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Paso Robles Subbasin
Groundwater Sustainability Plan
Chapter 9 Projects and Management Actions

Prepared for the Paso Robles Subbasin Cooperative Committee and the Groundwater Sustainability Agencies

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9 MANAGEMENT ACTIONS AND PROJECTS

9.1 Introduction

This chapter describes management actions and projects that will be implemented in the Subbasin to attain sustainability in accordance with §354.42 and §354.44 of the SGMA regulations. Management actions are non-structural programs or policies that are intended to reduce or optimize local groundwater use. Projects involve new or improved infrastructure to import or develop new water supplies for the Subbasin. The need for management actions and projects is based on the following Subbasin conditions that were described in previous chapters.

- Groundwater levels are declining in many parts of the Subbasin, indicating that the amount of groundwater pumping is more than the natural recharge (Chapter 5)
- Water budgets (Chapter 6) indicate that amount of groundwater in storage will continue to decline in the future at a rate of nearly 14,000 acre-feet per year (AFY).

To avoid future decline in groundwater levels, achieve the sustainability goal by 2040, and avoid undesirable results through 2070 as required by SMGA regulations, a combination of groundwater pumping reductions and new water supplies will be needed. In most cases, a reduction in groundwater pumping will occur as a result of management actions, except where a new water supply is provided and used in lieu of pumping groundwater. New water supplies will be developed using projects described in this chapter.

The circumstances under which management actions and/or projects will be implemented, as well as the criteria that will trigger implementation, modification, or termination of these actions are described in this chapter. The groundwater management actions and projects were selected to stabilize groundwater elevations, meet the estimated groundwater storage deficit described in Chapter 6, and address all other sustainability indicators. Best Water Use Practices (BPs) designed to reduce groundwater use, management actions to directly reduce groundwater pumping, and projects constructed to bring in new sources of water for in lieu replacement of groundwater pumping will be incrementally implemented.

The management actions and projects identified in this GSP will achieve a number of outcomes including:

- Achieving groundwater sustainability by meeting Subbasin-specific sustainable management criteria by 2040.
- Providing equity between who benefits from projects and who pays for projects.
- Providing a source of funding for project implementation.
- Providing incentives to constrain groundwater pumping within limits.

9.2 Implementation Approach and Criteria for Management Actions and Projects

Specific criteria will be used by the GSAs to determine the need for and type of management actions or projects required to stabilize groundwater levels, reduce depletion of groundwater from storage, and avoid undesirable results. During GSP implementation, monitoring associated with applicable sustainability indicators will be conducted and the results will be reported to DWR and the public at least annually, as described in Chapter 7. Monitoring results will be evaluated and compared to measurable objective and minimum thresholds (Chapter 8) for each sustainability indicator to ensure that undesirable results are avoided and progress is made toward achieving the sustainability goal. Each metric identified in Chapter 7 will be monitored to evaluate the need for implementation of management actions and/or projects. If metrics are trending toward minimum thresholds, the GSAs would accelerate actions to implement high priority management actions and/or projects to stabilize groundwater levels. Using authorities outlined in Sections 10725 to 10726.9 of the California Water Code, the GSAs would ensure the maximum degree of local control and flexibility consistent with this GSP to commence management actions and/or projects.

Concurrent with monitoring Subbasin conditions, the GSAs will fund and conduct necessary studies and begin early planning activities to:

- Develop baseline information needed to support an efficient, equitable, and practical decision-making process for implementing management actions and projects.
- Address data gaps identified in the GSP.
- Expand and improve monitoring networks.
- Assess economic, permitting, and engineering requirements of water supply projects.

In addition, the GSAs would commence outreach that would include informational materials, public meetings, and hearings in anticipation of management actions and/or projects. Key outreach goals would include:

- Create awareness, solicit input, and garner acceptance of management actions and projects.
- Present information on management actions and projects including the types of actions being considered, where in the Subbasin these actions are needed, the range of associated costs, and the funding mechanisms.
- Present groundwater level monitoring results and how they are being used to determine when and where management actions and projects might be needed.

