arroyo Seco GSA
    - MCWDGSA
    - M1W
- Board-Designated Appointments – The SVBGSA Board of Directors may appoint up to 3 individuals to serve on the Advisory Committee to fill identified gaps in representation (e.g., environmental, rural residential, tribal, industrial, underserved communities), enhance expertise or geographic balance and foster collaboration across sectors.

The Advisory Committee was established by Board action and operates according to a Committee Charter that serves as the bylaws of the Advisory Committee. The Committee's charge emphasizes:

- Reviewing groundwater issues relevant to SGMA implementation in the Salinas Valley
- Developing consensus-based recommendations that incorporate community and stakeholder perspectives
- Supporting the Board by identifying areas of agreement and disagreement and presenting clear, well-considered options

The Board established Subbasin Planning Committees in May 2020 to inform and guide planning for the 5 GSPs submitted in January 2022. In July 2021, the SVBGSA Board voted to create Subbasin Committees following GSP submittal to ensure continued involvement during GSP implementation. GSP Amendment 1, as well as GSP implementation, is guided and reviewed by the Langley Subbasin Committee, which is composed of local representatives from the Subbasin. The role of the Subbasin Committees as part of SVBGSA's community and public engagement strategies for GSP preparation and implementation is further discussed in Chapter 2.

Together, the Board, Advisory Committee, and Subbasin Committees are working to implement the 6 GSPs within the SVBGSA jurisdiction and in coordination with other GSAs. For the next phase of GSP implementation, SVBGSA will complete a Salinas Valley-wide Integrated Implementation Strategy (IIS). This strategy will detail project portfolios and groundwater sustainability programs needed to achieve SGMA compliance across all subbasins by 2042 and to maintain sustainability through 2070.

1.2.3 Agency Coordination

1.2.3.1 Coordination Agreements

No coordination agreement is needed for the Langley Subbasin because the SVBGSA is the only GSA with authority in the Subbasin.

1.2.3.2 Coordination with Other Water Agencies

SVBGSA continues to coordinate with agencies involved in water management within the Langley Subbasin. SVBGSA has a Memorandum of Understanding with MCWRA related to ongoing coordination and joint activities, as well as a service agreement for data collection under the Groundwater Monitoring Program. Further, MCWDGSA, Arroyo Seco GSA, M1W, and MCWRA have representation on the SVBGSA Advisory Committee.

SVBGSA has also coordinated with the agencies of the basins or subbasins adjacent to the Langley Subbasin and other Salinas Valley subbasins (Pajaro Valley Groundwater Basin, Seaside Basin, and Paso Robles Area Subbasin).

1.2.3.3 Coordination with Land Use Agencies

SVBGSA acknowledges the critical importance of coordinating water management and land use planning. SVBGSA is coordinating with land use authorities within the Subbasin, including the County of Monterey and the Cities of Salinas, Marina, and Gonzales. SVBGSA began coordination with land use agencies through meetings and requesting land use plan information to incorporate into GSP Amendments. SVBGSA will continue to coordinate with the County and cities by convening meetings with each jurisdiction to review the findings of the 5-year periodic evaluations and groundwater conditions, along with the land use plan information provided. This coordination is also described in the Land Use Coordination Program Implementation Action that is included in Chapter 9. This implementation action provides for more robust, ongoing coordination between the GSA and land use agencies during GSP implementation. [SVBGSA also solicited input from Monterey County, City of Salinas, City of Marina, and City of Gonzales prior to submitting GSP Amendment 1 to DWR, with the periodic evaluation, in January 2027.]

1.3 Overview of GSP Amendment 1

This GSP Amendment 1 is developed in concert with GSPs for 5 other Salinas Valley Groundwater Subbasins under SVBGSA jurisdiction: the 180/400-Foot Aquifer Subbasin (180/400 Subbasin), the Forebay Aquifer Subbasin (Forebay Subbasin), the Upper Valley Aquifer Subbasin (Upper Valley Subbasin), the Eastside Aquifer Subbasin (Eastside Subbasin), and the Monterey Subbasin. While this GSP is focused on the Langley Subbasin, the GSP will be implemented in accordance with SVBGSA's role in maintaining and achieving sustainability for all subbasins within the Salinas Valley in its juridisdiction. The Langley Subbasin is referred to as the Subbasin throughout this GSP, and the collection of Salinas Valley subbasins that fall partially or entirely under SVBGSA jurisdiction are collectively referred to as the Salinas Valley or Valley. All subbasins within the Salinas Valley Groundwater Basin are referred to as the Basin.

The SVBGSA used a collaborative process to develop this GSP. Chapter 2 details the stakeholders that participated, and process followed, to develop this GSP with amendments. Throughout preparation of the original GSP, stakeholders worked together to review existing information, define SMC for the Subbasin, and develop a list of projects and management actions. Throughout preparation of GSP Amendments 1 and 2, SVBGSA continued to provide opportunities for public engagement and stakeholder input at its Subbasin Committees, as well as Advisory Committee and Board meetings.

The GSP describes the basin setting, presents the hydrogeologic conceptual model (HCM), and describes historical and current groundwater conditions. It further establishes estimates of the historical, current, and future water budgets based on the best available information. The GSP defines local SMC, details required monitoring networks, and outlines projects and management actions for reaching sustainability in the Subbasin by 2042.

The SVBGSA developed this GSP Amendment 1 as part of an adaptive management process using improved data, models, and analysis of projects and management actions to achieve sustainability since preparation of the original GSP. This amended GSP replaces the original and previously amended GSP. It may be updated and adapted, and further amended if needed, as new information and even more refined models become available. This includes updating SMC and projects and management actions to reflect updates and future conditions. Adaptive management will be reflected in the required GSP 5-year periodic evaluation and annual reports.

2 COMMUNICATIONS AND PUBLIC ENGAGEMENT

2.1 Introduction

The SVBGSA was formed in 2017 to implement SGMA locally within the Salinas Valley. GSA formation and coordination took place from 2015 through 2017. The process included completing a Salinas Valley Groundwater Stakeholder Issues Assessment and resulted in recommendations for a transparent, inclusive process for the local implementation of SGMA and the formation of the SVBGSA. Through the development and implementation of the GSPs SVBGSA is committed to following the requirements for stakeholder engagement as defined by SGMA:

- Consider the interests of all beneficial uses of water and users of groundwater (§ 10723.2)
- Encourage the active involvement of diverse social, cultural, and economic elements of the population within the groundwater basin (§ 10727.8)
- Establish and maintain a list of persons interested in receiving notices regarding plan preparation, meeting announcements and availability of draft plans, maps, and other relevant documents (§ 10723.4)
- Make available to the public and DWR a written statement describing the manner in which interested parties may participate in the development and implementation of the GSP (§ 10723.2)

2.2 Defining and Describing Stakeholders for Public Engagement

The SVBGSA stakeholders are highly diverse. Groundwater supports economic activities from small domestic scale to large industrial scale and is an important supply for over 400,000 people living within the Salinas Valley. Beneficial users in the Valley are the key stakeholders targeted for robust public engagement for GSP development and implementation. Beneficial users in the Valley include the following:

Agriculture. Includes row crops, field crops, vineyards, orchards, cannabis, and rangeland. The Salinas Valley agricultural region supports a $5 billion dollar production value and produces a large percentage of the nation's produce and healthy foods. Agriculture is the largest user of groundwater in the Valley accounting for over 200,000 irrigated acres and 94% of pumping in the Valley.

Domestic Water Users. Includes urban water use and related non-agricultural water uses in the cities and census-designated places and rural residential wells used for drinking water. Urban water use includes small local water systems, small state water systems, and small and large public water systems.

Industrial Users. Includes industrial water users, such as coolers, agricultural wash facilities, quarries, and oil production.

Environmental Users. Environmental users include the habitats and associated species maintained by conditions related to surface water flows such as steelhead trout and groundwater dependent ecosystems (GDEs) including brackish and freshwater marsh and riparian habitats. Environmental users include native vegetation and managed wetlands.

Stakeholders associated with these beneficial users and uses are listed below. These users are in many cases also represented on the SVBGSA Board and Advisory Committees as described in the next section.

- **Environmental organizations.** Environmental organizations that are stakeholders include but are not limited to, Sustainable Monterey County, League of Women Voters of Monterey County, Landwatch Monterey County, Friends and Neighbors of Elkhorn Slough, California Native Plant Society Monterey Chapter, Trout Unlimited, Surfriders, the Nature Conservancy, Carmel River Steelhead Association, Central Coast Wetlands Group, and the Elkhorn Slough Foundation
- **Underrepresented communities (URCs) and Disadvantaged Communities (DACs).** URCs and DACs and organizations that represent with them include, but are not limited to, the Cities of Gonzales, Greenfield, King, Salinas, and Soledad, Castroville Community District, San Jerardo Cooperative, San Ardo Water District, San Lucas, San Vicente Mutual Water Company (DWR, 2026), Environmental Justice Coalition for Water and Community Water Center
- **City and county government.** Cities of Greenfield, Gonzales, King, Marina, Salinas, and Soledad, County of Monterey
- **Land use organizations.** Sustainable Monterey County, League of Women Voters of Monterey County, Landwatch Monterey County, Friends and Neighbors of Elkhorn Slough
- **Residential well owners.** Represented by public members and members of mutual water companies and local small or state small water systems
- **Water agencies.** MCWRA, Marina Coast Water District, Arroyo Seco Groundwater Sustainability Agency, Castroville Community Services District, M1W, Seaside Groundwater Basin Watermaster, and Monterey Peninsula Water Management District (MPWMD)

- **CPUC-regulated water companies.** Alco Water Corporation, California Water Service Company, and California American Water.

2.3 Langley Subbasin GSP Preparation and GSP Amendment

Given the importance of the groundwater and the development of the Langley Subbasin GSP to the communities, residents, landowners, farmers, ranchers, businesses, and others, inclusive stakeholder input was a primary component of the Langley GSP process. To encourage ongoing stakeholder engagement SVBGSA deployed the following strategies in the preparation of the Langley Subbasin GSP and GSP Amendment 1.

- Conducted an inclusive outreach and education process conducted that best supports the success of a well-prepared GSP that meets SGMA requirements.
- Kept the public informed by distributing accurate, objective, and timely information.
- Invited input and feedback from the public at every step in the decision-making process.
- Established the Langley Subbasin Planning Committee and completed a comprehensive planning process with this Committee, including engagement on key items with the Board and Advisory Committee. The Subbasin Committee continues to provide input on GSP implementation, including ongoing SGMA compliance and development of projects and management actions.
- Followed consistent stakeholder outreach for GSP amendments.
- Publicly noticed drafts of the Langley Subbasin GSP and allowed for required public comment periods as required by SGMA. Comments received and responses are included in Appendix 2A.

Additionally, a rigorous review process for each chapter in the Langley GSP and for the final plan was completed. This process ensured that stakeholders had multiple opportunities to review and comment on the development of the chapters.

2.4 Langley Subbasin Committee

Subbasin committees consist of local stakeholders and Board members and appointed by the Board of Directors following a publicly noticed application process by the SVBGSA. The Langley Subbasin Planning Committee was convened in 2020 and completed the original GSP submitted in January 2022; SVBGSA subsequently convened the Langley Subbasin Committee to guide GSP implementation and amendment. In 2024, the Board approved a Subbasin Committee Program that clarified and refined their roles. Subbasin committees do the comprehensive work of reviewing annual reports and monitoring data, providing input on project and management actions, general GSP implementation, and review of plan updates and amendments, with assistance and information provided by SVBGSA staff and technical consultants.

These committees include constituencies who are considered important stakeholders to implementing comprehensive subbasin plans for the Salinas Valley A list of the Langley Subbasin Committee members at the time of Amendment 1 adoption is included in the Acknowledgements section.

Subbasin committee meetings are Brown Act meetings and noticed publicly on the SVBGSA website and at the meeting locations. Public comment is taken on all posted agenda items. Subbasin committees have been engaged in an iterative planning process that combines education about pertinent technical topics through presentations and agenda packets and receiving GSPs chapters for review and comment.

Community engagement and public transparency on SVBGSA decisions is paramount to building a sustainable and productive solution to groundwater sustainability in the Salinas Valley.

2.5 Communication and Public Engagement Actions

SVBGSA is focused on communication and public engagement with the public, including beneficial users, regarding the development of the SVBGSA's GSP for the Langley Subbasin. Communication and public engagement actions (CPE actions) that took place during GSP development will continue during implementation of all SVBGSA GSPs. CPE actions provide the SVBGSA Board and staff a guide to ensure consistent messaging about SGMA requirements and other related information. CPE actions provide ways in which beneficial users and other stakeholders can provide timely and meaningful input into the GSA decision-making process. They also ensure that beneficial users and other stakeholders in the Basin are informed of progress and ongoing evaluation of groundwater conditions, and provide opportunities to participate in GSP implementation and plan amendments. Appendix 2B includes SVBGSA's communications plan.

Notice and communication, as required by GSP Regulation § 354.10, was focused on providing the following activities during the development of the Langley Subbasin GSP:

- Clear decision-making process on GSP approvals and outcomes
- Robust public engagement opportunities
- Encouragement of active involvement in GSP development and ongoing plan implementation

2.5.1 Goals for Communication and Public Engagement

Ultimately, the success of the Langley Subbasin GSP will be determined by the collective action of every groundwater user. To meet ongoing water supply needs for drinking water, agricultural, and other economic livelihoods, the Subbasin must achieve and maintain sustainability into the future. SVBGSA's outreach strategies engage the public early and frequently, and keep information flowing seamlessly among staff, consultants, committee members, and the SVBGSA Board regarding the goals and objectives of the Langley Subbasin GSP and associated monitoring and implementation activities.

Critical to the success of the Langley Subbasin GSP implementation is public understanding of the PMAs planned for sustainability, as well as sustainability implementation actions and other groundwater management activities. These important actions are specifically described in Chapters 9 and 10 of the Langley Subbasin GSP.

The required annual report due by April 1 every year is an important and ongoing GSP implementation activity. It covers data collected each water year from October 1 through September 30, and acts as an annual benchmark for SVBGSA to provide to the public and stakeholders for assessing progress toward sustainability. The annual report—which includes assessment of the 6 SMC for the respective subbasin—also provides an important opportunity to reengage the Langley Subbasin Committee in its review and to discuss sustainability status, groundwater conditions, and progress on PMA planning and implementation.

The GSP periodic evaluations, prepared at least every 5 years, also present an important opportunity for public engagement. These evaluations assess plan performance and inform adaptive management. They function as an implementation tool by reviewing conditions over the previous 5 years, analyzing progress toward sustainability goals and recommending adjustments as needed. In addition, a Periodic Evaluation provides the justification for and explanation of any GSP amendments. Because they offer a more comprehensive analysis than annual reports, they also present a valuable opportunity for GSAs to communicate how GSP implementation is progressing.

CPE actions provide outreach during the Subbasin planning and implementation efforts and assists SVBGSA in being receptive to stakeholder needs through communication tools. The CPE actions also forecast how SVBGSA communicates during GSP implementation.

The goals of the CPE actions are to expand audience reach, increase engagement and GSP awareness, and track efforts. Specific objectives include the following:

1. Keep stakeholders informed through the distribution of accurate, objective, and timely information while adhering to SGMA requirements for engagement (noted above).

2. Articulate strategies and create communications channels that will foster an open dialogue and increase stakeholder engagement during the planning and implementation process.
3. Invite input from the public at every step in the decision-making process and provide transparency in outcomes and recommendations.
4. Ensure that the Board, staff, consultants, and committee members have up-to-date information and understand their roles and responsibilities.
5. Engage the public on GSP implementation progress especially for project and management actions and Annual Reports

2.5.2 Communication and Outreach Objectives

The following are the communications and outreach objectives of the CPE Actions:

- Expand Audience Reach
    - Maintain a robust stakeholder list of interested individuals, groups, and/or organizations.
    - Secure a balanced level of participants who represent the interests of beneficial uses and users of groundwater.
- Increase Engagement
    - Keep interested stakeholders informed and aware of opportunities for involvement through email communications and/or their preferred method of communication.
    - Publish meeting agendas, minutes, and summaries on the SVBGSA website: (www.svbgsa.org).
    - Inform and obtain comments from the general public through GSP online comment form and hybrid ongoing public meetings.
    - Facilitate productive dialogues among participants throughout the GSP planning and amendment process.
    - Seek the input of interest groups during the planning and implementation of the GSP and any future planning efforts.
- Increase GSP Awareness
    - Provide timely and accurate public reporting of planning and implementation milestones through the distribution of outreach materials and posting of materials on the SVBGSA website for the GSP.
    - Seek quality media coverage and create opportunities for SVBGSA staff to author articles.

- Share information with interested persons through monthly email newsletters.
- Utilize social media to engage with and educate the public.
- Create partnerships with local organizations, elected officials and others to share SVBGSA information with their unique audiences.

- Track Efforts
  - Maintain an active communications tracking tool to capture stakeholder engagement and public outreach activities and to demonstrate the reporting of GSP outreach activities.

2.5.3 Target Audiences and Stakeholders

SVBGSA stakeholders consist of other agencies and interested parties including all beneficial users of groundwater or their representatives of someone who is. Under the requirements of SGMA, all beneficial uses and users of groundwater must be considered in the development of GSPs, and GSAs must encourage the active involvement of diverse social, cultural, and economic elements of the population.

There are a variety of audiences targeted within the Salinas Valley whose SGMA knowledge varies from high to little or none. Given this variance, SVBGSA communications and engagement efforts are broad and all-inclusive. Target audiences include:

- SVBGSA Board of Directors, Advisory Committee, and Subbasin Planning Committees
- SVBGSA Groundwater Sustainability Fee payers
- Partner agencies including other GSA's, County of Monterey, MCWRA, and other agency participants in the Greater Monterey County Integrated Regional Water Management Group
- Municipal and public water service providers
- Private and local or state small water system providers
- Local municipalities and communities
- Elected officials within the Salinas Valley
- Beneficial uses and users of groundwater, including agriculture, domestic wells and local small or state small water systems, and environmental uses such as wetlands, including non-profit organizations and industry groups that represent them
- Diverse social, cultural, and economic segments of the population within the Salinas Valley, including URCs
- The general public

Stakeholder involvement and public outreach are critical to the GSP development because it helps promote the plan based on input and broad support. The following activities summarize involvement opportunities and outreach methods to inform target audiences and stakeholders. It is important to note that levels of interest will evolve and shift according to the GSP's implementation opportunities and priorities.

2.5.4 Stakeholder Database

SVBGSA maintains a database of persons and organizations that includes stakeholders who represent the region's broad interests, perspectives, and geography. It is developed and maintained by leveraging existing stakeholder lists and databases and by conducting research of potential stakeholders that may be interested in 1 or all of the following categories: municipal users and groundwater users including agricultural, urban, industrial, commercial, institutional, rural, environmental, URCs, state lands and agencies, and integrated water management.

2.5.5 Key Messages and Communications

SVBGSA develops its communications and key messages focused on getting to know your GSA, providing overviews of groundwater sustainability planning for our community, and continued outreach through implementation. These messages are guided by the underlying statements:

- The GSP process, both planning and implementation, is transparent and direct about how the GSP will impact groundwater users.
- SVBGSA represents the groundwater interests of all beneficial uses/users of the basin equitably and transparently to ensure that the basin achieves and maintains sustainable groundwater conditions.
- SVBGSA is committed to working with stakeholders using an open and transparent communication and engagement process.
- As the overall GSP process is comprehensive with an engaged group of stakeholders providing useful information, SVBGSA creates as many opportunities as possible to educate stakeholders and obtain their feedback on the GSP implementation and plan updates.

These messages are the basis for effective engagement and communication with audiences. (Appendix 2C).

2.5.6 Engagement Strategies

SVBGSA uses a variety of tactics to achieve broad, enduring, and productive involvement with stakeholders during the development and implementation of the GSPs. Below are activities that SVBGSA uses to engage the public:

- Develop and maintain a list of interested parties
- Hold Board, Advisory Committee, Subbasin Committees and other Committee Meetings
    - Publish regular public notices and updates (Brown Act compliance)
    - Offer public informational sessions and subject-matter workshops
    - Provide hybrid meeting access online via Zoom or other appropriate platform.
- Provide SVBGSA website resources for topics including SGMA, SVBGSA, GSPs, Projects and Management Actions, annual reports, groundwater models, hydrogeology and educational resources, and annual budget and Groundwater Sustainability Fee information, including:
    - SVBGSA web map: provides access to visualize, search and export data
    - StoryMaps include how water moves through the Salinas Valley, groundwater challenges, sustainability goals and the current status
- Utilize social media platforms, including Facebook, Instagram and YouTube to share information, communicate with stakeholders and grow engagement
- Publish email newsletters to communicate directly with interested parties
- Garner earned media coverage through the use of press releases, media pitching and relationship-building with local reporters (appendix 2D includes SVBGSA's media policy)
- Publish op-eds in local newspapers
- Create and share engaging video content
- Place advertising in local media (including digital, print, radio and audio streaming)
- Post fliers/posters in public locations to share key initiatives
- Utilize co-promotional opportunities and existing channels with agencies, committees, and organizations including email newsletters, social media, board meetings and mailings to key audiences
- Provide talks and presentations to various stakeholder groups, associations, community organizations, and educational institutions
- Host workshops on key topics
- Make materials bilingual and provide interpretation services

2.5.7 CPE Actions Timeline and Tactics

CPE actions and GSP milestone requirements by phase include:

- Prior to initiating plan development: Shared how interested parties may contact the GSA and participate in development and implementation of the plan submitted to DWR. (23 California Code of Regulations § 353.6)
- Prior to GSP development: Establish and maintain an interested persons list. (California Water Code § 10723.4)
- Prior to and with GSP submission:
  - Record statements of issues and interests of beneficial users of basin groundwater including types of parties representing the interests and consultation process
  - Lists of public meetings
  - Inventory of comments and summary of responses
  - Communication section in GSP (23 California Code of Regulations § 354.10) that includes: agency decision-making process, identification of public engagement opportunities and response process, description of process for inclusion, and method for public information related to progress in implementing the plan (status, projects, actions)
- Supporting tactics to be used to communicate messages and supporting resources available through GSP development and GSP implementation described in section 2.6.6.

2.5.8 CPE Actions – Annual Evaluation and Assessment

Annually SVBGSA will summarize annual conditions and GSA activities to gather input for annual reports. A summary of CPE actions will be included within annual reports. Development of the subsequent fiscal year work plan happens in parallel with annual reporting. The GSA reviews community outreach activities and their effectiveness and considers the appropriate CPE actions for the upcoming year in its annual work plan and budget.

2.6 Underrepresented Communities and Disadvantaged Communities Strategic Engagement and Communications

During development of the 2022 GSPs SVBGSA scoped an engagement strategy for URCs and DACs that would provide both an assessment of how URCs and DACs may be engaged with the GSA and how to develop GSA materials that are accessible and culturally responsive (visual and in Spanish). These materials will communicate impacts of groundwater management on local water conditions in order to engage URCs and DACs into GSA plan reviews and develop pathways for future involvement.

2.6.1 Underrepresented Communities and Disadvantaged Communities in the Salinas Valley

In this GSP, URCs and DACs are considered communities that currently have little or no representation in water management, or who historically have had disproportionately less representation in public policy decision making. URCs and DACs are inclusive of Severely Disadvantaged Communities (SDACs), Economically Distressed Areas (EDAs) and other communities that are traditionally underrepresented.