Because the amount of groundwater pumping in the Subbasin is more than the estimated sustainable yield of about 61,000 AFY (Chapter 6) and groundwater storage is being depleted, the GSAs will begin to implement as early as possible after GSP adoption management actions under a phased approach as described in Section 9.3.1. The effect of the management actions will be reviewed annually, and additional management actions or projects will be implemented as necessary to avoid undesirable results.

In general, management actions will be implemented before projects. Management actions will be implemented in two levels as described in more detail in the subsequent sections. In general, Level 1 management actions will be designed to fund GSP operations, fund necessary studies and early planning work, and promote voluntary reductions in groundwater pumping aimed at both stabilizing groundwater levels and avoiding undesirable results. If Level 1 management actions are insufficient to achieve these goals, Level 2 management actions would be implemented. Level 2 management actions will be designed to promote deeper reductions in groundwater pumping and to raise funds for purchasing and fallowing cropland and developing new water supplies. Figure 9-1 shows a flowchart of the conceptual implementation approach for management actions and projects.

Public meetings and hearings will be held to determine when and where in the Subbasin management actions and projects are needed and to develop a proportional and equitable framework for funding these actions. During these meetings and hearings, input from the public, interested stakeholders, and groundwater pumpers will be considered and incorporated into the decision making process.

At a time in the future when the effects of management actions and projects have stabilized groundwater levels, the GSAs will reassess the need for continuing these actions. At a minimum, the reassessment process would be done as part of the 5 year review and report to the regulatory agencies. During this process, landowners may petition for a reassessment of fees enacted to support management actions and projects.

Any rules, regulations, ordinances or resolutions under consideration for adoption to implement the GSP for common conditions and users require substantially identical actions by each GSA Board to assure similar practices and conditions across the Basin receive similar treatment under this GSP.