The Salinas Valley has well documented DAC designations encompassing 50 Census Block Groups, 18 Census Tracts and 5 Cities or Census Designated Places, including Gonzales, King City, Bradley, Chualar, and San Lucas, according to 2019-2023 5-Year American Community Survey (ACS) data published on the Climate Bond S(DAC) Tool and CA DWR's DAC Mapping Tool websites (DWR, 2026; CNRA, 2026). The Salinas Valley's EDAs are inclusive of these DACs and further encompass Greenfield and Boronda and parts of Marina, Soledad, and Prunedale.

A proportional analysis of the area and population of Census Blocks suggests that roughly 13,4% of the population of the Langley Area Subbasin live in a DAC, 1.5% live in an SDAC, and 13,4% live in an EDA. Considering Census Tracts, this analysis suggests that roughly 1.5% of the Subbasin's population live in a DAC, 1.5% live in a SDAC; and 8.8% live in an EDA.

Figure 2-3 shows where DACs, SDACs, and EDAs are located within the Salinas Valley, and Appendix 2E further describes DACs and EDAs. Census block groups were not included in the map because they are excluded from the newer Climate Bond (Proposition 4) (S)DAC Mapping Tool due to high margins of error and data privacy concerns.

SVBGSA seeks to constructively engage with URCs and DACs in the subbasin planning processes and GSP implementation. During development of the original GSP, SVBGSA hired the Consensus Building Institute (CBI) to conduct an assessment with URC and DAC community leaders via formal interviews. The purpose of the assessment was to capture insights and recommendations to inform an engagement strategy for URCs and DACs. CBI conducted 14 interviews and summarized findings from the assessment to identify initial strategic steps for work with URCs and DACs for GSP planning and implementation. These actions continue to be a focus of community engagement activities with residents in DAC or URCs during implementation of the GSP. The *Spectrum of Community to Ownership* is 1 guide in further shaping SVBGSA work with URCs and DACs communities in the Basin in consultation with community leaders. In 2025 and 2026, SVBGSA co-sponsored the Salinas Valley Water Leadership Institute with the Environmental Defense Fund and others, focused on local water education and leadership and skill development for participating in the public processes for water management and decision making.

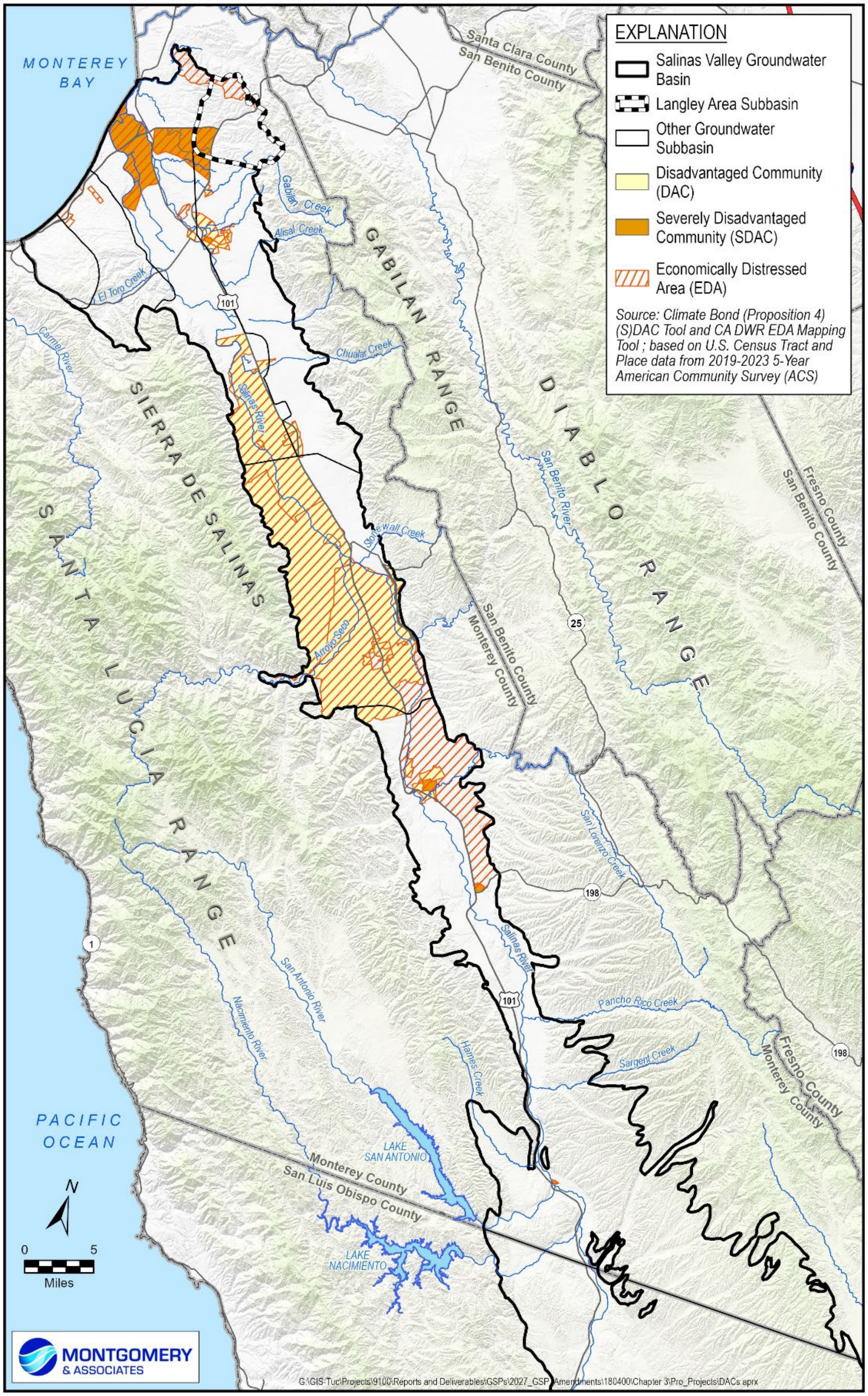


Figure 2-1. Disadvantaged Communities in the Salinas Valley

2.6.2 Activities Engagement of Underrepresented Communities and Disadvantaged Communities

Activities for engagement of URCs and DACs include:

- Conducting workshops with partners on importance of water and groundwater sustainability
- Identifying URC and DAC concerns and needs for engagement
- Planning listening sessions around GSA milestones
- Coordinating with partner organizations to develop a "resource hub" where people can go for support
- Identifying community allies in groundwater engagement work and reduce barriers for participation
- Considering particular URC and DAC impacts during routine GSA proceedings
- Convening a working group on domestic water, including URCs and DACs

3 PLAN AREA

This GSP covers the entire Langley Subbasin, as shown on Figure 3-1. The Langley Subbasin lies in the northeastern corner of Monterey County and the Salinas Valley Groundwater Basin. It encompasses an area of approximately 17,600 acres, or 27.5 square miles (DWR, 2004). The Subbasin is bounded by the Gabilan Range to the east, Pajaro Groundwater Basin to the north, the 180/400-Foot Aquifer Subbasin (DWR subbasin number 3-004.01) to the west, and the Eastside Aquifer Subbasin (DWR subbasin number 3-004.02) to the south. Although under MCWRA's jurisdiction and within MCWRA's Zone 2C, the Langley Subbasin does not align with MCWRA's management subareas aside from a small portion of the MCWRA Eastside Subarea which extends into the southern area of the Langley Subbasin.

The Langley Subbasin has 2 named intermittent streams that drain from the western slopes of the Gabilan Range and flow across the Subbasin and into the Eastside Aquifer Subbasin. The Subbasin contains small communities but no incorporated communities; Prunedale is the largest community in the Subbasin. Streams and major roads are shown on Figure 3-1.

This description of the plan area has been prepared in accordance with the GSP Regulations § 354.8. Information from existing water resource monitoring, management, and regulatory programs have been incorporated into this GSP through the development of the sustainability goal, SMC, and projects and management actions. This GSP has been developed to reflect the principles outlined in existing local plans, programs, and policies, and will build on them during GSP implementation.

3.1 Summary of Adjudicated and Jurisdictional Areas

3.1.1 Adjudicated Areas, Other GSAs, and Alternatives

The Langley Subbasin is not adjudicated. The only adjudicated area in the Salinas Valley Groundwater Basin is the Seaside Subbasin (DWR subbasin number 3-004.08), which is not adjacent to the Langley Subbasin.

No alternative plans have been submitted for any part of the Subbasin or for any other Salinas Valley subbasins.

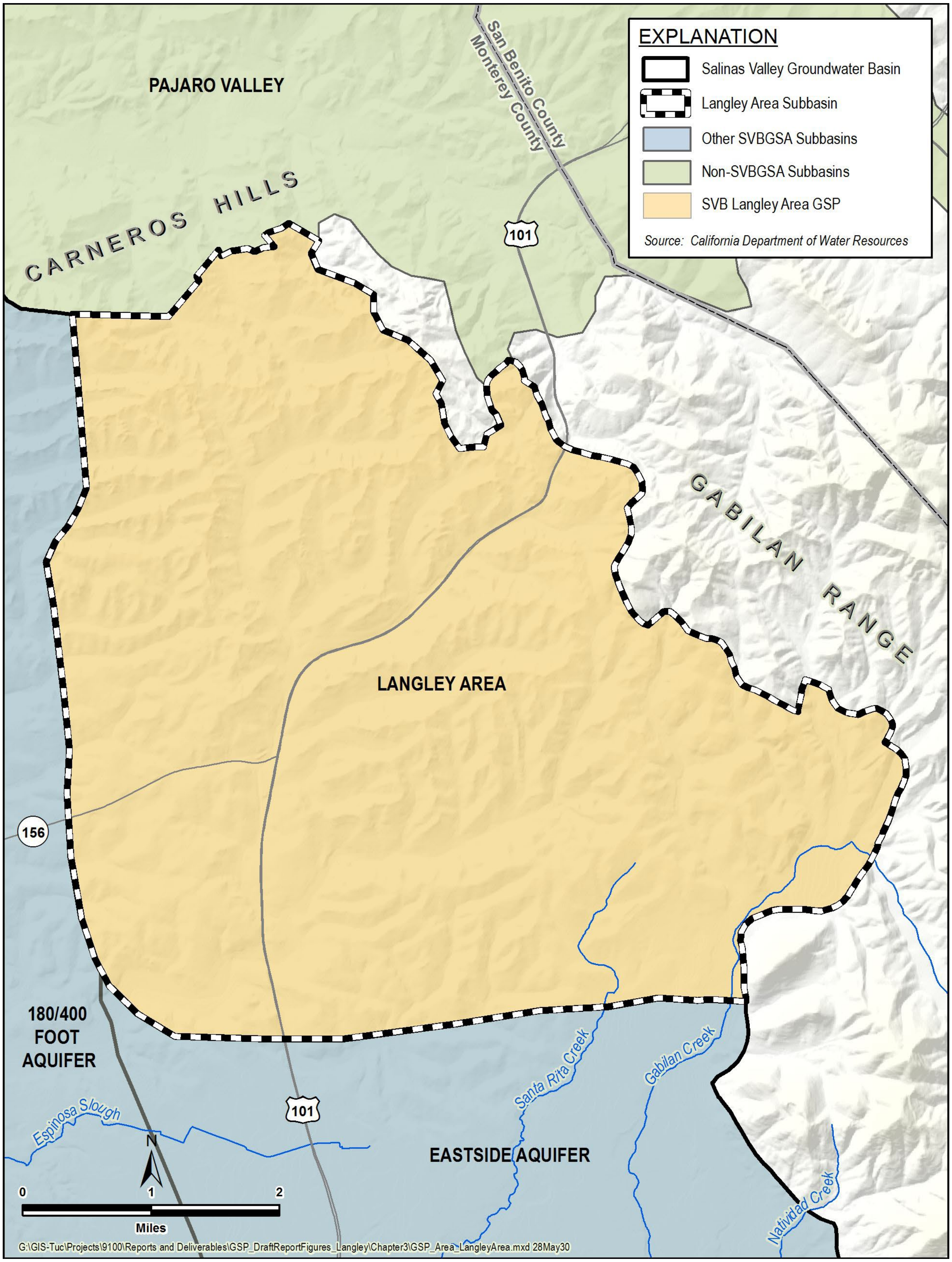


Figure 3-1. Langley Subbasin Area Covered by GSP

3.1.2 Jurisdictional Areas

3.1.2.1 Federal and State Jurisdictional Areas

Maps of federal and state jurisdictional areas are based on data from the U.S. Bureau of Land Management National Surface Management Agency National Geospatial Data Asset (BLM, 2020). Neither federal nor state agencies have jurisdiction over water management authority in the Subbasin. Although the Subbasin does not contain any federal tribal-owned lands, several recognized Tribes represent the area, and contacts are maintained through California's Native American Heritage Commission.

3.1.2.2 County Jurisdiction

Pursuant to Article XI, section 7 of the California Constitution, the County of Monterey has authority to adopt and enforce ordinances and regulations not in conflict with state laws to protect and promote the public health, safety, and welfare of its citizens. Specifically, with regard to the Subbasin, the County has authority over the entire unincorporated Subbasin. including well permitting, and land use authority. Figure 3-2 shows 2 County conservation areas or parks within the Subbasin: Royal Oaks Park and Manzanita Regional Park (BLM, 2020).

3.1.2.3 Monterey County Water Resources Agency

MCWRA is a flood control and water agency established in 1990 by special act of the state legislature codified at Water Code Appendix Chapter 52, with broad water management authority in Monterey County. s MCWRA's jurisdiction covers the entire Langley Subbasin, as shown on Figure 3-2.

Pursuant to MCWRA's enabling legislation, the MCWRA Act (Agency Act, California Water Code App. § 52-1, *et seq*), MCWRA has broad authority regarding groundwater regulation. This is specifically called out in Sections 8, 9(n), 21 and 22 of the Agency Act. Section 8 states the purposes of the MCWRA Act, which includes control of groundwater extractions as required to prevent or deter the loss of usable groundwater. Likewise, Section 9 covers the powers of MCWRA and subsection (n) states that MCWRA may "Develop and distribute water to persons in exchange for ceasing or reducing groundwater extractions, and prevent groundwater extractions which are determined to be harmful to the groundwater basin." Section 21 allows MCWRA to seek injunctive relief against the export of water from the Salinas Valley Groundwater Basin. Section 22 of the Agency Act explicitly provides MCWRA with the ability to prohibit groundwater extraction when appropriate studies determine a portion of the groundwater basin to be threatened by loss of usable supply as a result of seawater intrusion after a noticed public hearing by the Board of Supervisors. The Agency Act was enacted prior to the development of SGMA, which requires groundwater sustainability to be achieved according to 6 sustainability criteria.

Key assessment zones that provide revenues for capital, operations, and maintenance of various projects and programs administered by MCWRA are shown on Figure 3-3. MCWRA is governed by a 9-member Board of Directors who are appointed by the 5-member MCWRA Board of Supervisors. The Board of Supervisors of the County is the *ex officio* Board of Supervisors of MCWRA (Monterey County Water Resources Agency Act, Sec. 15).

3.1.2.4 City and Other Local Jurisdictions

The jurisdictional boundaries of cities are shown on Figure 3-2 (U.S. Census Bureau, 2018). Pajaro/Sunny Mesa Community Services District and Aromas Water District provide water to parts of the Subbasin.

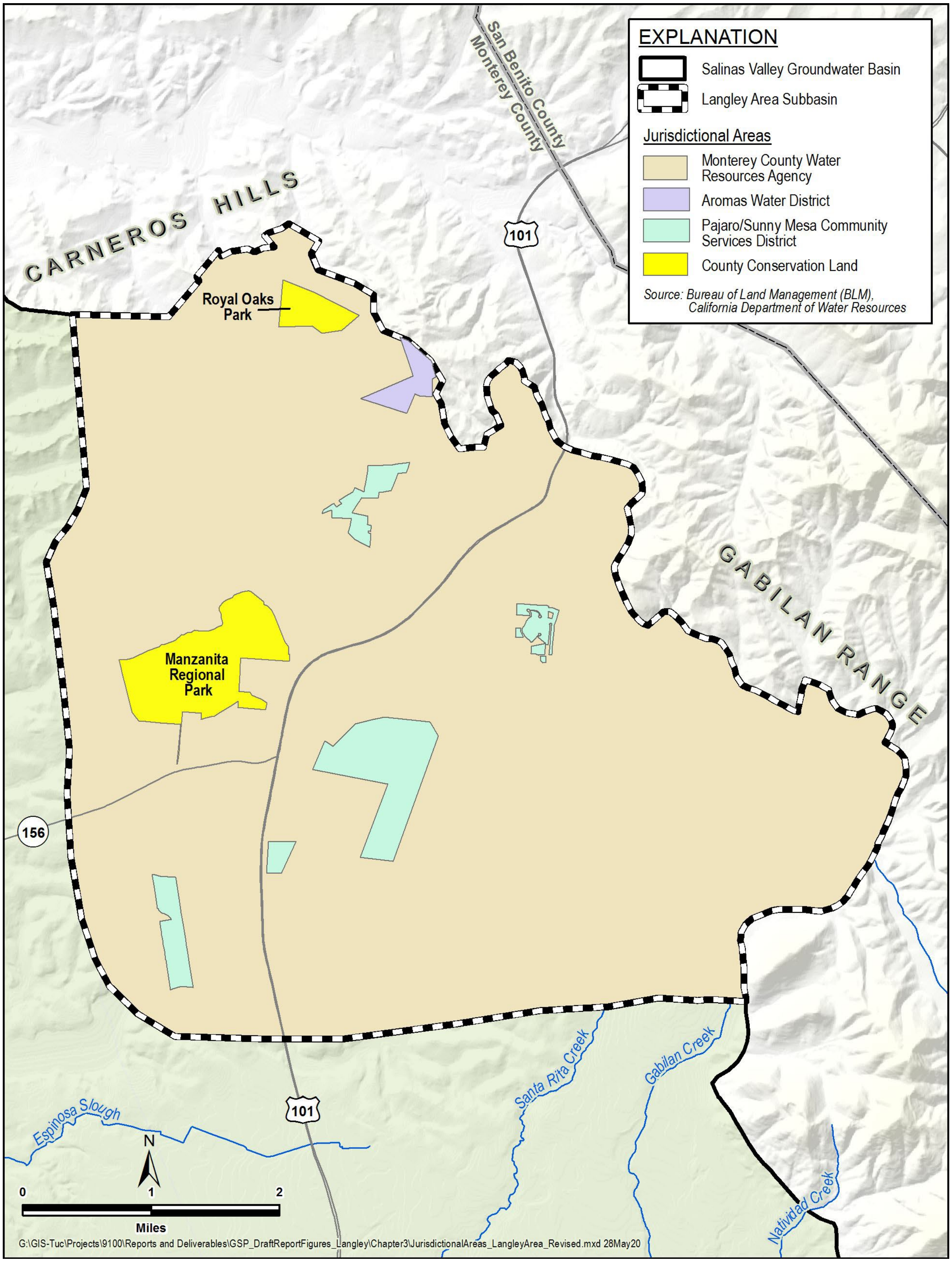


Figure 3-2. Federal, State, County, City, Local, and Water District Jurisdictional Areas

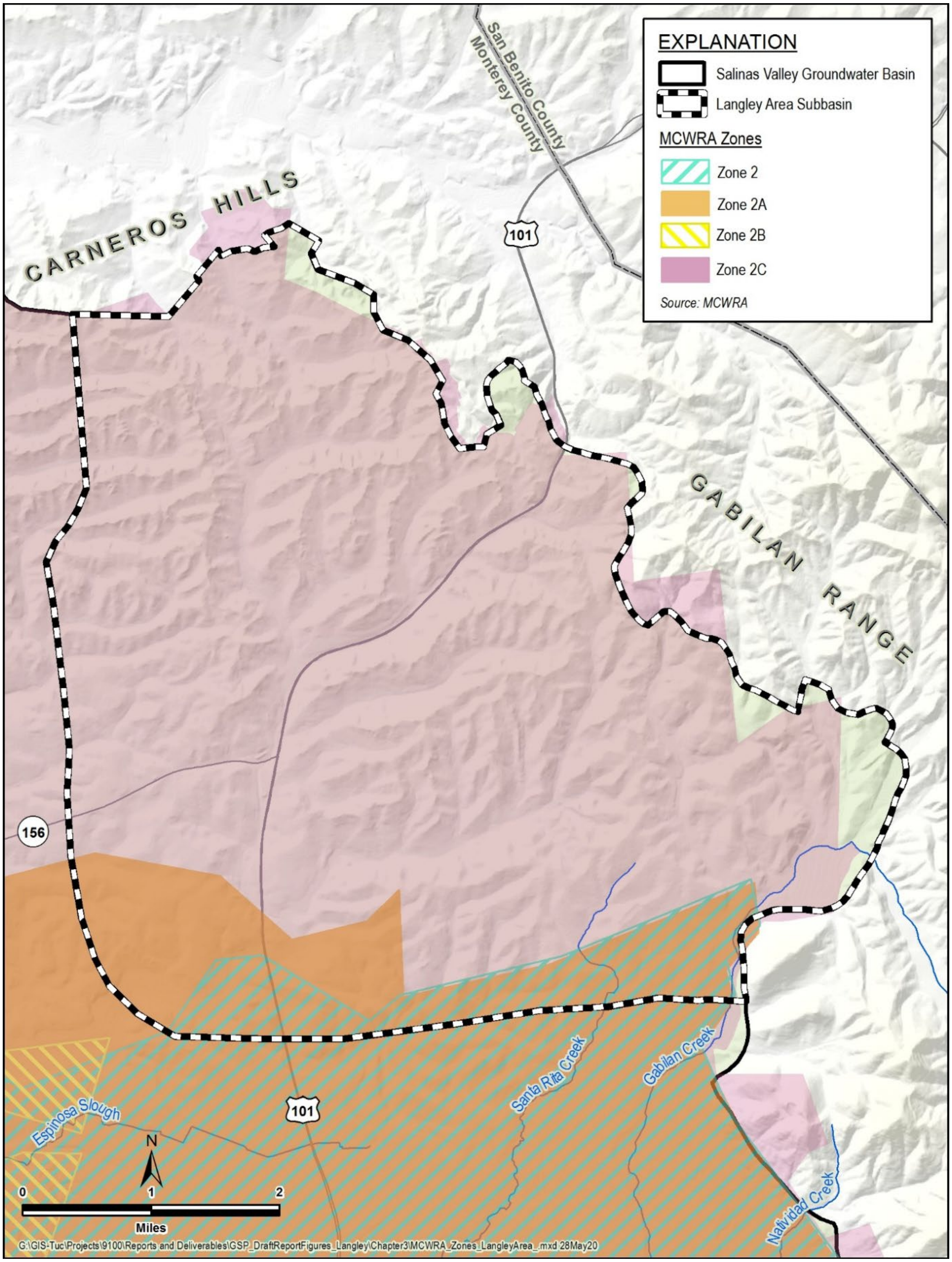


Figure 3-3. MCWRA Zones in the Langley Area Subbasin

3.2 Land Use

3.2.1 Overview of Land Uses

The Monterey County Assessor's Office maintains a Geographic Information System (GIS) database of land use at the parcel level. Land use in the Langley Subbasin, as classified by the Assesor's land use codes in 2024, is shown on Figure 3-4 and summarized by major category in Table 3-1. The difference between the land use area in Table 3-1 and the total Subbasin area of 17,600 acres is the result of 1) some parcels having null land use values and 2) small gaps between parcels that are not counted.