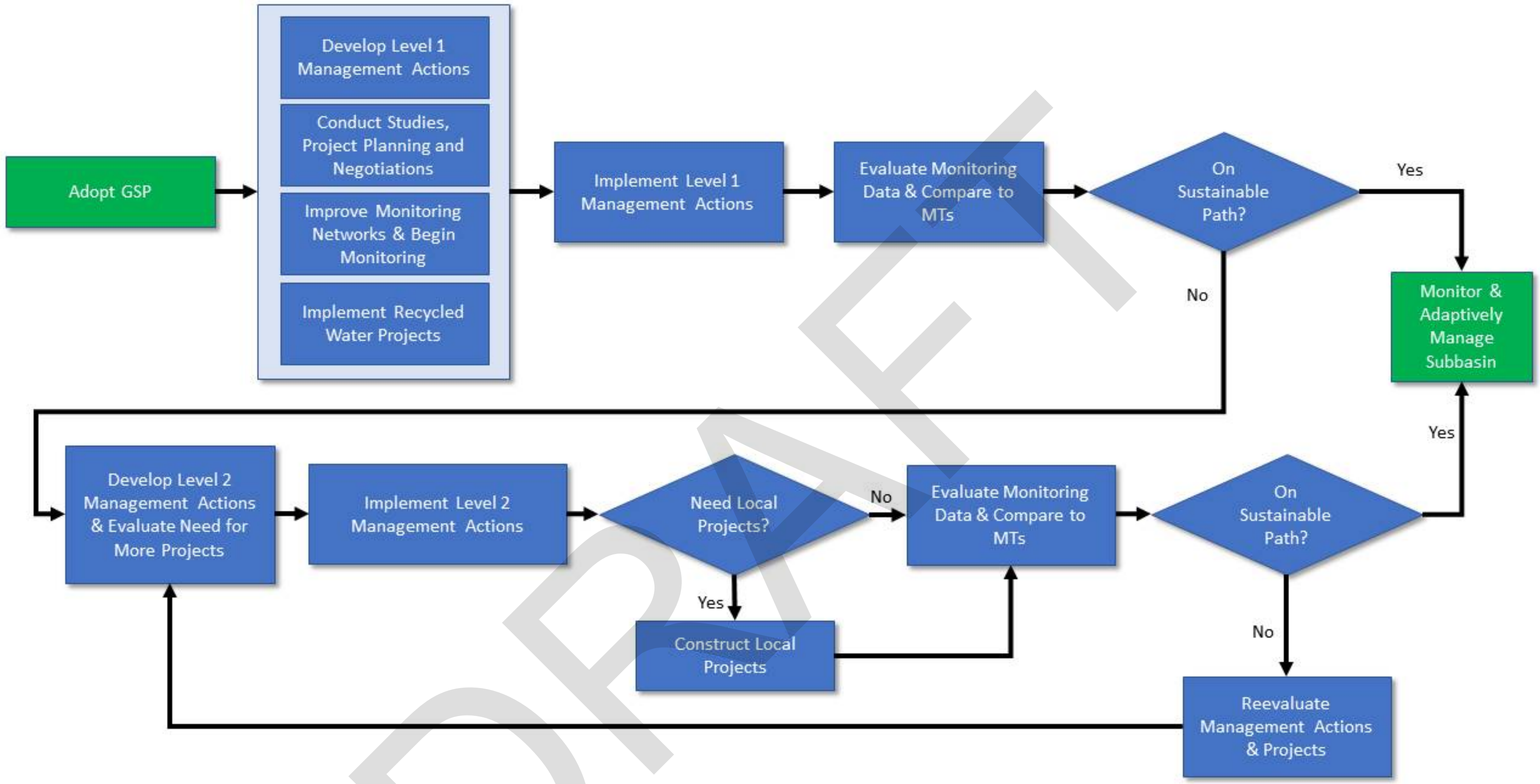

Figure 9-1: Conceptual Implementation Approach for Management Actions and Projects

9.3 Level 1 Management Actions

Several potential Level 1 management actions are included in this GSP; however, not all of them will necessarily be implemented by the GSAs. Level 1 management actions will be implemented only if they are deemed cost effective or necessary to achieve sustainability. To the extent possible, they will be implemented by Board Action in a data driven process. Level 1 management actions implemented under the GSP will be integrated into or be consistent with existing applicable programs and plans to the extent possible.

The following subsections outline the various Level 1 management actions. Level 1 management actions will be implemented using input from stakeholders and in a data-driven process.

Level 1 management actions may include:

- Encouraging BPs to optimize and reduce groundwater use.
- Initiating a groundwater management program that includes:
  - Rotating groundwater pumping on agreed upon schedules to optimize and reduce groundwater use.
  - Measuring or estimating and reporting groundwater pumping amounts to the GSAs.
- Promoting stormwater capture.
- Voluntary fallowing of irrigated crop land.
- Charging a groundwater pumping fee on a per acre-foot basis.

Soon after GSP adoption, Level 1 management actions will be developed and implemented concurrently. Public outreach would be conducted to educate and solicit input on the Level 1 management actions. The time required to implement these actions would likely vary depending on the level of effort required for development. More detail on the Level 1 management actions is provided in subsequent sections of this chapter.

9.3.1 Best Water Use Practices

BPs are activities, practices, and application of responsible use that, if promoted effectively, funded adequately, and applied rigorously and broadly, could reduce groundwater pumping. To improve adoption of BPs, the GSAs may develop programs to incentivize and provide funding assistance. Effective BPs could result in:

- Accurate measurement of water use by installing flowmeters on all non-exempt wells.

- Efficient irrigation practices by avoiding unbeneficial irrigation.
- A better accounting of annual precipitation and its contribution to soil moisture in all irrigation decisions and delay commencing irrigation until soil moisture levels require replenishment.
- Optimization of irrigation needs for frost control if sprinklers are used.
- More optimal irrigation practices by monitoring crop water use with soil and plant monitoring devices and tie monitoring data to ET estimates.
- Conversion from high water demand crops to lower water demand crops.

Many growers already use BPs, but improvements can be made. A goal of promoting BPs is to broaden their use to more growers in the Subbasin. *De minimis* groundwater users will be encouraged to use BPs as well. Promoting BPs will include broad outreach to groundwater pumpers in the Subbasin to emphasize the importance of adopting BPs and understanding their positive benefits for mitigating declining groundwater levels and forestalling mandated reductions in groundwater extraction on their property.

9.3.1.1 Relevant Measurable Objectives

BPs would benefit the groundwater elevation, groundwater storage, and land subsidence measurable objectives.

9.3.1.2 Expected Benefits and Evaluation of Benefits

The primary benefit from initiating BPs is reduced Subbasin pumping. A connected secondary benefit is mitigating the decline, or raising, groundwater elevations. An ancillary benefit from stable or rising groundwater levels may include avoiding subsidence. Because it is unknown how much pumping will be reduced from promoting BPs, it is difficult to quantify the expected benefits at this time.

Reductions in groundwater pumping will be measured directly through the flowmeter program and recorded in the DMS. Changes in groundwater elevation will be measured with the groundwater level monitoring program. Subsidence will be measured with the CGPS station network. Changes in groundwater storage will be estimated using the groundwater level proxy. Information about the monitoring programs is provided in Chapter 7. Isolating the effect of BPs on groundwater levels will be challenging because they are only one of several management actions that may be implemented concurrently in the Subbasin.

9.3.1.3 Circumstances for Implementation

BPs and related outreach will be promoted and implemented soon after adoption of the GSP. No other triggers are necessary or required.

9.3.1.4 Public Noticing

Public meetings will be held to inform the groundwater pumpers and other stakeholders that BPs are being developed. Groundwater pumpers and interested stakeholders will have the opportunity at these meetings to provide input and comments on the BPs. The BPs will be promoted through a focused outreach campaign.

9.3.1.5 Permitting and Regulatory Process

No permitting or regulatory process is needed for establishing and promoting BPs.

9.3.1.6 Implementation Schedule

Implementing BPs will begin immediately after the GSP is adopted and when funds become available. The GSAs envision that BPs will be promoted and established within two years of GSP adoption.

9.3.1.7 Legal Authority

No legal authority is needed to promote and establish BPs.

9.3.1.8 Estimated Cost

The estimated cost for promoting and establishing BPs during the first two years of GSP implementation is $100,000. Monitoring of BPs will have an estimated annual cost of $25,000 to $50,000.

9.3.2 Groundwater Management Program

The GSAs will implement a program to improve management of groundwater pumping in the Subbasin. *De minimis* groundwater users would be exempt from this program. This program will encourage or mandate the following elements:

- Rotation of pumping schedules
- Minimum well spacing requirements for new wells
- Required installation and periodic calibration of flowmeters to quantify water use
- Reporting flowmeter calibration reports and groundwater pumping amounts to GSAs

- Estimation of groundwater use with a penalty factor for growers who elect not to report pumping amounts

Costs incurred to comply with this program will be paid by groundwater users. In some cases, the GSAs may provide funding assistance for some program elements.

9.3.2.1 Relevant Measurable Objectives

The groundwater management program will benefit the groundwater elevation, groundwater storage, and land subsidence measurable objectives.

9.3.2.2 Expected Benefits and Evaluation of Benefits

The primary benefit from the groundwater management program will be less pumping in the Subbasin. A connected secondary benefit will be mitigating the decline, or raising, groundwater elevations from reduced pumping. An ancillary benefit from stable or rising groundwater elevations may include avoiding subsidence. Because the amount of pumping reduction from groundwater management program is unknown at this time, it is difficult to quantify the expected benefits.

Reductions in groundwater pumping will be measured directly through the flowmeter program and recorded in the DMS. Changes in groundwater elevation will be measured with the groundwater level monitoring program. Subsidence will be measured with the CGPS station network. Changes in groundwater storage will be estimated using the groundwater level proxy. Information about the monitoring programs is provided in Chapter 7. Isolating the effect of the groundwater management program on groundwater levels will be challenging because it will be only one of several management actions that may be implemented concurrently in the Subbasin.

9.3.2.3 Circumstances for Implementation

The groundwater management program will be initiated only after a public hearing has been held to determine when and where in the Subbasin the groundwater management program should be initiated, and after a proportional and equitable funding framework is developed.

9.3.2.4 Public Noticing

Public meetings will be held to inform the public that groundwater management program is being developed. The groundwater management program will be developed in an open and transparent process. The public and interested stakeholders will have the opportunity at these meetings to provide input and comments on the process and the program elements.

9.3.2.5 Permitting and Regulatory Process

The groundwater management program, and particularly the flowmeter program, may be subject to CEQA. Depending on the funding approach agreed to for this management action, funding may be subject to the requirements of proposition 218 or proposition 26. Pumping rotation schedules, well spacing requirements, and flowmeter installation and calibration requirements may need to be implemented by amending or establishing new County ordinances.