Table 3-1. Land Use Summary

Category	Area in Subbasin (acres)
Agriculture (Irrigated)	2,703
Agriculture (Dry)	2,597
Commercial	160
Industrial	35
Institutional	1,041
Miscellaneous	144
Multi-Family	164
Residential (Urban)	925
Rural	9,021
Not Classified	255
Total	**17,045**

Source: Monterey County Assessor's Office 2024 parcel data

Actual land uses may vary from year to year. The County Assessor parcel database is periodically updated and current Assessor's land use data may be utilized in periodic evaluations and/or updates to the SVBGSA Web Map. SVBGSA annually estimates cropped acreage as reported by DWR's most recent crop mapping, rather than relying on the Assessor's coding for irrigated acreage for its annual fee development. City and County general plans and planned land uses and zoning designations may also differ from the Assessor's land use codes in some cases.

The majority of land in the Subbasin comprises undeveloped land and rural homes, although there is some agriculture, mainly in the south and southeast where the land is flatter.

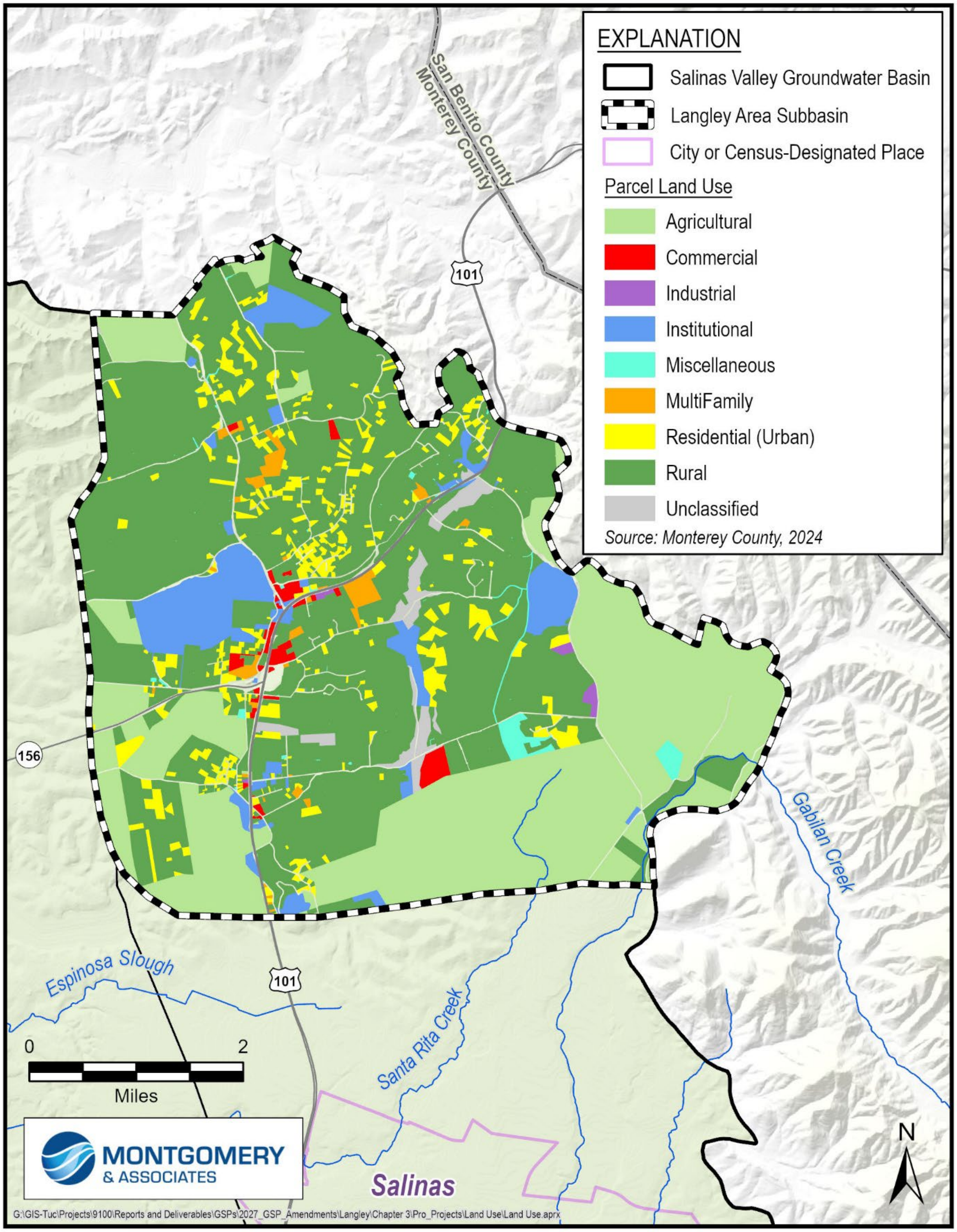


Figure 3-4. 2024 Land Use

3.2.2 Land Use Planning

Under SGMA, GSPs do not supersede the land use authority of cities and counties, including a city or county general plan, within the overlying basin. However, the GSA will coordinate with the cities and the County on general plans and land use planning/zoning as needed when implementing GSPs. SGMA also calls for processes to review land use plans and efforts to coordinate with land use planning agencies to assess activities that potentially create risks to groundwater quality or quantity. Planning agencies must review and consider GSPs, groundwater management plans, or groundwater management court order, judgment, or decree.

Land use is an important factor in water management. Monterey County has land use authority over all of the Langley Subbasin. It has adopted a general plan that guides land use within the Subbasin, along with other types of specific plans or community plans. General descriptions of the land use plans and how implementation may affect groundwater management in the Langley Subbasin are included in Appendix 3A.

The County of Monterey 2010 General Plan was prepared and adopted prior to SGMA and includes policies related to water supplies and well construction. The Public Services Element includes a goal for long-term water supply and related policies considered in the review of discretionary development permits. The policies include requiring proof of a long-term supply (PS-3.1), criteria for that proof for discretionary permits for new development (PS-3.2), criteria for the adequacy of domestic wells (PS-3.3.), assessments for high-capacity wells (PS-3.4), wells in areas of known saltwater intrusion (PS-3.5), coordination with other water management agencies (PS-3.6), and a program to eliminate overdraft of basins, with strategies including water banking, groundwater and aquifer recharge and recovery, desalination, pipelines to new supplies, and/or a variety of conjunctive use techniques (PS-3.7).

The County faced litigation after adoption of its 2010 General Plan. As part of a General Plan-related settlement agreement made prior to the statewide adoption of SGMA, the County conducted a Salinas Valley Basin Investigation pursuant to Policy PS-3.1 to develop a study of the Basin within MCWRA’s Zone 2C which largely overlaps the Basin and includes, among other items:

- An assessment of whether the total water demand for all uses designated in the General Plan for the year 2030 are likely to be reached or exceeded
- An evaluation and conclusions regarding future expected trends in groundwater elevations
- An evaluation and conclusions regarding expected future trends in seawater intrusion

The study finds that water demand trends in Zone 2C have diverged significantly from earlier 2010 General Plan Environmental Impact Report (EIR) projections. Instead of declining by 2030 as originally expected, total water demand has already increased, driven primarily by higher-than-anticipated agricultural use. Estimates at the time of the study (around 2017–2020), total demand reached about 485,000 acre-feet (AF)—exceeding both the EIR baseline and its projected 2030 level—and is expected to rise further to roughly 518,000 AF by 2030 under a medium-growth scenario. Urban demand has remained relatively stable, while agricultural demand has grown substantially, reversing assumptions about land contraction, crop shifts, and efficiency gains.

Based on data through 2021, these higher demands have led to increased groundwater pumping, resulting in measurable declines in groundwater levels and continued seawater intrusion. Declines have been most pronounced in coastal subareas that overlap with the 180/400, Eastside, Monterey, and Langley Subbasins. Looking ahead to 2030, the study projected additional declines under average conditions.

The study also projected that seawater intrusion was expected to persist at rates comparable to the past decade, particularly in the area overlapping with the 180/400 and Monterey Subbasins, affecting about 210–240 acres per year through 2030. While some localized improvements have occurred—such as near Castroville due to recharge projects—overall basin conditions are projected to worsen under continued demand pressures.

The study concludes that without further intervention, groundwater depletion and seawater intrusion will continue, though impacts will vary by location. It highlights the importance of coordinated groundwater management, conservation, and land use planning to mitigate these trends. The study recommends the County support groundwater sustainability efforts already underway associated with SGMA implementation.

In response to the study, the County Board of Supervisors directed County staff to coordinate with groundwater sustainability agencies on appropriate amendments to the 2010 General Plan and other regulatory actions. The County's implementation actions in response to the study and GSP implementation are parallel efforts, and the results of the County's response to the study will be considered during GSP implementation.

The County chose to retain the USGS to develop the Salinas Valley Integrated Hydrologic Model (SVIHM) and Montgomery & Associates to develop the Salinas Valley Seawater Intrusion Model. A provisional version of the SVIHM was used for the Basin Investigation, and the USGS subsequently published the model in 2025.

Updated versions of these models are used for the development of this GSP Amendment. The predictive baseline modeling includes population growth in the cities and some unincorporated communities, as projected by the Association of Monterey Bay Area Governments. This analysis is similar to the modeling in the study and is updated with improvements to the model tools.

3.2.3 Effects of GSP Implementation on Water Supply Assumptions

Implementation of this GSP may affect water supply assumptions of relevant land use plans over the planning and implementation horizon. Implementation of GSP projects and management actions may be necessary to avoid undesirable results and mitigate overdraft, including the potential for demand management, if needed. Changes in the cost of groundwater may affect whether surface water or groundwater is used. Land use changes may occur as a result of these activities and based on financial decisions by individual growers.

3.3 Water Use

3.3.1 Sources

No recycled water is used within the Subbasin.

Surface water diversions within the Salinas River watershed are reported to the State Water Resources Control Board (SWRCB). The Electronic Water Rights Information Management System (eWRIMS) was replaced by the California Water Accounting, Tracking, and Reporting System (CalWATRS). Elsewhere in the Salinas Valley some water use is reported to the SWRCB as surface water diversions and also reported to MCWRA as groundwater extractions, but double reporting does not exist in Langley Subbasin. With the intention of preventing double counting of surface water and groundwater, starting in WY 2025, MCWRA asked GMP extraction reporters if groundwater extractions were also reported as surface water diversions.

As described further in section 3.4, MCWRA operates 2 reservoirs with consideration of multiple factors, 1 of which is groundwater recharge. Groundwater resources reflect a mix of recharged surface water and groundwater, generally referred to as groundwater in this GSP. Groundwater is the primary water source for all water use sectors in the Subbasin. Communities that depend on groundwater are shown on Figure 3-6. The large public water systems shown on this figure are derived from data provided by Tracking California (2020), updated with boundaries directly from the water purveyors where possible. These boundaries were confirmed by the large water systems in the Langley Subbasin. Monterey County provided the boundaries for the small public water systems and the local small or state small water systems shown on Figure 3-6. More information on these water systems can be found on SVBGSA's Web Map, accessible at https://portal.elmontgomery.com. Groundwater is also used for rural residential areas, small community systems, and small commercial operations such as wineries and schools. The complete list of water systems and their number of connections where available are listed in Appendix 3B.

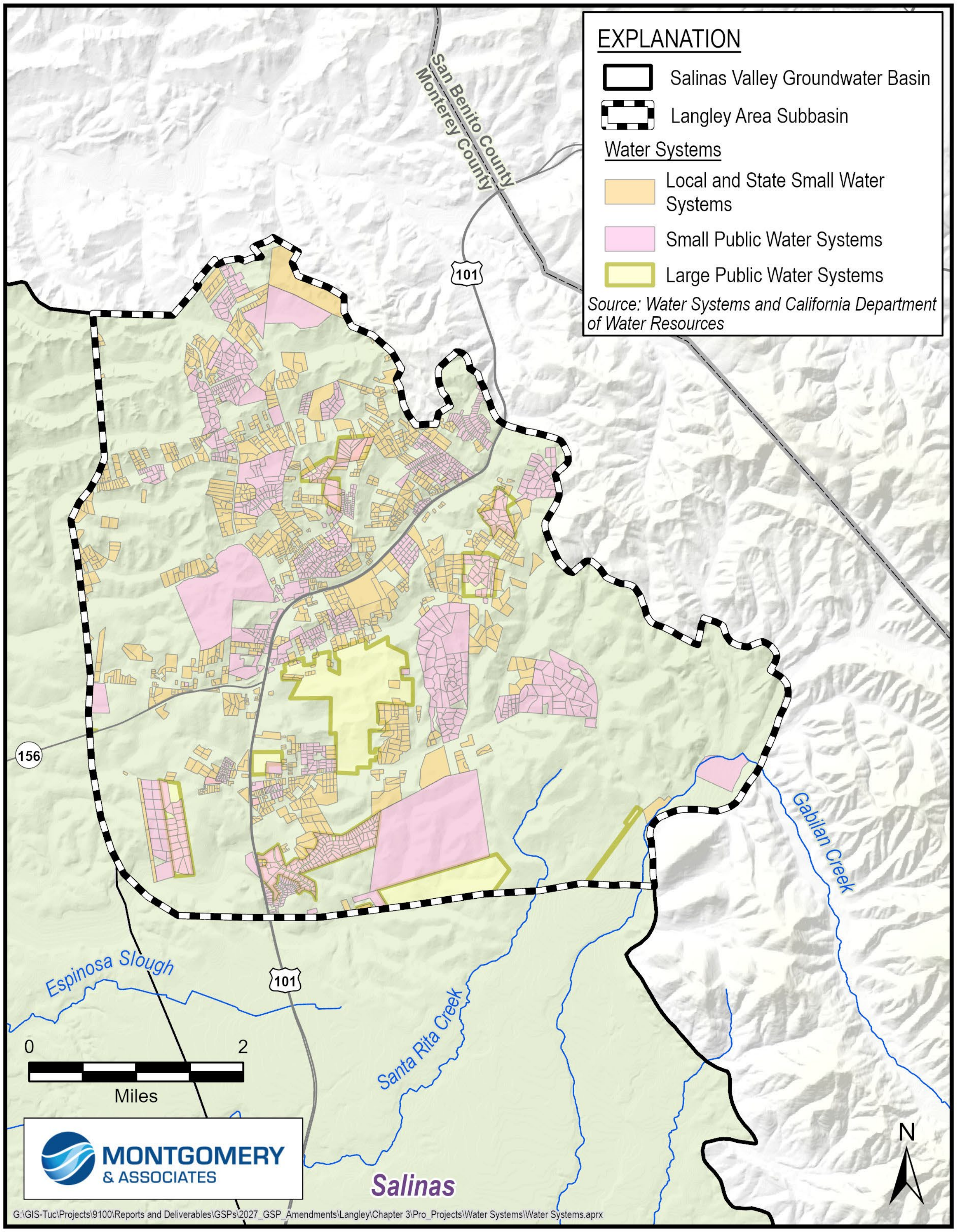


Figure 3-5. Communities Dependent on Groundwater

3.3.2 Water Use Sectors

Groundwater demands in the Subbasin are classified into the 6 water use sectors identified in the GSP Regulations. The water use sectors are shown on Figure 3-7, based on data available as of 2019.

- **Urban**. Urban water use is assigned to non-agricultural water uses in the cities and census-designated places. Domestic use outside of census-designated places is not considered urban use.
- **Industrial**. There is limited industrial use in the Subbasin.
- **Agricultural**. Agricultural use is mainly limited to the southern edges of the Langley Subbasin.
- **Managed wetlands**. DWR land use records indicate that there are no managed wetlands in the Langley Subbasin.
- **Managed recharge**. There is no managed recharge in the Subbasin.
- **Native vegetation**. Groundwater use by native vegetation has not been estimated for this Subbasin, however it is assumed to be minimal. Potential groundwater dependent ecosystems are mapped and described in Section 4.4.5.2.
- **Other**. This includes rural residential water use and any water use not captured in the other water use sectors.

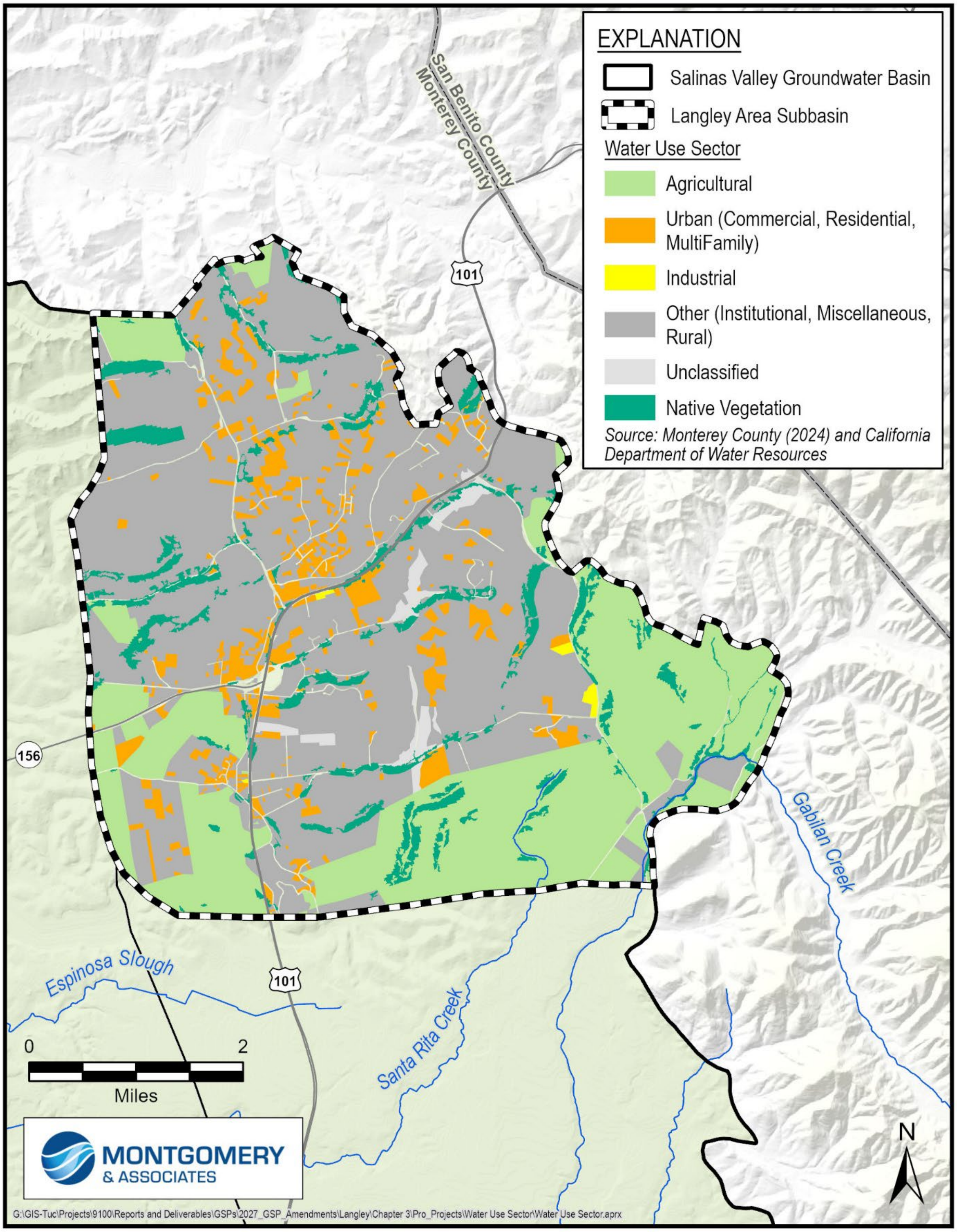


Figure 3-6. Map of Water Use Sectors

3.4 Conjunctive Uses

Although there are no conjunctive use programs located within the Langley Subbasin, the Subbasin is part of the larger Salinas Valley, where conjunctive use and the operation of water infrastructure influence groundwater conditions.

Groundwater, surface water, and recycled water management in the Salinas Valley is fundamentally shaped by a long history of groundwater overdraft and seawater intrusion, as formally documented in California's 1946 Bulletin 52. In addition, flood control was needed. In response, MCWRA (formerly Monterey County Flood Control and Water Conservation District) constructed the Nacimiento and San Antonio Reservoirs, which formed the basis for operation of a conjunctive management system.

Nacimiento Reservoir (License 7543, priority date November 4, 1954) and San Antonio Reservoir (License 12624, priority date December 2, 1955) form the backbone of this system. Nacimiento is authorized to collect up to 350,000 AF annually, with a maximum annual withdrawal of 180,000 AF based on storage change, supplemented by an additional 27,900 AF under Permit 21089. San Antonio holds up to 335,000 AF, and MCWRA is allowed annual withdrawals of up to 210,000 AF. Both reservoirs are operated to meet water rights requirements, environmental compliance requirements, and settlement agreements, while also meeting flood control requirements regulated by California Division of Safety of Dams and Federal Energy Regulatory Commission. Additional operational considerations include public safety, infrastructure limitations, dam safety, and incidental hydropower generation.

In 1998, MCWRA and M1W cooperated to implement the Monterey County Water Recycling Projects. This includes the Salinas Valley Reclamation Project (SVRP), which provides tertiary treatment of municipal wastewater and delivers it to CSIP to augment groundwater supplies for agricultural irrigation on approximately 12,000 acres in the seawater intruded area near Castroville.

As part of the Salinas Valley Water Project (SVWP), MCWRA constructed and began to operate the Salinas River Diversion Facility (SRDF) in 2010. SRDF adds treated surface water to the recycled water and supplemental groundwater sources of CSIP water supplies. SVWP also resulted in reoperation of the reservoirs to release additional stored water during the summer when it is needed for irrigation and re-diversion at SRDF. The SVWP represents the primary conjunctive use program integrating reservoir operations with groundwater and recycled water supplies.

MCWRA operates the reservoirs with consideration of multiple factors including groundwater recharge, re-diversion of surface water at the SRDF, recreational use at the reservoirs, and incidental power generation. Reservoir operations also consider flood control and environmental considerations such as fish and wildlife habitat and migration. Releases are highly variable—

ranging from 70 cfs to roughly 550, or approximately 4,100 to 33,000 AF per month, with even larger releases when there is a storm event—reflecting hydrologic conditions and the need to respond to system demand.

MCWRA adjusts releases dynamically to meet flow targets associated with environmental bypass requirements at downstream compliance points, using the river as a managed recharge conveyance system. These releases support stream infiltration and recharge into the groundwater basin, directly linking surface water operations with groundwater conditions. MCWRA is currently developing the Salinas River Operations Habitat Conservation Plan (SROHCP) to obtain federal Endangered Species Act (ESA) permits for its water management activities.Within the CSIP service area, this integrated supply approach allows for substantial reductions in groundwater pumping when surface water is available. During periods when the SRDF is operating, grower and CSIP supplemental groundwater extraction has been reduced by approximately 80% during peak irrigation demand periods. However, reliable irrigation supply still requires active conjunctive management of all 3 sources—surface water, recycled water, and groundwater—to balance seasonal demand and variable availability. Reservoir releases thus not only support groundwater recharge basin-wide but also directly enable substitution of surface and recycled water for groundwater pumping in critical coastal areas.