9.3.2.6 Implementation Schedule

The groundwater management program is a Level 1 management action and will be established and implemented within two years of GSP adoption.

9.3.2.7 Legal Authority

California Water Code §10725.8 provides GSAs the authorities to require flow meters on wells and require annual reporting of well pumping. California Water Code §10726.4 provides GSAs the authorities establish well spacing requirements and establish pumping rotation schedules.

9.3.2.8 Estimated Cost

The cost to develop and implement the groundwater management program is estimated to be $750,000. This estimated cost of the CEQA permitting and the annual cost of data collection, data management, and program compliance are unknown at this time.

9.3.3 Promote Stormwater Capture

Stormwater and dry weather runoff capture projects, including Low Impact Development (LID) standards for new or retrofitted construction, will be promoted as priority projects to be implemented as described in the San Luis Obispo County Stormwater Resource Plan (SWRP). The SWRP outlines an implementation strategy to ensure valuable, high-priority projects with multiple benefits. While the benefits are not easily quantified, the State is very supportive of such efforts. One of the initial tasks of the GSAs will be to pursue stormwater capture projects in several areas of the Basin, including reaches of the Huer Huero, San Juan and Estrella drainages.

This management action covers two types of stormwater capture activities. The first stormwater capture activity involves retaining and recharging onsite runoff. Examples of this type of activity include LID and on-farm recharge of local runoff. The second stormwater capture activity involves recharge of unallocated storm flows. These actions require temporary diversions of storm flows from streams, and transport of those flows to recharge locations.

9.3.3.1 Relevant Measurable Objectives

Stormwater capture may benefit the groundwater elevation, groundwater storage, and land subsidence measurable objectives.

9.3.3.2 Expected Benefits and Evaluation of Benefits

The primary benefit from the stormwater capture program is to mitigate the decline of, or possibly raise, groundwater elevations through addition recharge. An ancillary benefit from stable or rising groundwater elevations may include avoiding subsidence. Because the amount of recharge that could be accomplished from the program is unknown at this time, it is difficult to quantify the expected benefits.

Changes in groundwater elevation will be measured with the groundwater level monitoring program. Subsidence will be measured with the CGPS station network. Changes in groundwater storage will be estimated using the groundwater level proxy. Information about the monitoring programs is provided in Chapter 7. Isolating the effect of the stormwater capture program on groundwater levels will be challenging because it will be only one of several management actions that may be implemented concurrently in the Subbasin.

9.3.3.3 Circumstances for Implementation

Assuming applicable permitting requirements can be met, there are no other triggers required for the stormwater capture program.

9.3.3.4 Public Noticing

Public meetings will be held to inform the public that stormwater capture program is being developed. The stormwater capture program will be developed in an open and transparent process. The public and interested stakeholders will have the opportunity at these meetings to provide input and comments on the process and the program elements.

9.3.3.5 Permitting and Regulatory Process

Recharge of stormwater by retaining and recharging onsite runoff does not require permits. Recharge of unallocated storm flows is currently subject to the SWRCB's existing temporary permit for groundwater recharge program. The SWRCB is currently developing five-year permits for capturing high flow events. Recharge of unallocated storm flows will be subject to the terms of these five year permits if and when they are enacted. Stormwater capture may also be subject to CEQA permitting.

9.3.3.6 Implementation Schedule

The stormwater capture program is a Level 1 management action and will be established and implemented within two years of GSP adoption.

9.3.3.7 Legal Authority

Other than acquiring required permits and the right to divert stormwater, there are no other legal authorities required to implement stormwater capture.

9.3.3.8 Estimated Cost

The cost to develop and implement the stormwater capture program is estimated to be $250,000. This estimated cost of the CEQA permitting and the annual costs of data collection, data management, and program compliance are unknown at this time.

9.3.4 Voluntary Fallowing of Agricultural Land

The GSAs may consider developing a program to promote voluntary fallowing of crop land to reduce overall groundwater demand. This program would include:

- A process to allow landowner to justify and request the ability to retain previous irrigation rights that can be held for a timeframe approved by the GSAs.
- A process to request to reestablish groundwater use, including notification, outreach and continued monitoring of local wells.