Despite these efforts, challenges remain. While the CSIP and broader SVWP have slowed the rate of seawater intrusion over the past 2 decades, they have not halted it. The subbasin continues to experience declining groundwater elevations below sea level and persistent overdraft, underscoring the importance of continued optimization of reservoir operations, diversions, recharge, and recycled water use. As outlined in this GSP, additional projects and management actions are needed to manage and control undesirable results from seawater intrusion.

Together, the Salinas Valley system across multiple subbasins represents a highly managed conjunctive use framework in which surface water infrastructure, groundwater extraction, and recycled water supplies are closely integrated to mitigate long-term basin impacts and sustain agricultural productivity. No dedicated conjunctive-use facilities are located within the Eastside Subbasin; however, reservoir releases support stream infiltration and managed recharge along the Salinas River within the Salinas Valley.

3.5 Existing Well Types, Numbers, and Density

Well density data in the original GSP came from DWR's Online System for Well Completion Report (OSWCR) Map Application (DWR, 2020a). However, the OSWCR database has known limitations, including incomplete or inaccurate location information, duplicate records, and missing well completion reports, particularly for older wells, and it does not consistently reflect well abandonment, replacement, or destruction.

To develop a more accurate and complete dataset of active wells in the Salinas Valley, MCWRA conducted a desktop analysis and established a well registration program under Ordinance 5426, which requires all wells to be registered with MCWRA. As part of the desktop analysis, MCWRA reviewed well records from OSWCR, the Monterey County Environmental Health Bureau and its own records. Through the registration program, well owners now submit or verify well information via an online portal or form.

The registration process collects general information on well ownership, construction specifications, locations, and well status. Location and depth data, in particular, support analysis of the relationship between wells and groundwater conditions.

The data used in GSP Amendment 1 reflect the first 6 months of well registration. Table 3-2 summarizes the number and types of wells, including those identified through the desktop analysis and registration process with sufficient information (location, depth, and ownership). MCWRA will continue the registration program, assess spatial data to determine where there may be missing registrations, and continue outreach to well owners. Table 3-2 also includes the well count numbers from the OSWCR database for comparison. DWR's Well Completion Report Map Application classifies wells as domestic, production, and public supply; production wells include wells that are designated as irrigation, municipal, public, or industrial and only exclude those designated as domestic. For OSWCR well counts, public supply wells are subtracted from the production category to avoid double counting. Some domestic wells may be classified as *de minimis* extractors, defined as pumping less than 2 AF/yr for domestic purposes.

As of the first GSP Amendment, 56 wells in the Langley Subbasin have sufficient information. Although all well counts are lower to those reported in the OSWCR database in the original GSP, the discrepany between the domestic well counts is the most significant. Some of the domestic wells identified by DWR may not be reflective of active wells in the Subbasin, because some wells may have been abandoned or are inactive. Alternatively, some of the domestic wells may not have adequate location information to be considered registered for MCWRA's purposes. However, this discrepancy suggests that future registration efforts may be most effective if focused on domestic well owners. Figure 3-8, Figure 3-9, and Figure 3-10 show the density of domestic, production, and public supply wells, respectively, in the Subbasin according to the MCWRA dataset.

Table 3-2. Well Count Summary

Category	MCWRA Well Counts	OSWCR Well Counts
Domestic	42	916
Production	7	64
Public Supply	7	14
Total	**56**	**994**

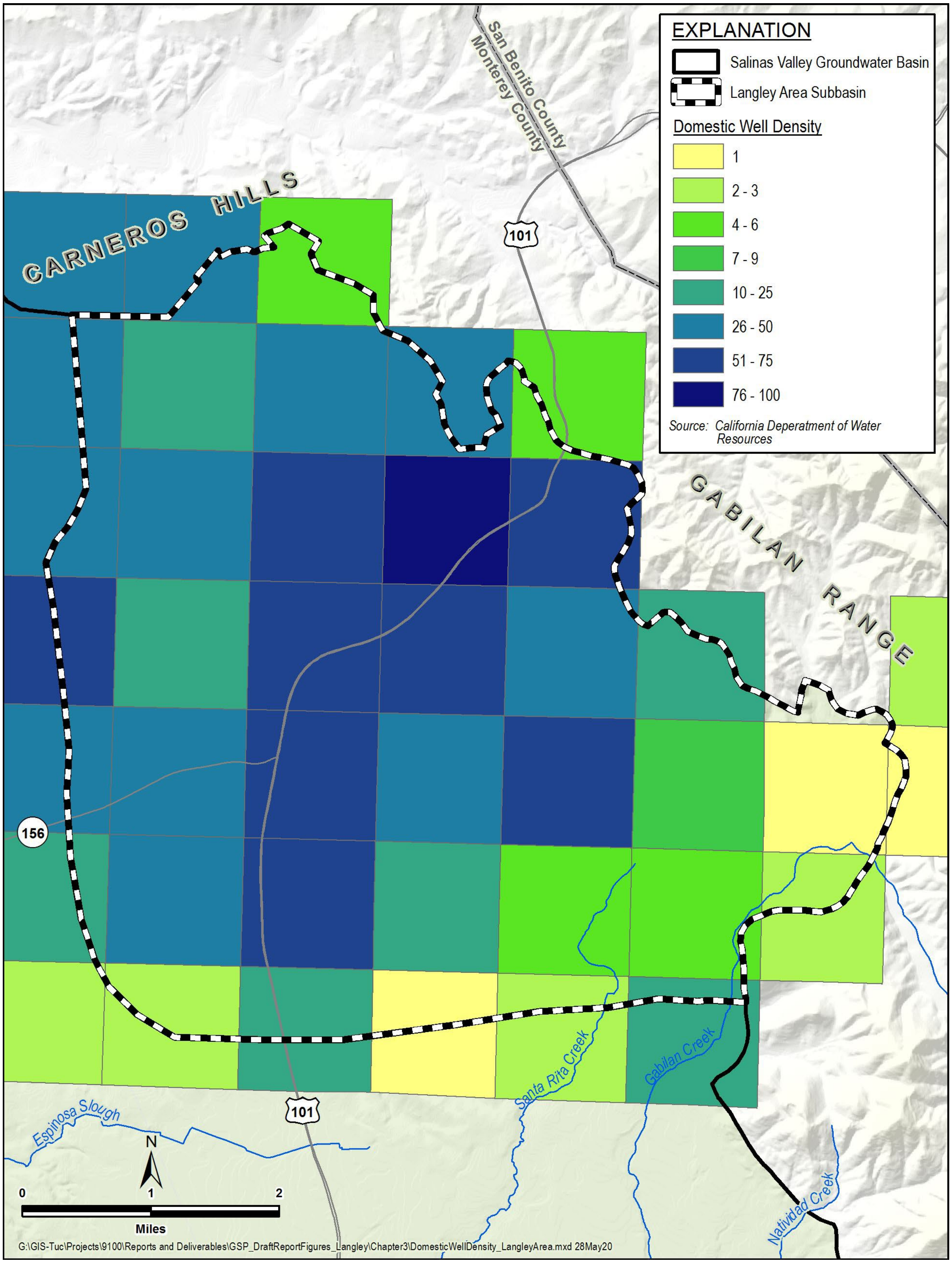


Figure 3-7. Density of Domestic Wells (Number of Wells per Square Mile)

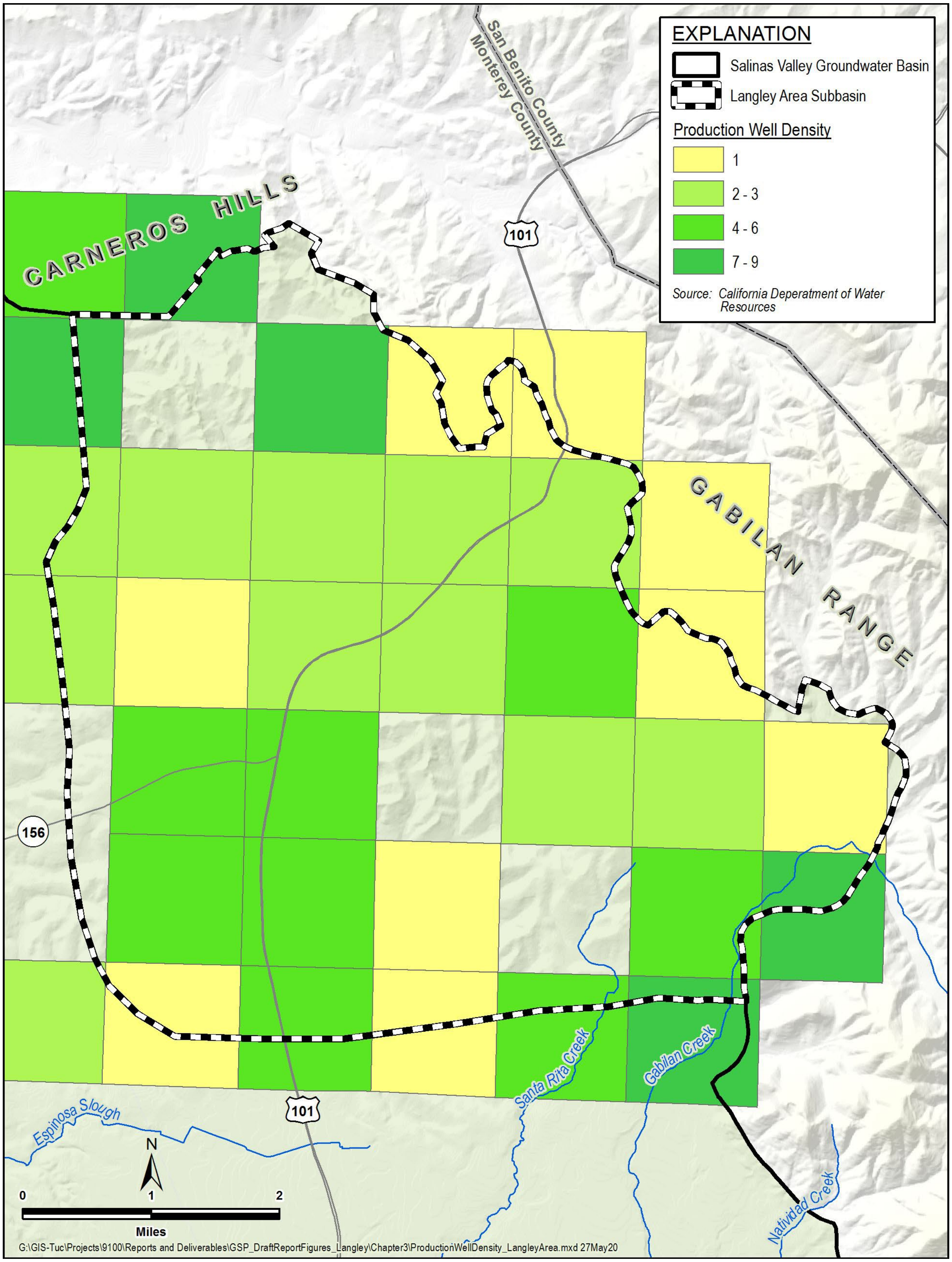


Figure 3-8. Density of Production Wells (Number of Wells per Square Mile)

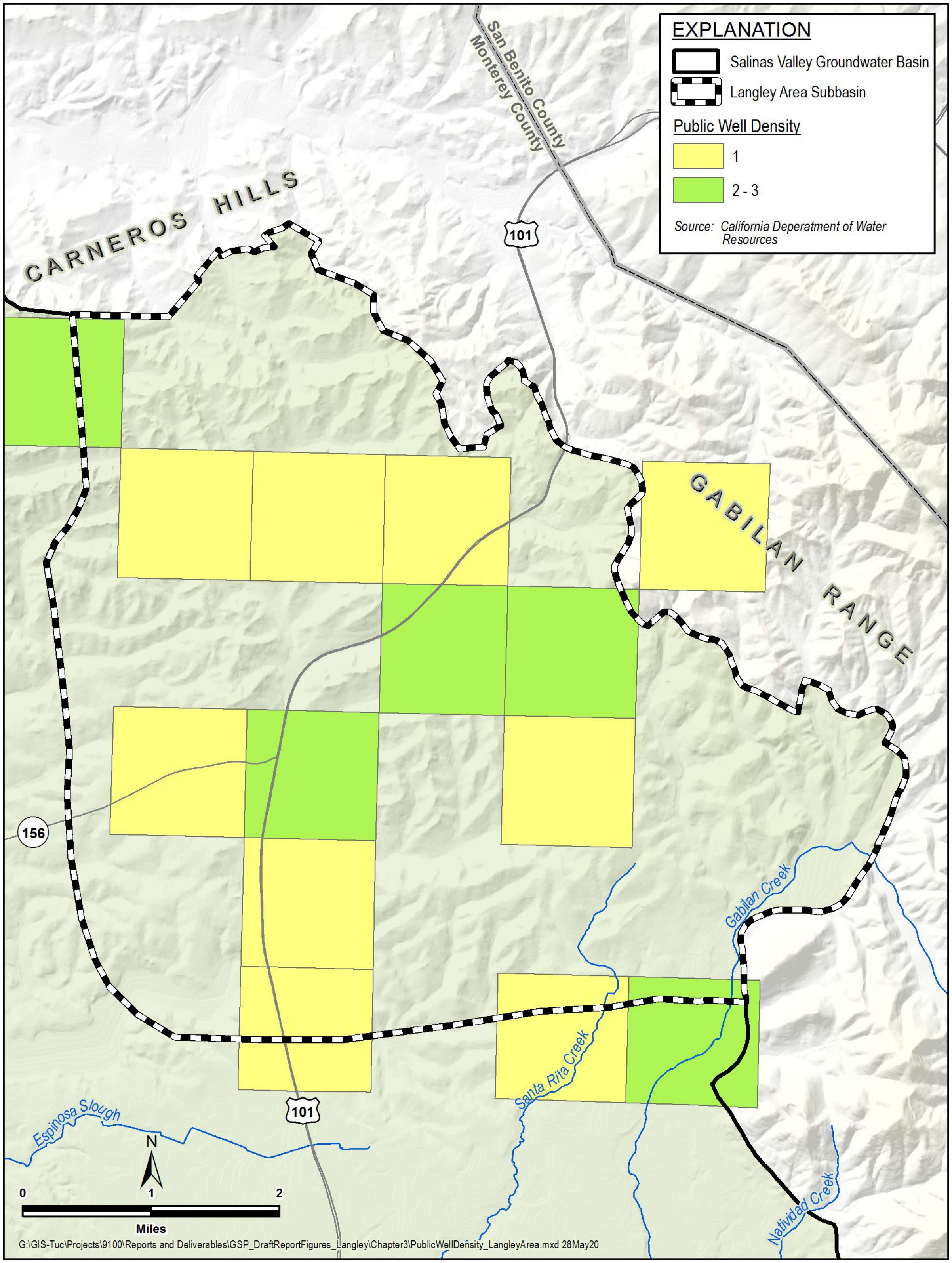


Figure 3-9. Density of Public Supply Wells (Number of Wells per Square Mile)

3.6 Existing Monitoring Programs

3.6.1 Groundwater Monitoring Program

In 2024, SVBGSA and MCWRA established a Groundwater Monitoring Program (GMP) for the Salinas Valley Groundwater Basin, adopted by MCWRA under MCWRA Ordinance No. 5426. The GMP integrates well registration, groundwater level monitoring, groundwater extraction reporting, and groundwater quality monitoring into a single coordinated program. The GMP also incorporates a Deep Aquifers Monitoring Plan to monitor conditions in the deeper aquifers of the Salinas Valley. The existing monitoring programs described below are being incorporated into and expanded under the GMP.

3.6.2 Groundwater Elevation Monitoring

MCWRA operates existing and expanded groundwater elevation monitoring programs in the Salinas Valley, which are incorporated into the monitoring plan of this GSP Amendment, as appropriate. MCWRA has annual fall (November/December), August, and monthly groundwater elevation monitoring programs. The existing groundwater elevation monitoring programs will be updated and improved to document the avoidance of undesirable results in the principal aquifer in the Subbasin.

MCWRA historically monitored 3 wells within the Langley Subbasin as part of the CASGEM network. All 3 were migrated to the SGMA monitoring network and are supplemented with additional wells that are also monitored by MCWRA. In 2024, MCWRA shifted the monitoring of these wells to the GMP with MCWRA Ordinance No. 5426. MCWRA monitors groundwater elevations. Groundwater elevation data from all wells in the monitoring network are publicly available through the SVBGSA Web Map. This network is used for groundwater elevation monitoring under this GSP, as described further in Chapter 7.

3.6.3 Groundwater Extraction Monitoring

MCWRA collects groundwater extraction information from non-*de minimis* extractors within Zone 2C and/or the 180/400, Eastside, Forebay, Langley, Monterey, and Upper Valley Subbasins. The Groundwater Extraction Monitoring System(GEMS) was established in 1993 and updated in 2024 as part of the GMP to meet SGMA requirements. GEMS required all wells located in Zones 2, 2A, and 2B with discharge pipes of 3 inches or greater in diameter to report extraction. These zones only overlap with the southern part of the Langley Subbasin as illustrated on Figure 3-3. As a result, MCWRA has not historically collected groundwater extraction data for most of the Langley Subbasin. The GMP covers all non-*de minimis* extractors within the Subbasin and is used for groundwater extraction reporting under this GSP, as described in Chapter 7. For rural residential extraction for parcels not within a water system that report and not covered by Zones 2, 2A, and 2B, extraction is estimated until it is consistently reported under the GMP.

SWRCB Division of Drinking Water (DDW) collects annual pumping data from public drinking water systems located within the Subbasin, which include systems with over 15 connections. This data has been used in annual reports to estimate municipal pumping in the areas of the Subbasin not covered by Zones 2, 2A, and 2B until it is consistently reported under the GMP.

3.6.4 Groundwater Quality Monitoring

3.6.4.1 MCWRA Seawater Intrusion Monitoring

Seawater intrusion has been observed in 2 adjacent basins: the Pajaro Valley Basin and the 180/400 Subbasin. MCWRA monitors seawater intrusion in the Salinas Valley with a network of dedicated monitoring and production wells in the 180/400, Eastside, and Monterey Subbasins, of which the majority are in the 180/400 Subbasin. The seawater intrusion front has not reached the Langley Subbasin. MCWRA collects samples in June and August that are analyzed for major cations and anions, and uses that data to produce chloride isocontours in the 180/400 Subbasin. This network is used for seawater intrusion monitoring under this GSP, as described in Chapter 7.

3.6.4.2 Other Groundwater Quality Monitoring

Groundwater quality is monitored under several different programs and by different agencies including the following:

- Municipal and community water purveyors must collect water quality samples on a routine basis for compliance monitoring and reporting to the SWRCB DDW. These purveyors include municipal systems; community water systems; non-transient, non-community water systems; and non-community water systems that provide drinking water to at least 15 service connections or serve an average of at least 25 people for at least 60 days a year.
- Local small or state small water system wells are regulated by the Monterey County Department of Public Health. Local small water systems serve 2 to 4 service connections and state small water systems serve 5 to 14 connections.
- To fulfill the groundwater quality regulatory requirements of the Irrigated Lands Program (ILP), the Central Coast Regional Water Quality Control Board (CCRWQCB) requires monitoring of both on-farm domestic wells and agricultural wells for irrigation and livestock supply.
- In addition to the ILP, the CCRWQCB conducts groundwater quality monitoring at multiple sites as part of investigation or compliance monitoring programs. These sites are discussed further in Chapter 5.

For this GSP, groundwater quality data will be downloaded and reviewed from SWRCB's DDW for municipal public water system supply wells and the ILP irrigation supply wells and on-farm domestic wells monitored under the CCRWQCB's Agricultural Order, as described in Section 3.6.2.

3.6.5 Surface Water Monitoring

The U.S. Geological Survey (USGS) does not operate any streamflow gages within the Langley Subbasin.

3.7 Existing Water Management Plans

3.7.1 Monterey County Groundwater Management Plan

MCWRA developed a Groundwater Management Plan that is compliant with AB3030 and SB1938 legislation (MCWRA, 2006). This Groundwater Management Plan exclusively covered the Salinas Valley Groundwater Basin in Monterey County. The original 2022 GSP succeeded the Groundwater Management Plan as the management plan for the Subbasin, and this GSP Amendment replaces the original GSP.

The Groundwater Management Plan identified 3 objectives for groundwater management:

Objective 1: Development of Integrated Water Supplies to Meet Existing and Projected Water Requirements

Objective 2: Determination of Sustainable Yield and Avoidance of Overdraft

Objective 3: Preservation of Groundwater Quality for Beneficial Use

To meet these 3 objectives, the Groundwater Management Plan identified plan elements to be implemented by MCWRA. These included groundwater monitoring; monitoring of surface water storage, flow, and quality; determination of basin yield and overdraft; continuation of conjunctive use operations; water quality management; identification of well construction, abandonment, and destruction policies; and public education. Since the GSP replaces the Groundwater Management Plan as the management plan for the Subbasin, the GSP incorporates and refines the elements of the Groundwater Management Plan to comply with SGMA.

3.7.2 Integrated Regional Water Management Plan

The Integrated Regional Water Management (IRWM) Plan for the Greater Monterey County Region was developed by the Greater Monterey County Regional Water Management Group (RWMG), which consists of government agencies, nonprofit organizations, educational organizations, water service districts, private water companies, and organizations representing agricultural, environmental, and community interests.

The Langley Subbasin falls within the IRWM Plan area. The IRWM Plan consists of a set of goals and objectives that were identified by the RWMG as being critical to address water resource issues within the planning area related to the following topics:

- Water Supply
- Water Quality
- Flood Protection and Floodplain Management
- Environment
- Regional Communication and Cooperation
- DACs
- Climate Change

The IRWM Plan includes more than 25 projects that could assist regional groundwater management (RWMG, 2018).

3.7.3 Urban Water Management Plan

This section describes the urban water management plan (UWMP) developed by California Water Service Company (Cal Water) for parts of the Langley Subbasin. Cal Water provides water service to portions of the City of Salinas and surrounding communities through its Salinas District in the 180/400, Eastside, and Langley Subbasins. Its 2025 UWMP (California Water Service, 2026) describes the service area; reports historical and projected population; identifies historical and projected water demand by category such as single-family, multi-family, commercial, industrial, institutional/government, and other; and describes the distribution system and identifies system losses and water supply reliability. The UWMP projects water demands through 2050 and evaluates water supply reliability under normal, single dry-year, and multiple dry-year conditions.

The UWMP describes the system's reliance on groundwater and Cal Water's support for the development and implementation of GSPs. Cal Water maintains an active well maintenance program to identify wells requiring replacement and intends to maintain sufficient wells and distribution facilities to accommodate future demand. To maintain system reliability and accommodate future growth, the UWMP describes supply-augmentation projects to reactivate 1 existing inactive well and bring three new wells online to extract an additional 7,090 AF/yr. by 2050. Cal Water also identifies groundwater sustainability considerations under SGMA as a driver for its ongoing conservation planning and resource management.

The UWMP recognizes that GSAs have authority under SGMA to implement projects and management actions. It states that the applicable GSPs contain various PMAs, and that if future actions such as groundwater pumping allocations or pumping fees are adopted, Cal Water will consider them in future supply planning.

Cal Water has and intends to take an active role in the local and state-wide management of groundwater resources over the next 5 to 25+ years by fully supporting and participating in the principal edicts of SGMA. Cal Water has had active participation with the SVBGSA, the SVBGSA Board, the SVBGSA technical advisory committees, and the subbasin committees.