The GSAs would consider financial incentives to encourage voluntary fallowing.

9.3.4.1 Relevant Measurable Objectives

The groundwater management program would benefit the groundwater elevation, groundwater storage, and land subsidence measurable objectives.

9.3.4.2 Expected Benefits and Evaluation of Benefits

The primary benefit of the voluntary fallowing program would be lower Subbasin pumping. This benefit would be facilitated by a process where landowners who elected to voluntarily fallow their land and cease groundwater pumping could retain and reinstate their right to pump at some point in the future. A connected secondary benefit is mitigating the decline of, or raising, groundwater elevations from the reduced pumping. An ancillary benefit from stable or rising groundwater elevations may include avoiding subsidence. Because it is unknown how many landowners will willingly enter the land fallowing program, it is difficult to quantify the expected benefits at this time.

Reductions in groundwater pumping will be measured directly through the flowmeter program and recorded in the DMS. Changes in groundwater elevation will be measured with the groundwater level monitoring program. Subsidence will be measured with the CGPS station network. Changes in groundwater storage will be estimated using the groundwater level proxy. Information about the monitoring programs is provided in Chapter 7. Isolating the effect of the voluntary fallowing program on sustainability metrics will be challenging because it will be only one of several management actions that may be implemented concurrently in the Subbasin.

9.3.4.3 Circumstances for Implementation

The land fallowing program will be implemented only after a public hearing has been held to determine when and where in the Subbasin the program should be initiated, and after a proportional and equitable funding framework is developed.

9.3.4.4 Public Noticing

Public meetings will be held to inform groundwater pumpers and other stakeholders that a voluntary fallowing program is being developed. The voluntary fallowing program will be developed in an open and transparent process. The public and interested stakeholders will have the opportunity at these meetings to provide input and comments on the process and the program elements.

9.3.4.5 Permitting and Regulatory Process

The land fallowing program is subject to CEQA. If a funding approach is agreed to for developing this management action and potentially providing financial incentives for land fallowing, the funding may be subject to the requirements of proposition 218 or proposition 26.

9.3.4.6 Implementation Schedule

Voluntary land fallowing is a Level 1 management action and may be established and implemented within one year of GSP adoption.

9.3.4.7 Legal Authority

California Water Code §10726.3(c) provides GSAs the authorities to provide for a program of voluntary land fallowing.

9.3.4.8 Estimated Cost

The cost to develop and implement the voluntary land fallowing program is estimated to be $200,000. This cost does not include possible financial incentives that the GSAs may use to promote fallowing, the cost of the CEQA permitting, or any ongoing oversight to ensure that the fallowing program is maintained in accordance with agreements.

9.3.5 Groundwater Pumping Fees

A groundwater pumping fee structure will be developed to fund GSA operations, conduct necessary studies, conduct early planning for sustainability projects, and to promote voluntary reductions in groundwater pumping. The GSAs will conduct focused public outreach and hold meetings to educate and solicit input on the fee structure. The GSAs will begin developing the fee structure as soon as administratively feasible after GSP adoption and after property ownership and groundwater pumping assessment information is developed. Initially, a base pumping fee would be charged to all non-exempt groundwater pumpers on a per acre-foot basis. If the base fee fails to reduce pumping to a level that stabilizes groundwater levels, the pumping fee will be incrementally increased to progressively induce greater reductions in groundwater use.

Any imposition of fees, taxes or other charges will follow protocols outlined in the California Water Code, Chapter 8, 10730 et sec, Government Code 6066 and in accordance to subdivisions (a) and (b) of Section 6 of Article XIII D of the California Constitution. Protocols include public outreach, notification of all property owners, and at least one public hearing where the opinions and concerns of all parties are heard and considered before the GSAs makes a determination to proceed with a fee or other charge. If needed, each GSA shall enact fees by ordinance or resolution that is materially comparable to similar levels and classes of use to the ordinance or resolution of the other GSAs. Any class of groundwater use, for example irrigated agriculture, would be treated in an equal and similar manner within the boundaries of all four GSAs.

Any groundwater pumping fees will acknowledge existing water rights and will be developed in accordance with existing groundwater law. The GSAs will obtain necessary legal advice prior to implementing the groundwater pumping fees in order to reduce risk of legal actions.