The 2025 UWMP addresses groundwater quality as a factor in water supply reliability. Cal Water routinely monitors its wells and treated water for regulated constituents and tracks changes in constituent concentrations to proactively address potential water quality issues. Where source-water constituents are detected at concentrations requiring treatment, Cal Water may take affected wells offline and implement appropriate treatment. Cal Water also evaluates groundwater contamination when siting new wells and avoids areas of known contamination. Based on these monitoring and management practices, the UWMP concludes that water quality is not expected to affect the reliability of Cal Water's supplies through 2050.

Cal Water's UWMP notes that groundwater will continue to remain as its sole supply. The 2025 UWMP incorporates climate change into its reliability analyses and concludes that available supplies are expected to remain sufficient to meet projected demands, including during a 5-year drought and under projected climate change conditions.

3.8 Existing Water Regulatory Programs

3.8.1 Well Permitting

The Monterey County Code Chapter 15.08 –contains the County's regulations for the construction, repair, destruction and reconstruction of all water wells. The Chapter sets forth certain technical requirements that appear to be purely ministerial in their application; however, the Chapter also refers to DWR Bulletin Nos. 74-81 and 74-1 and gives the Health Officer discretion to impose unspecified conditions on a permit, grant variances, and deny an application if in his/her judgment it would defeat the purposes of the Chapter. Permit review considers whether a well would be located in an area where groundwater quality programs are known to exist or where a well will intersect more than 1 aquifer, among other things.

On August 29, 2018, the State Third Appellate District Court of Appeal published an opinion in *Environmental Law Foundation v. State Water Resources Control Board* (26 Cal.App.5th 844), a case that may impact future permitting of wells near navigable surface waters to which they may be hydrologically connected. The Court of Appeal found that while groundwater itself is not protected by the public trust doctrine, the doctrine does protect navigable waters from harm caused by extraction of groundwater if it adversely affects public trust uses. Further, it found that Siskiyou County, as a subdivision of the State, shares responsibility for administering the public trust. Similarly, the County is responsible for well permitting. Therefore, it has a responsibility to consider the potential impacts of groundwater withdrawals on public trust resources when permitting wells near areas where groundwater may be interconnected with navigable surface waters.

Moreover, California Supreme Court's decision in *Protecting Our Water and Environmental Resources v. County of Stanislaus* (10 Cal.5th 479 (2020)) held that Stanislaus County could not categorically classify its issuance of groundwater well construction permits as ministerial decisions exempt from environmental review under the CEQA. The Monterey County Health Department, Environmental Health Bureau issues well permits and does inhouse CEQA review on all well application in consultation when need with County Counsel. If the well application is in conjunction with a building permit, EHB receives input from the County of Monterey Housing & Community Development. Although the Monterey County Code has not yet been amended in response to these cases, discretionary well permit review, where determined to be needed, may require analyses of the effects of pumping from new wells, including factors such as both the total volume and seasonal timing of extraction, how the new wells may affect nearby wells and regional groundwater levels and whether the wells are located in an area with overdraft conditions. GSPs have established SMC that provide quantifiable minimum thresholds that can be used in these evaluations.

As in the land use discussion, the Public Service element of the County's 2010 General Plan addresses permitting of individual wells. Table 3-3 summarizes the 2010 General Plan's water supply guidelines for the creation of new residential or commercial lots (County of Monterey Housing and Community Development, 2010, Table PS-1). Table 3-4 depicts the decision matrix from the Monterey County General Plan for permitting new residential or commercial wells for existing lots (County of Monterey Housing and Community Development, 2010, Table PS-2).

Table 3-3. County of Monterey Water Supply Guidelines for the Creation of New Residential or Commercial Lots

Major Land Groups	Water Well Guidelines
Public Lands	Individual Wells Permitted in Areas with Proven Long-Term Water Supply
Agriculture Lands	Individual Wells Permitted in Areas with Proven Long-Term Water Supply
Rural Lands	Individual Wells Permitted in Areas with Proven Long-Term Water Supply
Rural Centers	Public System; Individual Wells Allowed in limited situations
Community Areas	Public System

Table 3-4. County of Monterey Well Permitting Guidelines for Existing Residential and Commercial Lots

Characteristics of Property	Water Connection Existing or Available from the Water System	Not Within a Water System or a Water Connection Unavailable
Greater than or equal to 2.5 Acres connected to a Public Sewage System or an on-site wastewater treatment system	Process Water Well Permit	Process Water Well Permit
Less than 2.5 Acres and connected to a Public Sewage System	Process Water Well Permit	Process Water Well Permit
Less than 2.5 Acres and connected to an on-site wastewater treatment system	Do not Process Water Well Permit	Process Water Well Permit

3.8.2 Groundwater Export Prohibition

The MCWRA Act, § 52.21 prohibits the export of groundwater for uses outside the Salinas Valley Groundwater Basin from any part of the Basin, including the 180/400 Subbasin. In particular, the Act states:

> *For the purpose of preserving [the balance between extraction and recharge], no groundwater from that basin may be exported for any use outside the basin, except that use of water from the basin on any part of Fort Ord shall not be deemed such an export. If any export of water from the basin is attempted, the Agency may obtain from the superior court, and the court shall grant, injunctive relief prohibiting that exportation of groundwater.*

3.8.3 Agricultural Order

In 2021 the CCRWQCB issued Agricultural Order No. R3-2021-0040, the Proposed General Waste Discharge Requirements for Discharges from Irrigated Lands (CCRWQCB, 2021). The permit requires that growers implement practices to reduce nitrate leaching into groundwater and improve receiving water quality. Specific requirements for individual growers are structured into 3 phases based on the relative risk their operations pose to water quality. Each of the 3 phases encompass a different area of the Central Coast Basin. Monitoring results from this new Agricultural Order (Ag Order 4.0) will be incorporated into this GSP’s groundwater quality data.

3.8.4 Water Quality Control Plan for the Central Coast Basins

The Water Quality Control Plan for the Central Coastal Basin (Basin Plan) was most recently updated in June 2019 (CCRWQCB, 2019). The objective of the Basin Plan is to outline how the quality of the surface water and groundwater in the Central Coast Region should be managed to provide the highest water quality reasonably possible. Water quality objectives for both groundwater and surface water are provided in the Basin Plan.

The Basin Plan lists beneficial users, describes the water quality that must be maintained to allow those uses, provides an implementation plan, details SWRCB and CCRWQCB plans and policies to protect water quality, and describes statewide and regional surveillance and monitoring programs. Present and potential future beneficial uses for waters in the Basin are municipal supply; agricultural supply; groundwater recharge; recreation; sport fishing; warm freshwater habitat; wildlife habitat; rare, threatened, or endangered species habitat; and spawning, reproduction, and/or early development of fish.

3.8.5 Title 22 Drinking Water Program

The SWRCB DDW regulates public water systems in the State to ensure the delivery of safe drinking water to the public. A public water system is defined as a system for the provision of water for human consumption that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year. Private domestic wells, wells associated with drinking water systems with fewer than 15 residential service connections, industrial, and irrigation wells are not regulated by the DDW.

The DDW enforces the monitoring requirements established in Title 22 of the California Code of Regulations for public water system wells, and all the data collected must be reported to the DDW. Title 22 also designates the Maximum Contaminant Levels (MCLs) and Secondary Maximum Contaminant Levels (SMCLs) for various waterborne contaminants, including volatile organic compounds, non-volatile synthetic organic compounds, inorganic chemicals, radionuclides, disinfection byproducts, general physical constituents, and other parameters.

3.8.6 County Public Policy of Safe and Clean Water

In December 2018, the County Board of Supervisors adopted Resolution No. 18-385 recognizing the human right to safe and clean drinking water. The resolution established a public policy recognizing that all residents of Monterey County have the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes, including disadvantaged individuals and groups and communities in rural and urban areas. The intent of the policy is to inform the County when implementing policies and regulations affecting water supply and usage and to help the County focus on the issue of drinking water pollution in certain Monterey County domestic wells and water systems. The policy also serves to identify potential future threats due to drought and a lack of available drinking water without impacting water rights or expanding or creating new County obligations.

3.9 Incorporating Existing Programs into the GSP and Limits on Operational Flexibility

Information from existing water resource monitoring, management, and regulatory programs have been incorporated into this GSP. They are taken into consideration during the preparation of the sustainability goal, when establishing SMC, and when developing projects and management actions. This GSP has been developed to reflect the principles outlined in those existing local plans and builds on existing plans during GSP implementation. Some of the existing management plans and ordinances may limit operational flexibility. These potential limits to operational flexibility have already been incorporated into the projects and management actions included in this GSP, as amended. Examples of limits on operational flexibility include:

- The groundwater export prohibition included in the MCWRA Act prevents export of water out of the Salinas Valley Groundwater Basin. This prohibition is not expected to adversely affect SVBGSA's ability to reach sustainability.
- The Basin Plan and the Title 22 Drinking Water Program restrict the quality of water that can be recharged into the Subbasin.
- The Habitat Conservation Plan (HCP) being developed by MCWRA on the Salinas River will guide operations for Nacimiento and San Antonio reservoir releases which provide groundwater recharge, among other purposes.

The other monitoring, management, and regulatory programs do not limit the operational flexibility in this Subbasin.

4 HYDROGEOLOGIC CONCEPTUAL MODEL

The hydrogeologic conceptual model (HCM) characterizes the geologic and hydrologic framework of the Subbasin in accordance with GSP Regulations § 354.14. It is based on best available data, technical studies, and qualified maps that characterize the physical components and surface water-groundwater interaction in the Subbasin. The HCM provides comprehensive written descriptions and illustrated representations of subsurface conditions. This chapter describes the Subbasin characteristics and processes that govern the flow of water across the Subbasin boundaries and outlines the general groundwater setting that may be encountered in the subsurface environment. Current and historical groundwater conditions are discussed in greater detail in the following chapter. The current HCM in this GSP will be part of an iterative process where current conditions and data gaps are described, investigated, and then updated accordingly.

Since the original 2022 GSP, this HCM has been updated with newly available data and technical studies and incorporated into GSP Amendment 1 (Montgomery & Associates, 2025a). These updates provide a stronger understanding of the Subbasin and focus on key areas where new information warranted a revised interpretation. Key updates to this HCM include the following:

- Revised the bedrock surface that delineates the bottom of the groundwater basin
- Refined the weathered bedrock surface that contributes to small domestic wells
- Incorporated the observed hard pan intervals into the Aromas Sands Aquifer understanding and relating them to the known water quality challenges in the Subbasin
- Incorporated the results of the *Deep Aquifers Study* (Montgomery & Associates, 2024) that defined the 400/Deep Aquitard that separates the 400-Foot Aquifer from the Deep Aquifers where the aquitard is present in the Subbasin

4.1 Subbasin Setting and Topography

The Langley Subbasin is an approximately 24-square-mile long hilly area at the northern end of the Salinas Valley. The Subbasin is roughly triangular, with a few stream drainages dissecting lower elevations of the Carneros Hills and the Gabilan Range (Figure 4-1).

The colored bands on Figure 4-1 show the topography of the Subbasin, derived from the USGS Digital Elevation Model (DEM). The Subbasin slopes at an average grade of approximately 125 feet/mile, generally from the northeast to the southwest towards the Salinas River. Land surface elevations in the Subbasin range from approximately 600 feet along its border with the Gabilan Range to approximately 100 feet where it meets the 180/400-Foot and Eastside Aquifer Subbasins.

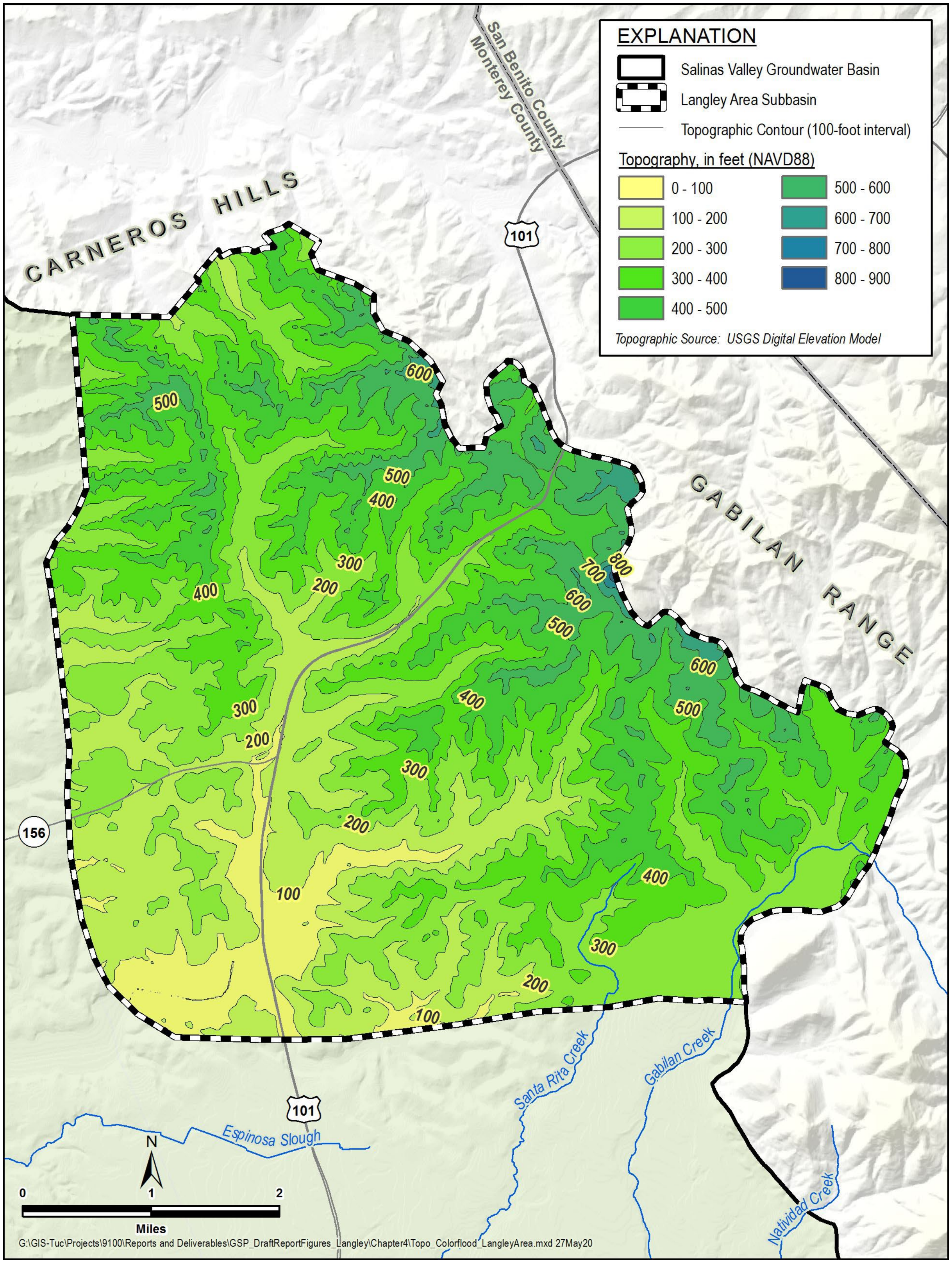


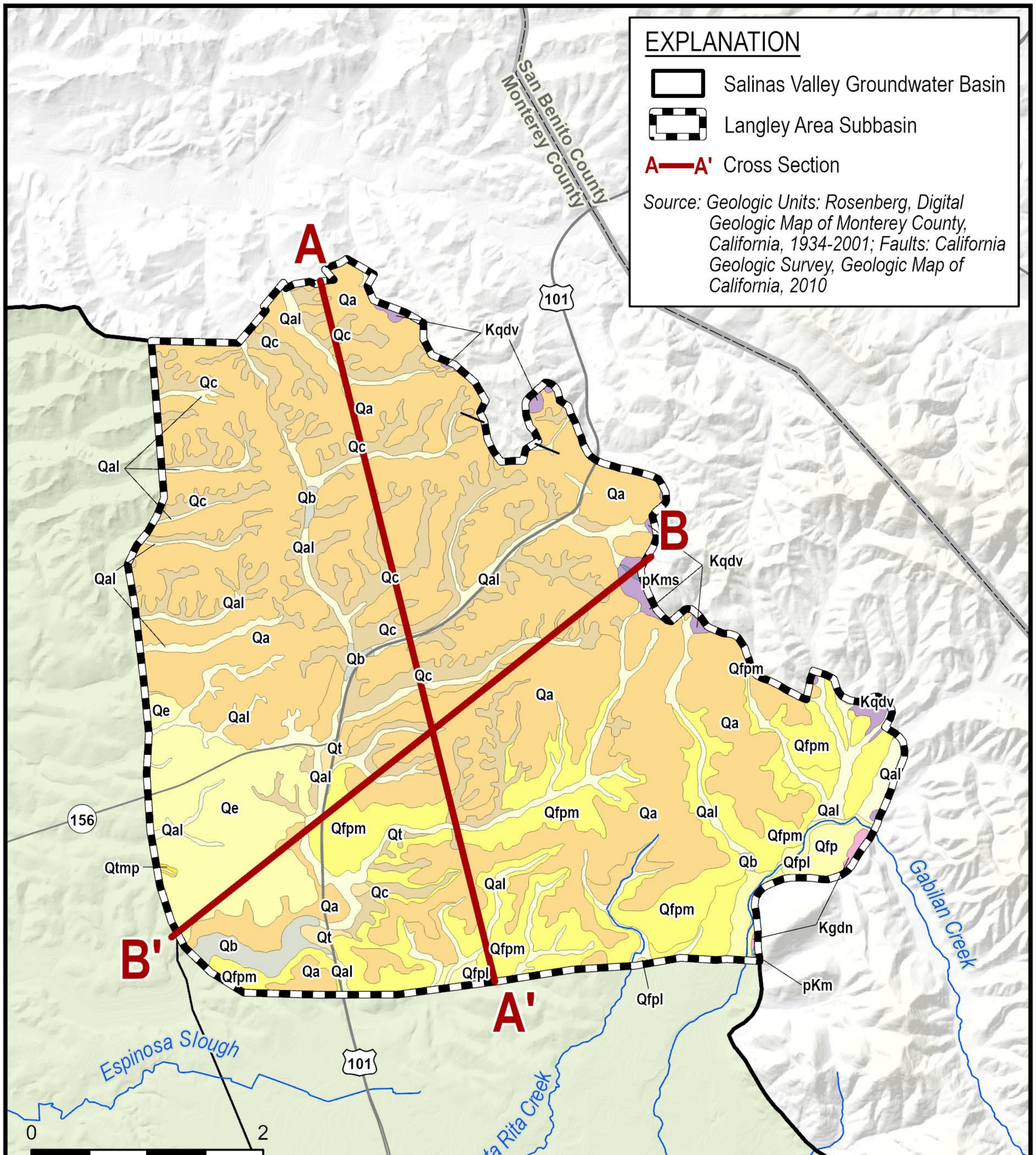
Figure 4-1. Langley Area Subbasin Topography

4.2 Subbasin Geology

The subbasin geology describes the physical framework in which groundwater occurs and moves. The geology of the Subbasin controls the locations and depths of the aquifer and aquitards as well as the subbasin boundaries. The geologic descriptions provided here are derived from previously published scientific reports and from investigations conducted by the USGS, State of California, and academic institutions.

The Subbasin was formed through periods of structural deformation and periods of marine and terrestrial sedimentation in a tectonically active area on the eastern edge of the Pacific Plate. Figure 4-2 presents a geologic map of the Subbasin and vicinity. This geologic map was adopted from the 2001 Digital Geologic Map of Monterey County as well as the California Geologic Survey's 2010 statewide geologic map and the surface geology map of Monterey County (Jennings, *et al.*, 2010; Rosenberg, 2001). The locations of geologic cross-sections used to define the principal aquifer in Section 4.4 are also shown on Figure 4-2. The explanation on Figure 4-2 presents the age sequence of the geologic materials from the youngest unconsolidated Quaternary sediments to the oldest pre-Cambrian basement rock. It also contains the locations of cross-sections that are located in Section 4.4.

The geology of the Langley Subbasin is dominated by the Aromas Sand, alluvial fans, and other sedimentary deposits that form low hills. Granite and weathered or decomposed granite are also present at relatively shallow depths in the northern portions of the Subbasin. Surface-water drainages originating in the Gabilan Range eroded through the Aromas Sand that unconformably overlies the Gabilan granite and deposited a series of small, alluvial fans that extend from the higher elevations and the fluvial deposits that define the 180/400 Subbasin in the southwest. The Aromas Sand comprises fine- to coarse-grained quartz and feldspar sand with clayey, cemented zones, referred to as hardpan, that act as caprock when exposed at the tops of hills or as perch zones within the formation (Harding, 2001).



(from Rosenberg, 2001; Jennings, *et al.*, 2010)

Figure 4-2. Subbasin Geology

FIGURE 4-2. EXPLANATION

QUATERNARY

Qa	Aromas Sand, undifferentiated
Qal	Alluvial deposits, undifferentiated
Qb	Basin deposits
Qc	Colluvium
Qe	Eolian deposits
Qfp	Flood-plain deposits, undifferentiated?
Qfpl	Alluvial fans, late Pleistocene
Qfpm	Alluvial fans, middle Pleistocene
Qls	Landslide deposits
Qt	Fluvial terrace deposits, undifferentiated
Qtmp	Fluvial terrace deposits, middle Pleistocene

PRE-CRETACEOUS

pKms	Mica schist (Gabilan Range)
pKm	Marble

CRETACEOUS

Kqdv	Quartz Diorite of Vergeles
Kgdn	Granodiorite of Natividad

GEOLOGIC FEATURES

——	fault, certain

4.2.1 Geologic Formations

Major geologic units present in the Langley Subbasin are described below, starting at the surface and moving through the geologic layers from youngest to oldest. Geologic descriptions are derived from a combination of sources (Jennings *et al.*, 2010; Clark *et al.*, 2000; Johnson *et al.*, 1988; DWR, 2004). The corresponding designations on Figure 4-2 are provided in parentheses.

Quaternary Deposits

- *Alluvium in streambeds and small drainages (*Qal, Qb, and Qfp*)* – Streambeds and other drainages are filled with loose, moderately sorted silt and sand with lenses of clay and some areas of gravel (Qal). Clays mixed with silt, sand, and organic material have collected at the bottoms of past and present basins (Qb). A floodplain deposit in the southeast corner of the Subbasin contains loose sand and silt where Gabilan Creek has overflowed its banks (Qfp).
- *Aromas Red Sands and similar (*Qa, Qe, and Qc*)* – The Aromas Red Sands Formation consists of lower fluvial sand units and upper aeolian sand units locally separated by interbedded clays and silty clays (DWR, 2004). Some of these interbedded clays are highly cemented and may act as caprock when exposed at the tops of hills or as perch

zones within the formation (Harding, 2001). This complex aggregation of materials has been deposited in varied, localized environments, which makes it difficult to correlate significant stratigraphies over distance (Fugro West, Inc., 1995). The Aromas Red Sands include partly consolidated, moderately to poorly sorted, silty clay, sand, and gravel (Qa). Sand matching that of the Aromas Red Sands is also found in windblown deposits (Qe). Some sources refer to the windblown deposits as the Upper Aromas Red Sands.

- *Alluvial fans (*Qfpl and Qfpm*)* – Alluvial fans are sediments deposited in a distributary manner at the base of mountain fronts where streams emerge (Kennedy/Jenks, 2004). Alluvial Fans can be found on either side of drainages in the southern Subbasin. They consist of moderately to poorly sorted sand, silt, and gravel, although recent data have shown them to have higher clay content than previously understood. This clay content is likely the result of chemical decomposition of the feldspars found in the granite. Middle Pleistocene alluvial fans (Qfpm) tend to be weakly consolidated, whereas late Pleistocene alluvial fans (Qfpl) can be moderately consolidated.
- *Terrace deposits (*Qt and Qtmp*)* – Terrace deposits are the remains of ancient floodplains. The terrace deposits in the southern Subbasin are partially consolidated and consist mostly of sand mixed with silt and gravel. Some are known to be from the middle Pleistocene (Qtmp). Others are of indeterminate age (Qt).

Quaternary-Tertiary Deposits

- *Paso Robles Formation* – Although not shown on Figure 4-2, the Paso Robles Formation underlies the Aromas Red Sands in parts of the Subbasin (DWR, 2004). This Pliocene to lower Pleistocene (1.6 million to 5 million years ago) unit is composed of lenticular beds of sand, gravel, silt, and clay from terrestrial deposition (Thorup, 1976, Durbin *et al.*, 1978). The depositional environment is largely fluvial but also includes alluvial fan, lake, and floodplain deposition (Durbin, 1974; Harding ESE, 2001; Thorup, 1976; Greene, 1970). The alternating beds of fine and coarse materials typically have bed thicknesses of 20 to 60 feet (Durbin *et al.*, 1978).
- *Purisima Formation (P)* – Also not shown on Figure 4-2, The Purisima Formation underlies the Aromas Red Sands in parts of the Subbasin (DWR, 2004). This Pliocene unit consists of intercalated siltstone, sandstone, conglomerate (Greene, 1977), clay, and shale (Harding ESE, 2001) deposited in a shallow marine environment.

Older Igneous and Metamorphic Rocks

Cretaceous quartz diorite (Kqdv) and granodiorite (Kgdn) form the eastern boundary of the Subbasin. This bedrock angles downward to the northwest, where it underlies the sedimentary deposits above. On the eastern boundary, there is at least 1 outcropping of pre-Cretaceous mica schist (pKms).

4.2.2 Restrictions to Flow

No known structural features, such as geologic folds or faults, restrict groundwater flow within the Langley Subbasin. However, depositional features have the potential to restrict groundwater flow. Intermittent cemented clay layers within the Aromas Sand form confining beds or perched zones in some places. These barriers to flow appear to be localized. A report by Fugro West, Inc. (1995) acknowledges the clay but states that there are no major aquitards in the Subbasin.

4.2.3 Soils

The soils of the Subbasin are derived from the underlying geologic formations and influenced by the historical and current patterns of climate and hydrology. Soil types can influence groundwater recharge and the placement of recharge projects. The arable soils of the Subbasin historically are classified into 4 groups (Carpenter and Cosby 1925): residual soils, old valley-filling soils, young valley-filling soils, and recent-alluvial soils.

More recent surveys classify the soils into categories based on detailed soil taxonomy (U.S. Department of Agriculture, 2018). Figure 4-3 is a composite map of soils in the Subbasin from the USDA Natural Resources Conservation Service (NRCS) and the Gridded Soil Survey Geographic (SSURGO) Database that is produced by the National Cooperative Soil Survey (NCSS).

The Subbasin is dominated by 3 major soil orders: entisols, mollisols, and alfisols. Minor soils include vertisols, histosols, and isceptisols. The 3 major soil orders are described below.

- **Entisols** are the predominant soil order in this Subbasin. Entisols are mineral soils that have not been in place long enough for distinct horizons to develop. These soils are often found in areas of recent deposition such as active flood plains, river basins, and areas prone to landslides.
- **Mollisols** are the second most found soil order in this Subbasin. This soil is more prevalent proximal to the boundary with the Eastside Subbasin and the 180/400-Foot Subbasin. Mollisols are characterized by a dark surface horizon, indicative of high organic content. The organic content often originates from roots of surficial grasses or similar vegetation. They are highly fertile and often alkaline rich (calcium and magnesium). Mollisols can have any moisture regime, but enough available moisture to support perennial grasses is typical.
- **Alfisols** are present along portions of the Subbasin close to the boundary with the Eastside Subbasin. Alfisols are known to have natural fertility both from the tapering of clay in the subsurface horizons and from leaf litter when under forested conditions. This order of soils is commonly associated with high base minerals such as calcium, magnesium, sodium, and potassium.

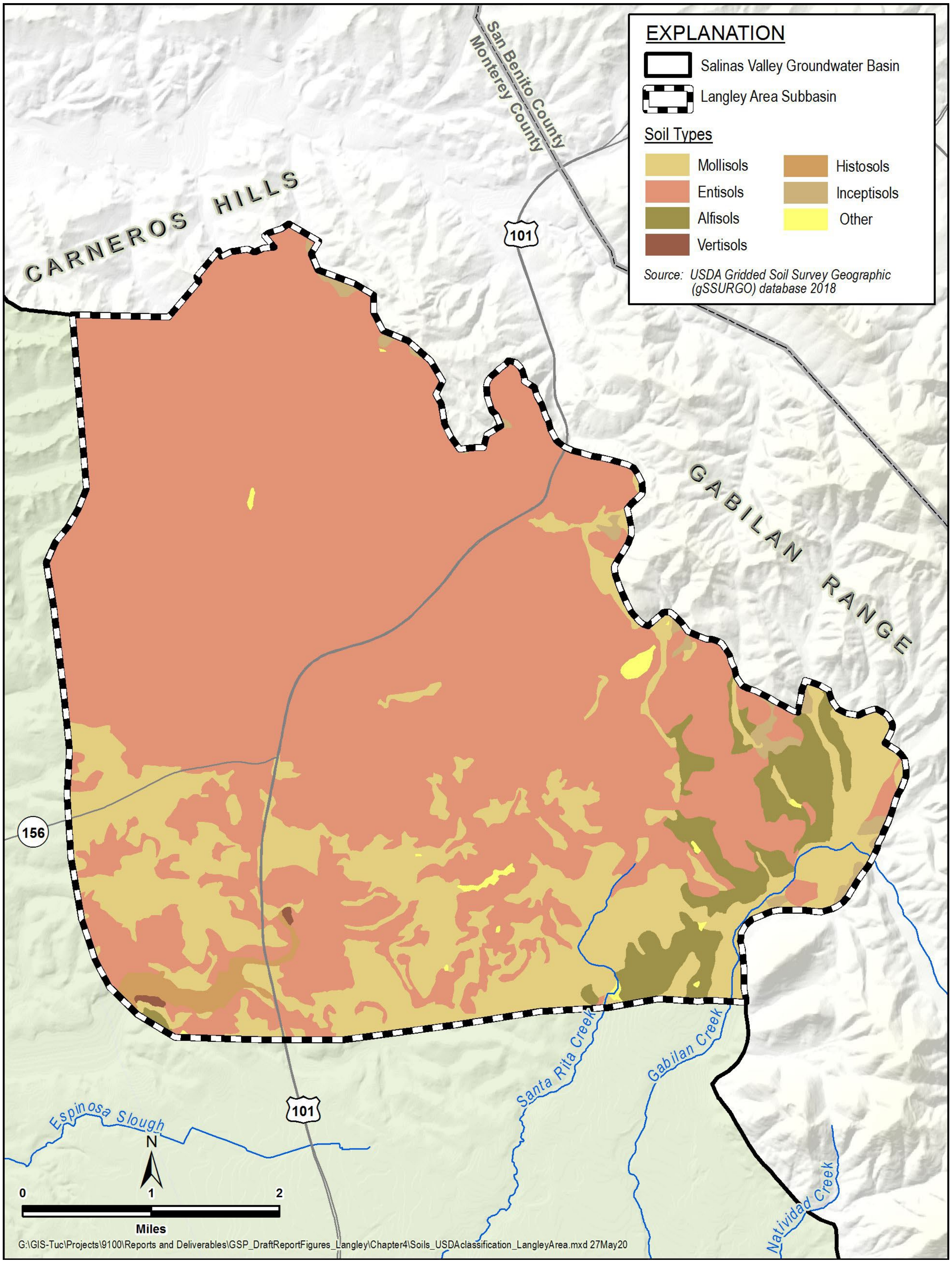


Figure 4-3. Composite Soils Map

4.3 Subbasin Extent

The subbasin extents describe both the lateral and vertical extents of the Subbasin. The Subbasin extents are defined by DWR and are documented in Bulletin 118, (DWR, 2003; DWR, 2016a). Figure 3-1 illustrates the extent of the Subbasin.

4.3.1 Lateral Subbasin Boundaries

The Langley Subbasin is laterally bounded by a combination of subbasin boundaries and physical boundaries of the Salinas Valley Groundwater Basin, all shown on Figure 1-1.

4.3.1.1 Boundaries with Adjacent Subbasins

The Langley Subbasin is bounded by the following subbasins:

- **180/400-Foot Aquifer Subbasin.** The western boundary with the adjacent 180/400-Foot Aquifer Subbasin generally coincides with the 200-foot land surface elevation contour. Although the Langley Subbasin is not on the valley floor, no reported hydraulic barriers separate these 2 subbasins, particularly because the Aromas Sand includes portions of both the 180- and 400-Foot Aquifers. Therefore, this GSP needs to consider potential for groundwater flow between these adjacent subbasins.
- **Eastside Subbasin.** The southern boundary with the Eastside Subbasin generally coincides with the presence of Pleistocene Aromas Red Sands indicative of the Langley Subbasin (DWR, 2004). Although the Langley Subbasin is not on the valley floor, no reported or observed hydraulic barriers separate these 2 subbasins. However, the difference in sediments and depositional environments may restrict hydraulic connectivity.

4.3.1.2 Physical Basin Boundaries

The Langley Subbasin is bounded by the following physical features:

- **The Gabilan Range.** The eastern boundary of the Subbasin is the contact between the unconsolidated sediments and the Gabilan Range, which consists mostly of granitic rocks. Groundwater flow across this boundary has not been studied extensively, and many reports indicate groundwater recharge for this subbasin is primarily through the stream channels originating in the Gabilan Range. There are no published mapped faults or significant fracture sets that could contribute to mountain block recharge for the Subbasin.
- **Drainage Divide with the Pajaro Valley Groundwater Basin.** This boundary follows the course of a Salinas River paleo-drainage (DWR, 2004). This abandoned river valley

cuts through the Aromas Red Sands and is filled in with terrestrial to marine sediments in a fining-up sequence (Schwartz, 1983). The presence of these fine sediments may act as a barrier to flow between the Salinas River Groundwater Basin and the Pajaro Valley Groundwater Basin.

4.3.2 Vertical Subbasin Boundaries

The base, or bottom, of the Subbasin is defined as the contact between the Aromas Red Sands and the surface of the unweathered crystalline rocks—in other words the more competant granite—of the Gabilan Range. The weathered, decomposed or fractured granite is included in the principal aquifer due to many domestic wells installed in this geology.. Farther from the Gabilan Range, the surface is deeper than current data are able to verify. Therefore, in this area the GSP adopts the bottom of the Basin that was defined by the USGS (Durbin *et al.*, 1978) and extrapolates that surface northward where it is noted in wells or in contact with the Gabilan Range. Durbin *et al.*, (1978) defined the usable portion of the Basin as a combination of freshwater-producing geologic formations and how deep production wells could reasonably be expected to be.

As the Subbasin deepens to the southwest, the sedimentary layers thicken and 3 factors limit the viability of the sediments as a productive, principal aquifer:

1. Shallow contact with the crystalline granite limits the thickness of saturated sediments, and the decomposed granite may lend itself to increased clay content in the sediments.
2. Discontinuous alluvial fan deposits and observed cemented clay lenses impede vertical and horizontal groundwater flow.
3. Increased consolidation and cementation of the sediments decrease well yields, particularly with depth.

Figure 4-4 is a map of elevation contours of the bottom of the Subbasin, which reflects the recent HCM updates. Figure 4-5 shows a contour map of the depth to the bottom of the Subbasin from the ground surface, prepared using the updated extrapolated bottom elevation and ground surface elevation. This interpretation will continue to be refined through implementation as more data become available.

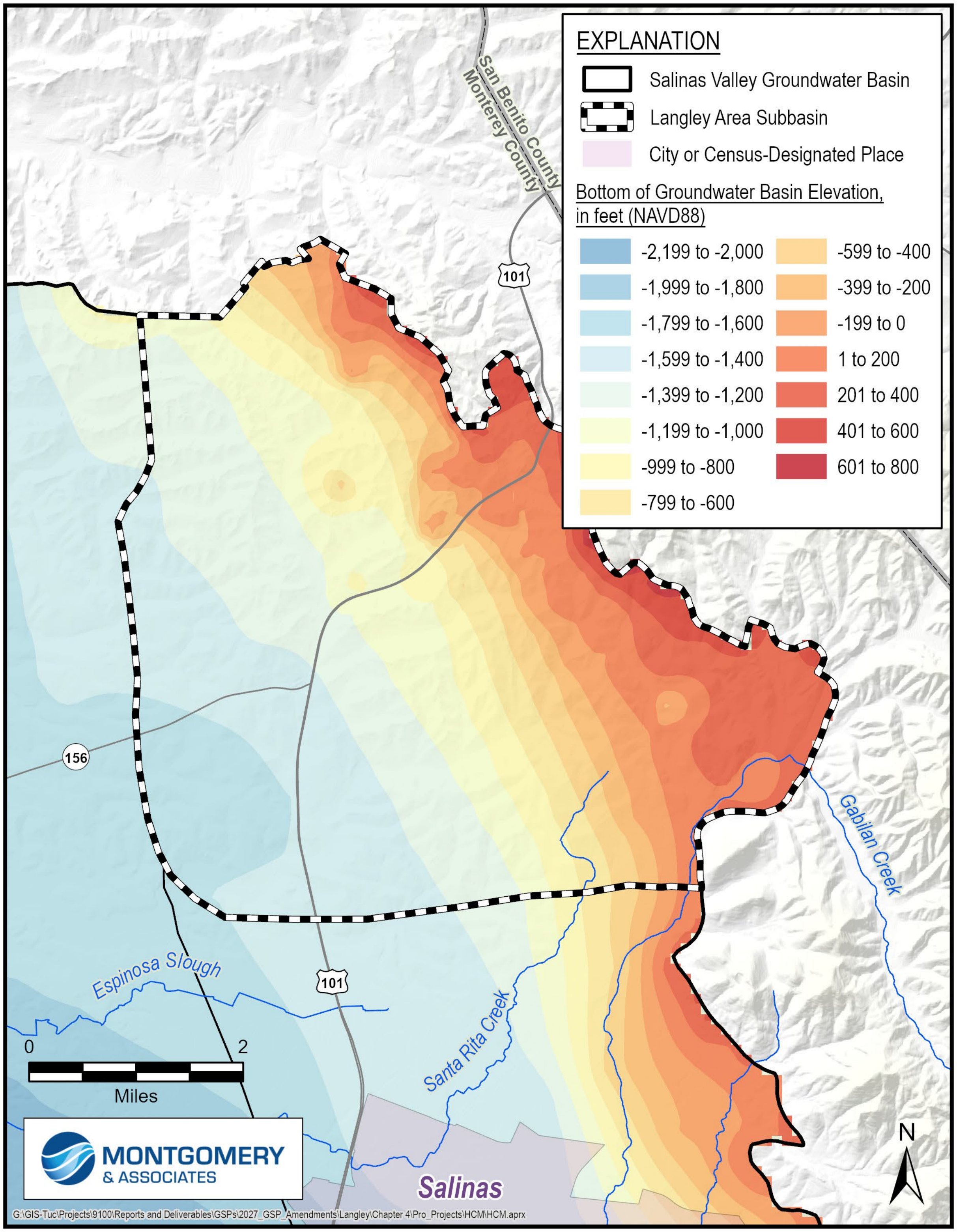


Figure 4-4. Elevation of the Bottom of the Langley Area Subbasin

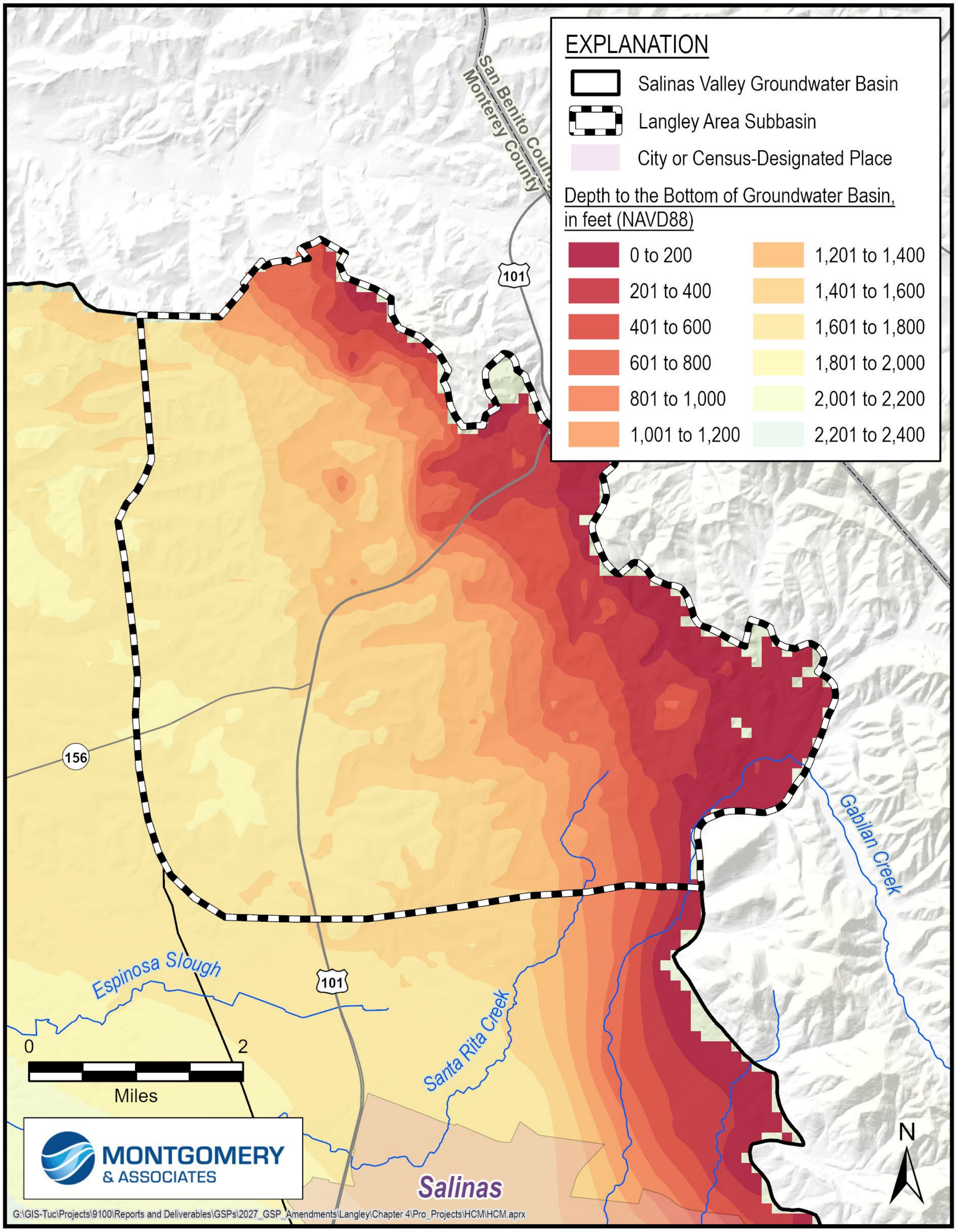


Figure 4-5. Depth to Bottom of the Langley Area Subbasin

4.4 Subbasin Hydrogeology

The Subbasin hydrogeology details the principal aquifer that occurs in the Subbasin, inventories known aquifer properties, and identifies naturally occurring groundwater inputs and outputs, which will be incorporated into the groundwater budgets described in Chapter 6. Cross-sections are provided to represent content described in the following subsections.

Groundwater in the Langley Subbasin is primarily produced from the Aromas Red Sands. Groundwater generally flows from the northeast to the southwest. However, historical pumping created a groundwater depression in the center of the Subbasin in the mid-1990s, which altered groundwater flow direction (DWR, 2004). Observations made during the HCM updates also indicate more perched water and lateral flow due to the prevalence of the cemented clay layers in the Aromas Sand. While this helps explain the complex groundwater levels observed in the Subbasin, it adds complexity to understanding how the principal aquifer works in concert.

4.4.1 Principal Aquifers and Aquitards

The Langley Subbasin has 1 defined principal aquifer, the Basin Fill Aquifer, which varies spatially. It primarily consists of Aromas Red Sands; however, for SGMA purposes, it may also include groundwater in the decomposed or fractured granite.

There has been limited hydrogeologic analysis of the Langley Subbasin aquifer. The most recent, detailed hydrostratigraphic analysis of the region that encompasses the Langley Subbasin was published in 1995 with an update on nitrate conditions in 2014 (Fugro West Inc., 1995; HydroFocus, Inc., 2014). The *North Monterey County Hydrogeologic Study, Volume I, Water Resources* report discusses 2 subareas that predated the Langley Subbasin: the South Highlands and Granite Ridge subareas (Fugro West Inc., 1995). These 2 subareas cover approximately 75% of the Langley Subbasin (MCWRA, 2015b). The HCM updates attempt to further refine the understanding of the Subbasin.

The Aromas Red Sands are the primary water-bearing formation in the Subbasin’s sole principal aquifer. Water is drawn from the unconfined sands and gravels that characterize the formation. The lower portion of the Aromas Red Sands Formation includes blue clays typically found in the Salinas Valley Aquitard (Fugro West Inc., 1995). Additionally, cemented clay lenses are prevalent throughout the Aromas Red Sands and act as locally confining or perching units. However, there is no unified aquitard in the Langley Subbasin. The Aromas Red Sands Formation is also found in the 400-Foot Aquifer of the 180/400 Subbasin where it interfingers with the upper portion of the Paso Robles Formation (DWR, 2004). Thus, the single aquifer in the Langley Subbasin appears to be hydraulically connected to the 180-Foot and 400-Foot Aquifers in the 180/400 Subbasin.

The Paso Robles Formation is also included in the Subbasin's single principal aquifer where it may be in contact with the Aromas Red Sands. The upper Paso Robles Formation comprises portions of the 400-Foot Aquifer as well. The aquitard that separates the 400-Foot Aquifer from the Deep Aquifers is encountered in 1 well in the southwest corner of the Subbasin, anchoring the presense of the Deep Aquifers in the Subbasin. The Purisima Formation is encountered below the Paso Robles Formation, and while it may be present beneath the Paso Robles Formation, no data exist to account for it in the Langley Subbasin. Therefore, this GSP shows the Purisima Formation as present in the cross-sections based on published stratigraphic relationships. There is no significant and laterally extensive aquitard separating the Aromas Red Sands from the underlying Paso Robles Formation, and therefore, this GSP presumes these formations are hydraulically connected to the Aromas Red Sands and contribute water to the principal aquifer.

Near the Gabilan Range, some wells are completed in the weathered surface of the granite, fresh granite, or other consolidated formations (Fugro West, Inc., 1995). It is difficult to determine exactly where wells are completed because many well completion reports lack the detail necessary to distinguish between granite and gravel derived from granite. Additionally, well yields in either the weathered or fresh granite are variable, with many well yields not exceeding 5 gallons per minute (Fugro West, Inc., 1995). Despite the inability to convey significant or reliable amounts of water, the fractured granite is included in the Basin Fill Aquifer because many wells are at least partially completed and there may be hydraulic connectivity between in this unit and the Aromas Sand.