9.3.5.1 Relevant Measurable Objectives

The groundwater management program will benefit the groundwater elevation, groundwater storage, and land subsidence measurable objectives.

9.3.5.2 Expected Benefits and Evaluation of Benefits

The primary benefit from implementing groundwater pumping fees is reduced Subbasin pumping. A connected secondary benefit is mitigating the decline of, or raising, groundwater elevations from the reduced pumping. An ancillary benefit from stable or rising groundwater elevations may include avoiding subsidence. Because it is unknown how much pumping will be reduced due to the groundwater pumping fees, it is difficult to quantify the expected benefits at this time.

Reductions in groundwater pumping will be measured directly through the flowmeter program and recorded in the DMS. Changes in groundwater elevation will be measured with the groundwater level monitoring program. Subsidence will be measured with the CGPS station network. Changes in groundwater storage will be estimated using the groundwater level proxy. Information about the monitoring programs is provided in Chapter 7. Isolating the effect of the groundwater pumping fees on sustainability metrics will be challenging because it will be only one of several management actions that may be implemented concurrently in the Subbasin. However, as pumping fees are increased the correlation between pumping fees and changes in groundwater pumping, and the associated increase in groundwater levels may become more apparent.

9.3.5.3 Circumstances for Implementation

Groundwater pumping fees will be implemented only after public hearings have been held to determine when and where in the Subbasin the program should be initiated, and after a proportional and equitable funding framework is developed.

9.3.5.4 Public Noticing

Public meetings will be held to inform groundwater pumpers and other stakeholders that groundwater pumping fees are being considered. The groundwater pumping fees program will be developed in an open and transparent process. Groundwater pumpers, public and other interested stakeholders will have the opportunity at these meetings to provide input and comments on the process and the program elements.

9.3.5.5 Permitting and Regulatory Process

The groundwater pumping fees will be developed in accordance with all applicable groundwater laws and respect all groundwater rights. Depending on the funding approach for developing this management action, the groundwater fees program could be subject to the requirements of proposition 218 or proposition 26.

9.3.5.6 Implementation Schedule

Groundwater pumping fees are a Level 1 management action and will be established and implemented within two years of GSP adoption. Implementing groundwater pumping fees will likely require a proposition 218 or proposition 26 vote.

9.3.5.7 Legal Authority

California Water Code §10730 provides GSAs the authorities to impose fees, including fees on groundwater pumping.

9.3.5.8 Estimated Cost

The cost to develop and implement the pumping fees program is estimated to be $500,000. This does not include the ongoing cost of program oversight and compliance monitoring.

9.4 Level 2 Management Actions

If, after implementing the Level 1 management actions, monitoring data indicate that sustainability metrics (primarily groundwater levels) are continuing to trend toward or have exceeded minimum thresholds in portions of the Subbasin, the GSAs will begin the process to implement more aggressive Level 2 management actions and/or projects (Figure 9-1). Level 2 management actions may include:

- A groundwater conservation program designed to control groundwater pumping by regulating, limiting or suspending pumping from individual groundwater wells or from all groundwater wells in areas where minimum thresholds are threatened or exceeded.
- Retirement of agricultural Land and suspending the associated groundwater pumping.

9.4.1 Groundwater Conservation Program

A groundwater conservation program will be implemented to promote deeper reductions in groundwater pumping using elements similar to a water market. This program will include a tiered pumping fee structure. Funds raised under this program will be used by GSAs to fallow agricultural land and develop sustainability projects. The GSAs will conduct substantial public outreach and hold meetings to educate and solicit input on the groundwater conservation program. This outreach program will be designed to ensure that the conservation program is equitable to all beneficial groundwater users and uses, and that it is consistent with groundwater laws and water rights.

The groundwater conservation program will provide groundwater pumpers flexibility in how they manage water and how Subbasin achieves groundwater sustainability. All non-exempt groundwater pumpers will be able to make individual decisions on how much groundwater they pump based on their perceived best interests. Some groundwater pumpers may choose to reduce pumping, others may choose to buy water from neighbors or retire land, while others may choose to pay a surcharge over the Level 1 pumping fee for importing new water supplies.