Two geologic cross-sections along and across the Subbasin are shown on Figure 4-6 and Figure 4-7. The location of these cross-sections is depicted on Figure 4-2. Cross-section A-A' extends from north to south, and section B-B' extends northeastward across the Langley Subbasin.

The cross-sections are based on newly available airborne electromagnetic (AEM) data, where available, and geologic logs provided in DWR Water Well Drillers Reports. Both cross-sections show how the generalized groundwater flow model layers in the updated SVIHM (Montgomery & Associates, 2025a) were interpreted from well logs, AEM geophysical data, and previously published data. While the model layers are extended across the Langley Subbasin, they are not as differentiated as in adjacent subbasins. In particular, the 400/Deep Aquitard is present only in the southeastern portion of the Langley Subbasin, and while the model layer continues, the hydraulic parameters differ beyond where the aquitard has been mapped. The primary focus of the cross-sections for the Langley Subbasin is the top of the bedrock shown in gray in the cross-sections. For the purposes of groundwater modeling, these layers are smoothed; however, evaluation of the data shows smaller-scale variability, particularly in the Langley Subbasin.

The fractured granite was more closely evaluated for the HCM update and interpreted for improved modeling. The secondary focus was on the noted hard pan areas in the well logs. The well logs were reinterpreted with an increased focus on notations of hard pan after observations of the cemented clay were made by staff in 2024. The hard pan notations are not easily traceable across distances, nor do they follow a particular pattern of distribution. The analyzed well logs show their intermittent distribution throughout the Aromas Red Sands. Finally, it is important to note where the Paso Robles Formation is located in both cross-sections. This characterization is consistent with the extent of the Paso Robles Formation from both the 1976-1983 Thorup study on the Deep Aquifers and the Deep Aquifers Study (Montgomery & Associates, 2004). There are few wells that are drilled deep enough to verify their presence, but the Paso Robles Formation, being a part of both the 400-Foot Aquifer and Deep Aquifers, does extend farther than the Deep Aquifers, which is reflected in these layers in the cross-sections. Below the Paso Robles Formation is the Purisima Formation, which reflects regional stratigraphy, rather than specific data points in the Langley Subbasin.

In some cases, the logs may be old, the depth resolution poor, or the lithologic distinction questionable, and therefore the lithology shown on the well logs should not be considered precise.

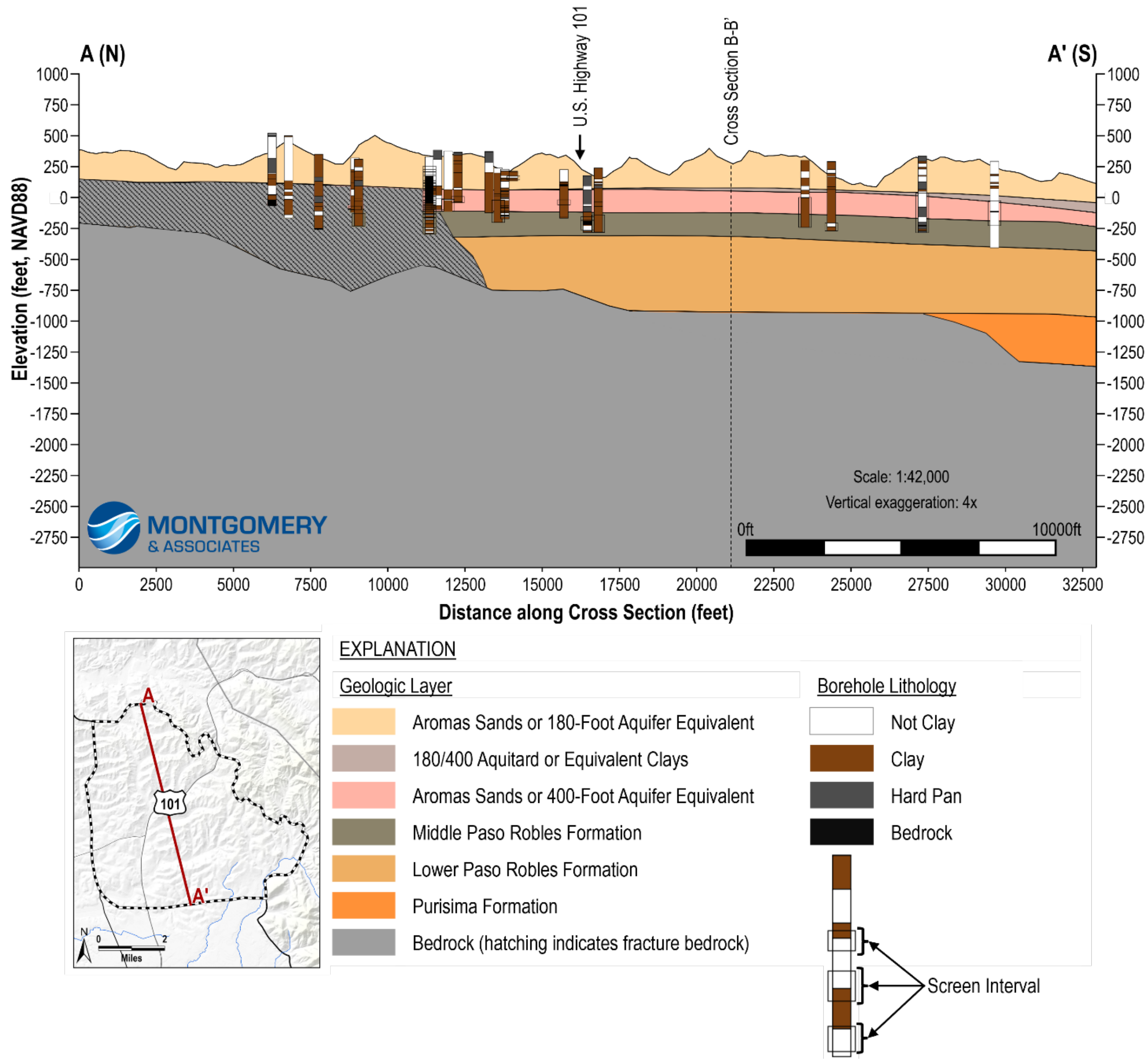


Figure 4-6. Cross-section A-A'

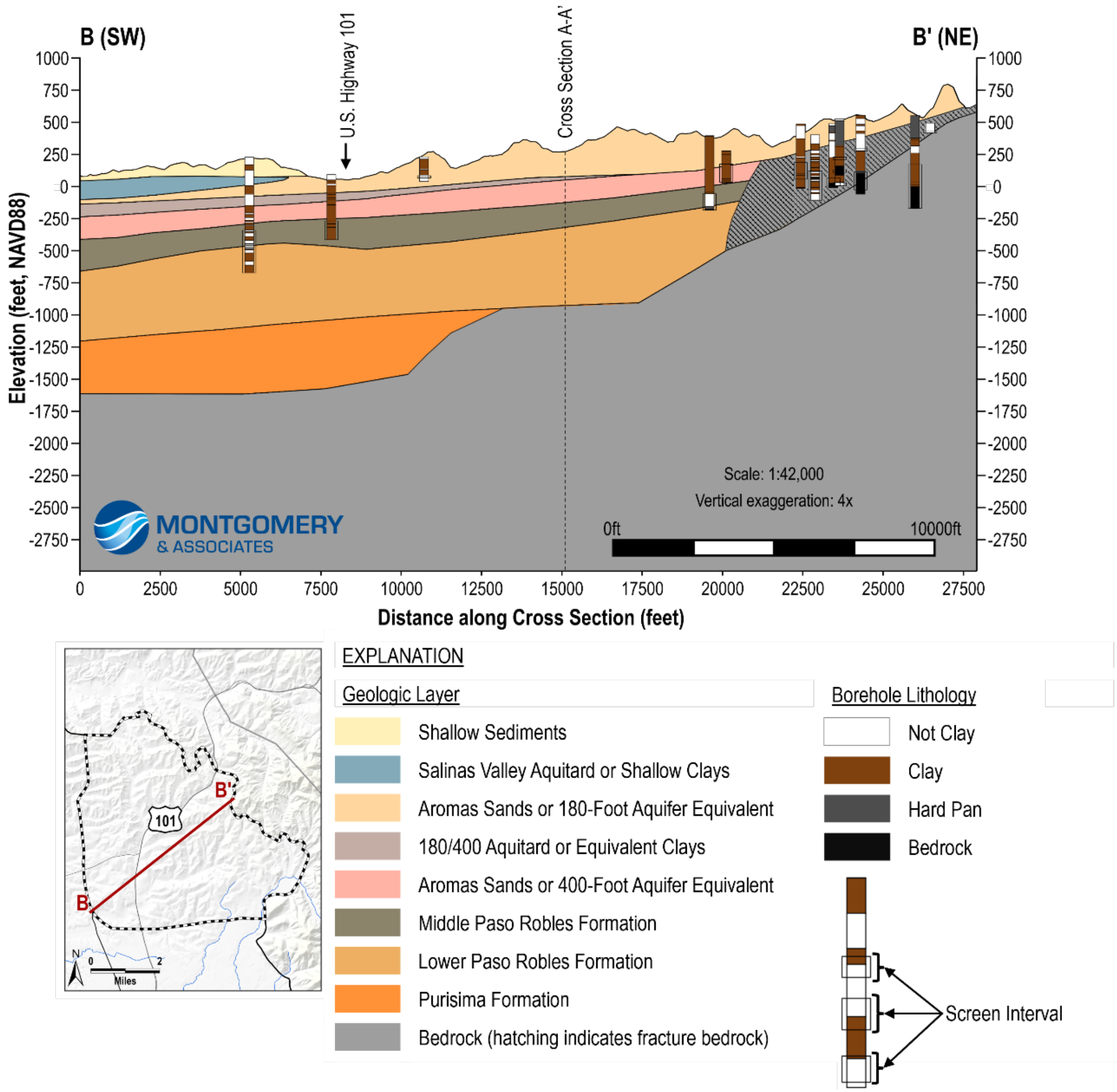


Figure 4-7. Cross-section B-B'

4.4.2 Aquifer Properties

Aquifer properties define how groundwater is stored and moves in the subsurface. This information is needed to understand current groundwater conditions, to predict future groundwater conditions, and to assess strategies for achieving sustainability.

The values and distribution of aquifer properties in the Langley Subbasin have not been well characterized and documented; therefore, aquifer properties have been estimated during calibration of regional numerical groundwater flow models. Aquifer property calibration has been completed for numerous published modeling studies including studies by Durbin (1974), Yates (1988), WRIME (2003), and the updated SVIHM (Montgomery & Associates, 2025b) that is used to develop this GSP Amendment 1.

There are 2 general types of aquifer properties relevant to groundwater management:

- **Aquifer storage properties.** These properties control the relationship between the volume of groundwater stored in the aquifer and the groundwater elevations measured in the aquifer.
- **Groundwater transmission properties.** These properties control the relationship between hydraulic gradients and the rate of groundwater flow.

4.4.2.1 Aquifer Storage Properties

The aquifer properties that characterize the relationship between groundwater elevation and amount of water stored in an aquifer are specific yield for unconfined aquifers and specific storage for confined aquifers. Storativity, or storage coefficient, is equal to specific storage multiplied by the aquifer saturated thickness for confined aquifers. Both specific yield and specific storage are measured in units of cubic feet of water per cubic feet of aquifer material. These ratios are often expressed as a percentage.

- **Specific yield** is the amount of water that drains from pores when an unconfined aquifer is dewatered. Often, specific yield values range from 8% to 20% for alluvium deposits. Estimated Aromas Red Sands specific yield values from the USGS's groundwater model of the adjacent Pajaro Valley range from 4% to 15% (Hanson *et al.*, 2014). Fugro West *et al. (2005)* defined the specific yield for the Paso Robles Formation as 0.05 to 0.17, which is in the same expected range as that of Yates and may be a good reference for the Deep Aquifers in this Subbasin.
- **Specific storage** is the amount of water derived from a unit volume of a confined aquifer due to a unit decline in pressure change in the aquifer. There are no estimated specific storage values published for the principal aquifer in the Langley Area because this aquifer is generally considered to be unconfined. Fugro West *et al.* (2005) estimated a

storage coefficient of 0.0005 to 0.015 for the Paso Robles Formation because it is generally confined in the Paso Robles Groundwater Basin, which may be a good reference for the Deep Aquifers in this Subbasin. Estimating storage properties in decomposed or fractured granite is challenging due to the complexities of groundwater movement in such systems.

Detailed aquifer property values specific to the Subbasin are a data gap that still need to be filled during implementation.

4.4.2.2 Groundwater Transmission Properties

Hydraulic conductivity measures the ability of an aquifer to transmit water and is expressed in units of length per unit time, such as feet per day. Materials with higher hydraulic conductivities, such as sands and gravels, transmit groundwater more readily than units with lower hydraulic conductivities, such as clay. Transmissivity is equal to the hydraulic conductivity multiplied by the aquifer saturated thickness. Few estimates of either hydraulic conductivity or transmissivity exist for the Subbasin. Since the aquifer thickness changes dramatically from east to west, a representative transmissivity is more difficult to estimate for this Subbasin. Estimated hydraulic conductivities for the Aromas Red Sands, derived from the USGS's groundwater model of the adjacent Pajaro Valley, range from 3.2 to 167 feet/day (Hanson *et al.*, 2014). The updated and calibrated SVIHM (Montgomery & Associates, 2025b) estimated hydraulic conductivities of 9 to 42 feet/day with an average of 18 feet/day for the Aromas Sands. However, the SVIHM is poorly calibrated in the decomposed and fractured granite portions of Subbasin, which renders estimated aquifer property values highly uncertain. Fugro West *et al. (2005)* estimated horizontal hydraulic conductivities between 0.5 to 20 feet/day, and vertical hydraulic conductivities between 0.005 and 1foot/day for the Paso Robles Formation. Data compiled from previous studies provide hydraulic conductivity estimates of about 4 to 760 feet/day for the Aromas Sands (based on 2 wells). The larger estimate is much larger than previous studies and could be an outlier. Estimated hydraulic conductivity from a slug test conducted in the Subbasin is 0.1 feet/day for the decomposed granite. Both of these geologic units tend to have high variability both horizontally and vertically: in the Aromas Red Sands, the cemented clay lenses cause the hydraulic conductivity to be largely variable, and the extent of granite decomposition or fracture also is widely variable.

Specific capacity of a well is sometimes used as a surrogate for estimating aquifer transmissivity. The specific capacity of a well is the ratio between the well pumping rate in gallons per minute (gpm), and the drawdown in the well during pumping measured in feet. Specific capacity is moderately well correlated, and approximately proportional to, aquifer transmissivity. Wells completed in the Aromas Red Sands in the Pajaro Valley have specific capacities of approximately 20 gallons per minute per foot (gpm/ft) (Johnson, 1983). Durbin *et al.* (1978) reported that the granitic fragments that comprise the alluvial fans along the Gabilan Range weather rapidly, and the pores of the unconsolidated sediments are plugged with clay minerals. This results in a reported specific capacity of 20 gpm/ft in the alluvial fan emanating from Gabilan Creek which flows through the southeastern corner of the Subbasin (Durbin *et al*. 1978). In contrast, well yields in the Aromas Red Sands average 450 gpm and can be as high at 750 gpm (Johnson, 1983).

4.4.3 Primary Aquifer Uses

The primary uses of groundwater from this single aquifer include domestic, irrigation, and municipal water supply (DWR, 2004).

4.4.4 Natural Recharge Areas

Natural recharge areas allow rainfall, local runoff, and streamflow to replenish aquifers by percolating through the subsurface. Identifying areas of potentially significant natural recharge can inform water budgets and help planners promote good groundwater management by incorporating recharge areas into land use plans. This section only identifies areas of natural recharge; quantitative information about all natural and anthropogenic recharge is provided in Chapter 6. There is no known anthropogenic recharge in this subbasin at this time.

Natural groundwater recharge occurs through the following processes:

- Recharge of surface water from the streams originating in the Gabilan Range
- Deep percolation of infiltrating precipitation

Recharge of surface water and deep percolation of precipitation are both surficial sources of natural groundwater recharge. An area's capacity for surficial groundwater recharge is dependent on a combination of factors, including steepness of grade, soil surface conditions such as paving or compaction, and ability of soil to transmit water past the root zone. To assist agricultural communities in California assess groundwater recharge potential, a consortium of researchers at University of California Davis developed a Soil Agricultural Groundwater Banking Index (SAGBI) and generated maps of recharge potential in agricultural areas of California (O'Geen *et al.*, 2015). Figure 4-8 presents the SAGBI index map for the Langley Subbasin. This map ranks soil suitability for groundwater recharge based on 5 major factors including: deep percolation, root zone residence time, topography, chemical limitations, and soil surface condition. Areas with excellent recharge properties are shown in green. Areas with poor recharge properties are shown in red. Not all land is classified, but this map provides helpful guidance on where natural recharge likely occurs.

The area with the highest potential for recharge is along Gabilan Creek in the southeast corner of the Subbasin. Most soils in the Subbasin are classified as very poor for recharge potential. Although Figure 4-8 shows many areas of very poor recharge potential in the Langley Subbasin, actual recharge to the productive zones of the Subbasin is unknown. This is likely compounded with the interspersed cemented clay areas within the Aromas Red Sands that define the Subbasin. Therefore, this map should not be used exclusively to identify recharge areas that will directly benefit the aquifer in the Langley Subbasin. Rather, it should be used in conjunction with additional research and investigation tools such as test boreholes and downhole geophysics.

There is no known subsurface recharge since this Subbasin is against the Gabilan Range and Elkhorn Slough and is upgradient to the 180/400 Subbasin and the Eastside Subbasin. Total natural recharge is estimated to be 4,000 AF/yr (DWR, 2004).

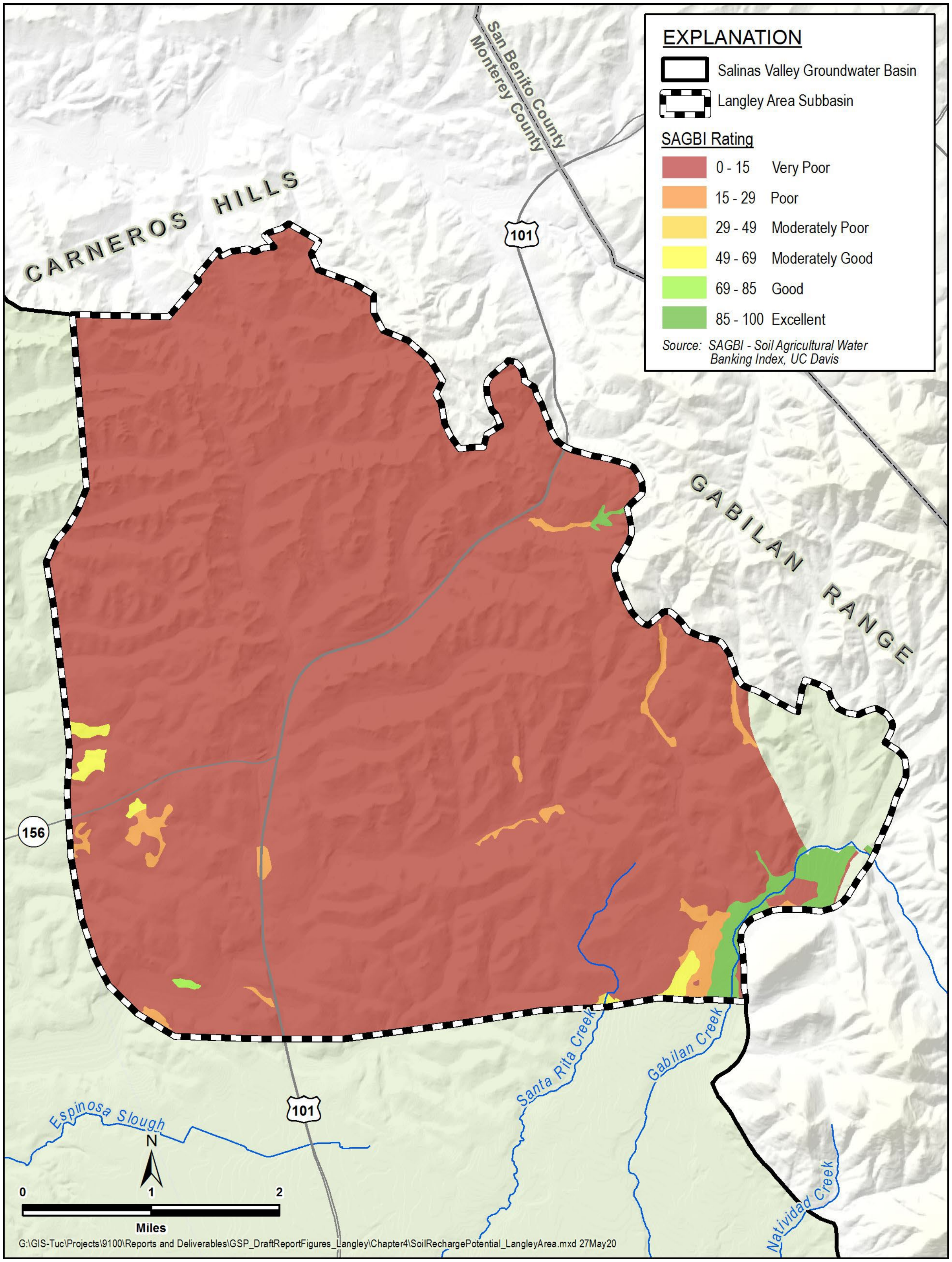


Figure 4-8. SAGBI Soils Map for the Langley Area Subbasin

4.4.5 Natural Discharge Areas

Natural discharge areas are areas where groundwater naturally leaves aquifers through flow to adjoining basins or percolation to the ground surface. Identifying areas of potentially significant natural discharge can inform water budgets and help locate important environmental uses of groundwater. Quantitative information about all natural and anthropogenic discharge is provided in Chapter 6.

Natural groundwater discharge areas within the Subbasin include wetlands and other surface water bodies that receive groundwater discharge to surface water bodies and evapotranspiration (ET) by vegetation types commonly associated with the sub-surface presence of groundwater. There are no springs and seeps in the Subbasin as identified in the National Hydrology Dataset (NHD). Natural groundwater discharge to streams has not been mapped to date.

4.4.5.1 Potential Interconnected Surface Water

Figure 4-9 shows locations of potential ISW, in the Langley Subbasin evaluated on a monthly basis over the entire SVIHM model period from 1968 to 2022. This analysis includes the full year. The conservation release period (from April 1 to October 31) and non-release period (from November 1 to March 31) were compared and were not substantially different. During conservation release period, the majority of flow in Salinas River is from conservation releases from the reservoirs. The blue cells on Figure 4-9 indicate areas where surface water is connected to groundwater for more than 10% of the number of months in the model period and are designated as areas of ISW. The orange cells indicate areas where surface water is connected to groundwater for less than 10% of the number of months in the model period. The clear cells represent areas classified as not connected to groundwater based on spatial, physical, and hydrogeologic constraints. These disconnected reaches include locations outside the SVBGSA boundary, areas just outside the groundwater model boundary, regions underlain by the Salinas Valley Aquitard, and artificial conveyances (canals, drains, or connectors) identified in the 2022 GSP. Only a partial extent of identified groundwater dependent ecosystems (further described in Section 4.4.5.2) are included on the analysis because these areas suggest a potential connection to groundwater. The extent of the interconnection between surface water and groundwater, which can vary both in time and space, is evaluated in Chapter 5 and is not shown on Figure 4-9. These ISW locations are based on simulated results from the updated SVIHM, which is calibrated to measured groundwater levels and stream flows. Although seepage along the ISW reaches is based on assumed channel and aquifer parameters as model inputs, the SVIHM is currently the best available tool to estimate ISW locations. The model construction and uncertainty are described in Chapter 6 of this GSP and in a model summary report by Montgomery & Associates (2025b). See Appendix 4a for more information on the ISW location analysis.

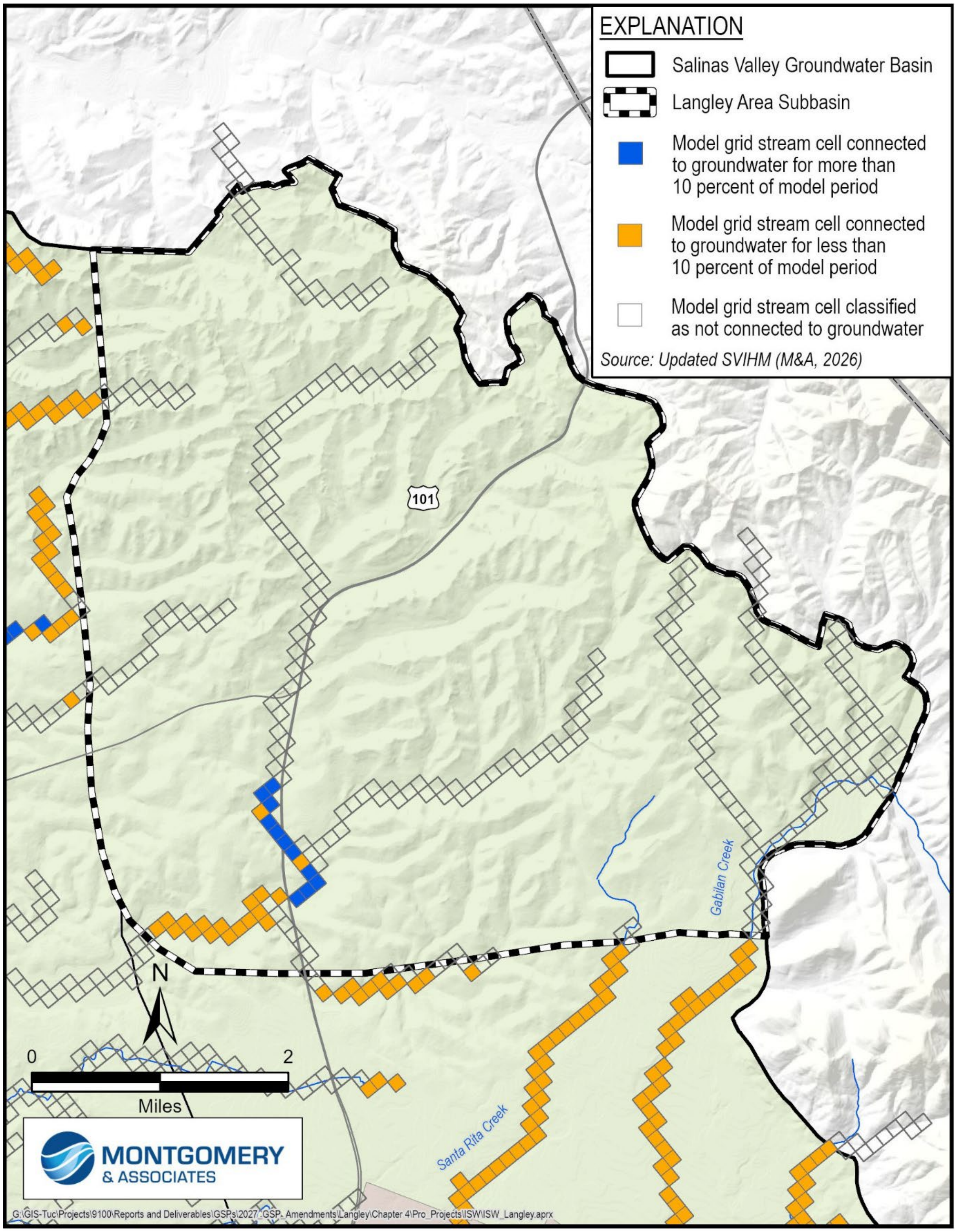


Figure 4-9. Locations of Interconnected Surface Water

4.4.5.2 Groundwater Dependent Ecosystems

GDEs refer to ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface. Two main types of ecosystems are commonly associated with groundwater: wetlands associated with the surface expression of groundwater and vegetation that typically draws water from a shallow water table (phreatophytes).

GDEs may provide critical habitat for threatened or endangered species. Areas designated as critical habitat for threatened or endangered species contain the physical or biological features that are essential to the conservation of these species and may need special management or protection (U.S. Fish and Wildlife Service [USFWS], 2017). A list of threatened and endangered species that might rely on GDEs in the Subbasin was compiled using information from the USFWS, California Department of Fish and Wildlife (CDFW), and TNC. Several steps were taken to determine which threatened and endangered species could be found in the Subbasin and of those, which could potentially rely on GDE habitat. A list of threatened and endangered species for Monterey County was downloaded from the USFWS website and cross-referenced to species identified in the CDFW California Natural Diversity Database. The threatened and endangered species for Monterey County was further cross-referenced with the TNC Critical Species LookBook to identify which species are likely to directly depend on groundwater, as indicated in Table 4-1. Species with an indirect potential dependence on groundwater were not included.

Two threatened and endangered species, the California Red-legged Frog and Santa Cruz long-toed salamander, were identified as likely to rely directly on groundwater and could be present in the Langley Subbasin. While the species might rely directly on groundwater, the identification of potential GDEs in the Salinas Valley does not distinguish between groundwater and surface water sources. One species identified has an unknown dependence on GDEs or groundwater.

Table 4-1. Federal and State Listed Threatened and Endangered Species and Respective Groundwater Dependence for Monterey County

Groundwater Dependence*	Common Name	Habitat	Federal Status	State Status
Direct	California red-legged frog	Quiet pools of streams, marshes, and occasionally ponds	Threatened	
Direct	Santa Cruz long-toed salamander	Seasonal and permanent aquatic features (ponds or wetlands) for breeding and adjacent upland scrub and woodland areas during the nonbreeding season	Endangered	Endangered
Unknown	California tiger salamander	Tiger salamanders breed and lay eggs primarily in vernal pools and other temporary rainwater ponds	Threatened	Threatened

* Groundwater Dependence as defined by TNC is related to species type. The distinction between groundwater and surface water dependence is not determined in the Salinas Valley GDE identification where the groundwater level is close enough to the ground surface to reasonably support the overlying ecosystem.

The process for identifying and mapping potential GDEs in the Salinas Valley was developed by Central Coast Wetlands Group (CCWG) with guidance from documents developed by The Nature Conservancy (TNC) (Rhode et al. 2018, Rhode et al. 2020), TNC staff and San Francisco Estuary Institute (SFEI) staff with subject matter expertise, and Dr. Melissa Rhode. Additionally, feedback from local stakeholders was incorporated from the Groundwater Dependent Ecosystem Working Group. The goal of the identification and mapping process was not to identify endangered animal species, or every plant and waterbody dependent on groundwater, but rather ensure there was representative identification of potential GDEs across the Eastside Subbasin. GDE identification provides the basis for monitoring and assessment.

Figure 4-10 shows the distribution of potential GDEs within the Subbasin based on the Natural Communities Commonly Associated with Groundwater (NCCAG) Dataset (DWR, 2020b) where the depth to groundwater table is high enough to support the above ecosystems (CCWG, 2026).. The NCCAG dataset maps vegetation, wetlands, springs, and seeps in California that are commonly associated with groundwater. These include 1) wetland features commonly associated with the surface expression of groundwater under natural, unmodified conditions; and 2) phreatophytes. NCCAG data need to be verified for accuracy. If the groundwater table is greater than 30 feet (9.14 meters) below the ground surface, the ecosystem at the surface is likely not reliant on groundwater. This is because most vegetation does not have roots deep enough to reach the water table below 30 feet (9.14 meters) (Rhode et al. 2018). Oak trees are an exception to this generalized rule, as oak trees have been shown to have roots that reach up to 80 feet (24.38 meters) below the ground surface (Howard 1992). For this reason, in areas mapped as having oak trees as the dominant plant species, the depth to groundwater cutoff for including the ecosystem as a potential GDE was 80 feet (24.38 meters). For all other areas, the cutoff was 30 feet. Potential GDEs were grouped into units based on shared hydrogeology and association with the same aquifer, this resulted in 1 GDE unit for the Langley Subbasin.

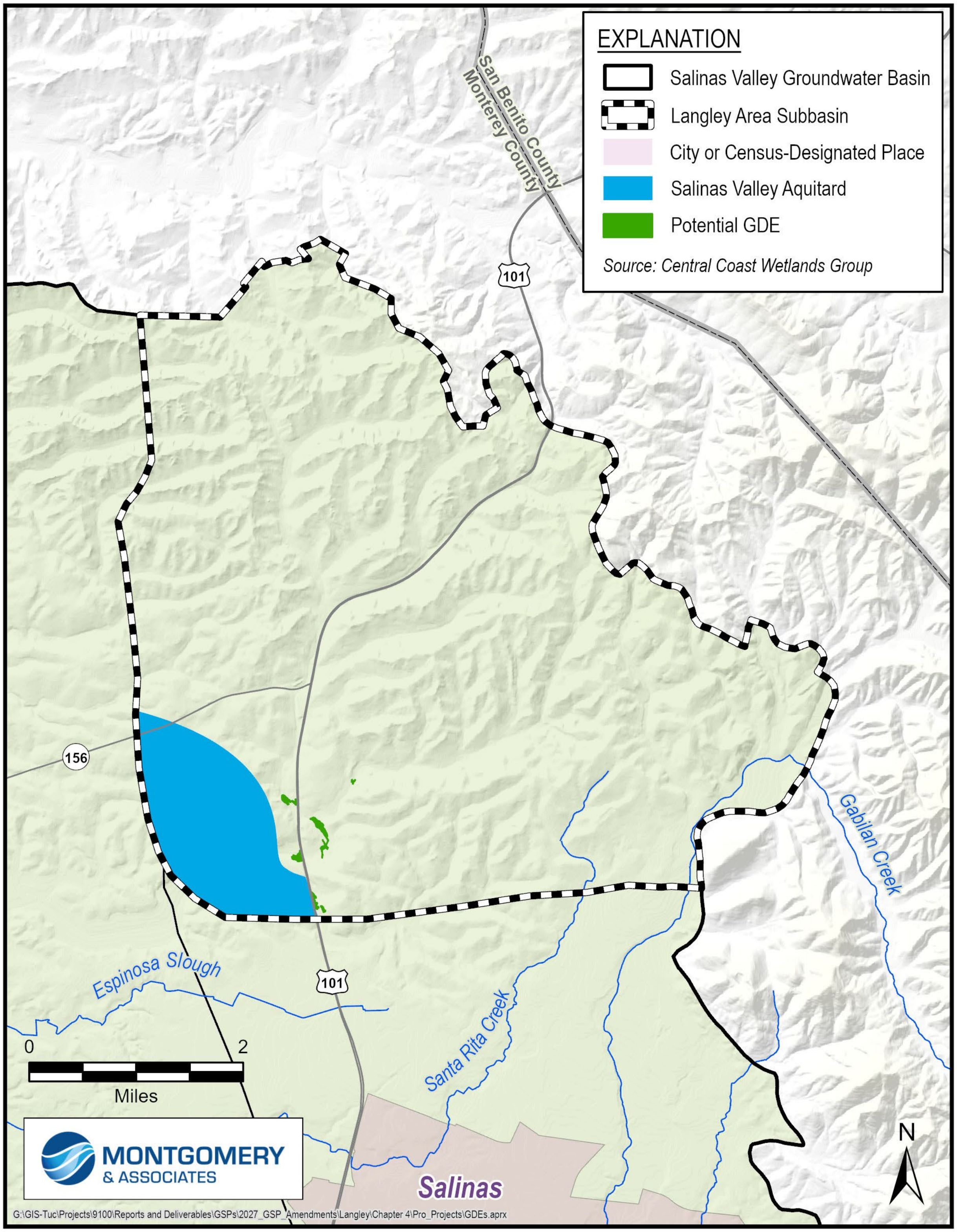


Figure 4-10. Potential Groundwater Dependent Ecosystems

4.5 Surface Water Bodies

The primary surface water bodies in the Subbasin are shown on Figure 4-11. Two significant named tributaries in the southeast section of the Langley Subbasin include Gabilan Creek and Santa Rita Creek.

4.5.1 Watersheds

Figure 4-12 shows several watersheds that contribute small tributary streams to the Salinas River in the Langley Subbasin. From the boundary with the Gabilan Range to the 180/400-Foot Aquifer Subbasin, the HUC12 watersheds within the Langley Subbasin are as follows:

- Mud Creek-Gabilan Creek
- Natividad Creek-Gabilan Creek
- Alisal Slough-Tembladero Slough
- Elkhorn Slough

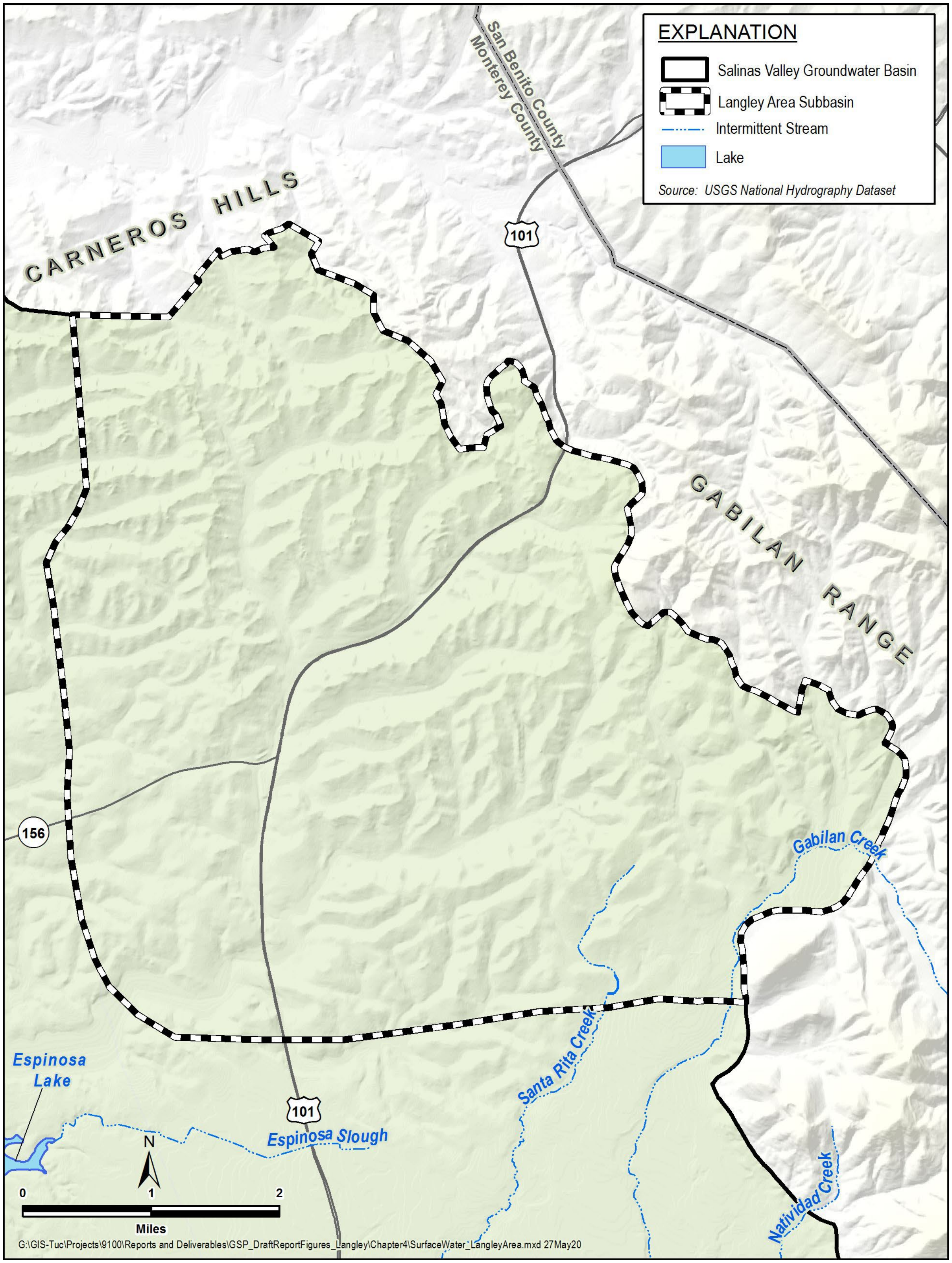


Figure 4-10. Surface Water Bodies in the Langley Area Subbasin

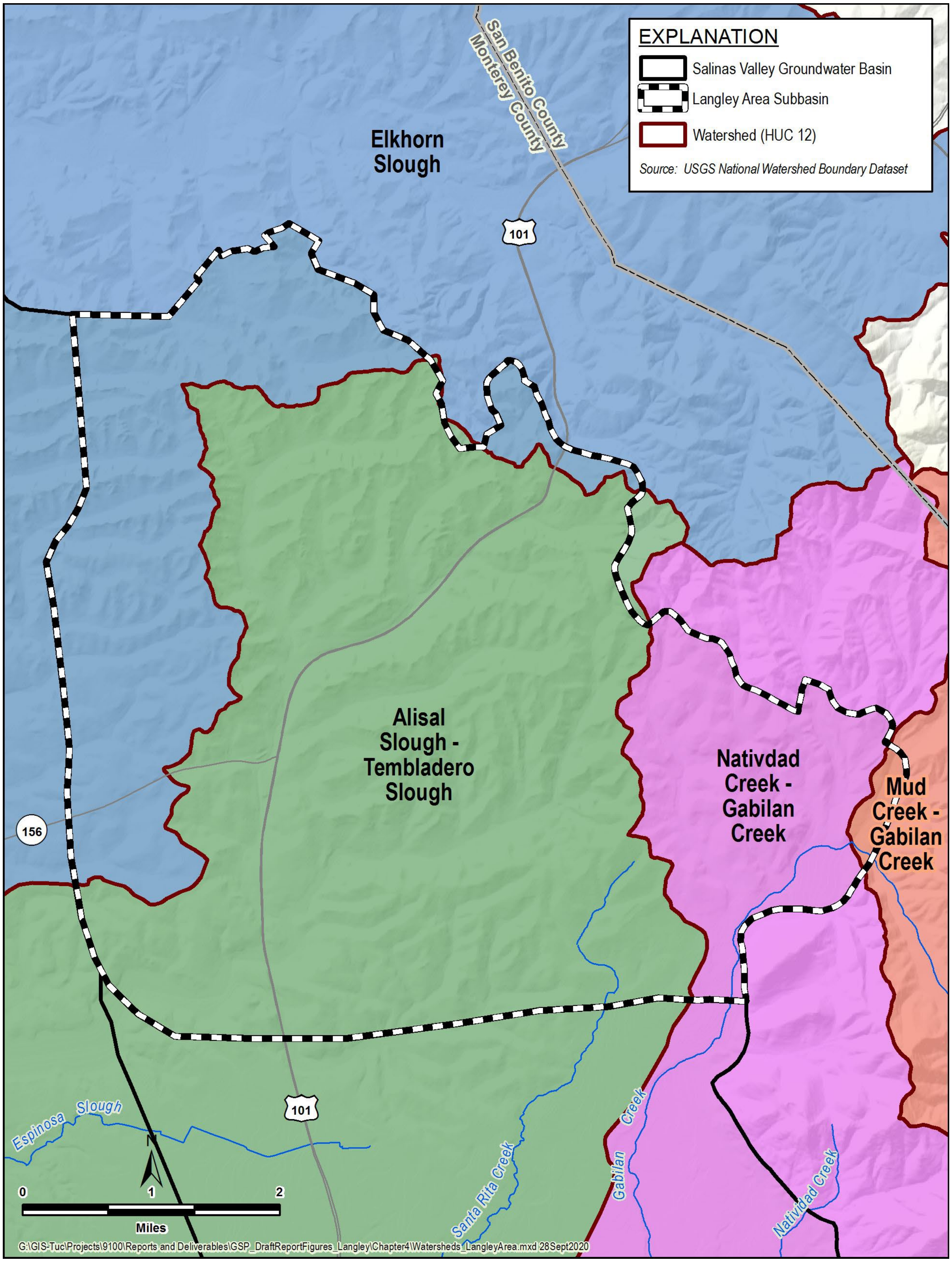


Figure 4-11. HUC12 Watersheds within the Langley Area Subbasin

4.5.2 Imported Water Supplies

There is no water imported into the Langley Subbasin.

4.6 Water Quality

Natural groundwater quality can determine how much treatment may be needed prior to being used for municipal uses or how the water may impact crop production. This section presents a discussion of the natural groundwater quality in the Subbasin, focusing on general minerals. This discussion is based on data from previous reports. Distribution and concentrations of specific constituents of concern (COC) are discussed in Chapter 5.

4.6.1 General Mineral Chemistry

General water chemistry provides a baseline understanding of the water by showing major ions that are dissolved in the groundwater; the ions can inform users if the water is more alkaline or more acidic. In many areas with more alkaline water, which has more dissolved cations such as calcium, magnesium, and sodium, many users report their water as being “hard.” Water in this subbasin is generally a calcium bicarbonate type (Fugro West, 1995). Water from the Aromas Red Sands is high in magnesium and calcium (Johnson, 1983). Locally, water may also have high concentrations of iron and manganese (Johnson, 1983).

4.6.2 Seawater intrusion

There is no recorded seawater intrusion in the Langley Subbasin, unlike the adjacent 180/400-Foot Aquifer Subbasin. While seawater intrusion has not reached the Langley Subbasin, which is approximately 5 miles from the coastline, this is a potential concern. The most recent seawater intrusion contours in the 180-Foot Aquifer place the 500 mg/L chloride isocontour within 2.5 miles of the Langley Subbasin. The most recent seawater intrusion contours in the 400-Foot Aquifer place the 500 mg/L chloride isocontour leading edge within 3 miles of the Langley Subbasin.

The current seawater intrusion conditions are described more fully in Chapter 5.

4.7 Uncertainty of the HCM

The HCM update included in this GSP Amendment 1 address the HCM data gaps in the GSP, particularly with regards to the geology. While opportunities for conducting additional aquifer testing were limited by well availability, landowner participation, and construction constraints, the data collected represent a meaningful step toward reducing uncertainty and informing future groundwater modeling and groundwater management decisions. This update highlights how the geology and hydrogeology result in highly variable conditions in the Subbasin. Any further data collected will help refine the understanding of the Subbasin; however, site-specific studies should be conducted if projects are considered for any particular area.

These persistent issues have led to some uncertainties in how the principal aquifer functions, and the SVBGSA will minimize these uncertainties by continuing to collect additional data. As described in Chapter 7, the GSP will include ongoing data collection and monitoring recommendations that will allow continued refinement and quantification of the groundwater system.