Because substantial negotiation among Subbasin groundwater users and public input will be needed to develop an equitable fee structure and other elements of the groundwater conservation program, many program details will need to be developed during GSP implementation. Concepts that could be included in the groundwater conservation program include:

- A tiered pumping rate structure. This structure will be the fundamental mechanism to promote broad voluntary reductions in groundwater pumping and to fund land fallowing and water supply projects.
- A process to create initial pumping allowances that are quantified for every non-exempt groundwater pumper. These allowances are not water rights. Instead, they form the basis of the tiered pumping fee structure.
- Pumping allowances would be ramped down over time to be within the Subbasin sustainable yield before 2040.
- Pumping would be recorded or estimated annually for all pumpers that are subject to fees. Pumping amounts would be reported to the GSAs annually, stored in the Data Management System and reported to DWR.
- GSAs would use the base rate funds to acquire water rights or contracts; as well as plan, design, permit, and develop and implement one or more of the management actions or projects described in this chapter. GSAs would use the surcharge funds to buy irrigation rights, irrigated property or to pay annual costs of purchasing and treating water, and delivering it into the Subbasin.
- Groundwater pumpers could acquire carryover pumping credits, obtain recharge credits, and transfer pumping allowances to other properties.
- Provisions for how non-irrigated land is treated.
- Provisions for how *de minimis* pumpers are treated.

Additional details on the groundwater conservation program components are provide in the following sections.

9.4.1.1 Tiered Pumping Fee Structure

The Level 1 groundwater pumping fee system described in Section 9.3.5 will continue until monitoring data conclusively indicate that groundwater levels are continuing to decline at a rate that requires near-term initiation of more aggressive management actions or projects to avoid exceeding minimum thresholds and avoid undesirable results. In this case, to induce deeper reductions in groundwater pumping, a tiered pumping fee structure would be implemented. All non-exempt pumpers would be charged a groundwater replenishment fee. Groundwater pumped within a pumping allowance would be charged a base fee. Groundwater pumped above a pumping allowance is charged the base fee plus a surcharge. The thresholds that define each tier along with the fee charged for each tier would be determined in hearings, public outreach and be subject to final Board approval. The tiers and fees will be established to address areas where reduced pumping is needed and to provide a mechanism to fund projects that may be needed in these areas.

Individual groundwater pumpers may choose to switch to less water-intensive crops, implement water use efficiencies, or transition to non-groundwater sources. Alternatively, if reducing pumping is not the best economic option, a groundwater pumper may instead pay an overproduction surcharge.

The fee structure and allowances may not be uniform across the Subbasin in the final groundwater conservation program. Portions of the Subbasin with localized groundwater decline may be subject to different fee structures and pumping ramp down schedules to promote additional conservation.

9.4.1.2 Pumping Allowance Ramp Down

Pumping allowances would be ramped down until total pumping allowances in the Subbasin are less than or equal to the estimated sustainable yield. Estimated sustainable yield will be updated periodically as new data are developed. The ramp down schedule would be developed during program development; the rate of ramp down would depend on when the program starts and projections of how long lower pumping rates are required before 2040 to achieve sustainability. Conceptually, it is envisioned that the ramp down would occur over a time span of 5 to 10 years. Different water rights holders might be subject to different ramp down amounts and schedules. The specific ramp down amounts and timing would be reassessed periodically by the GSAs as needed to achieve sustainability. These adjustments would occur when additional data and analyses are available to refine the sustainable yield estimate.

9.4.1.3 Carryover and Recharge

To provide groundwater pumpers the flexibility to pump more during dry years and less during wet years, the unused portion of a pumping allowance for a given year may be carried over for use in subsequent years. The amount a groundwater pumper can carryover is limited to an amount equal to their current pumping allowance. The GSAs may elect to impose an annual loss factor that reduces a groundwater pumpers carryover credits due to natural hydrogeologic losses from the Subbasin. The exact loss percentage will be agreed to in the final water charges framework.

The carryover element of pumping allowances allows groundwater pumpers to pump more water only if they have previously accumulated pumping credits, and offers significant flexibility to groundwater pumpers while keeping long-term pumping within the sustainable yield. This directly addresses the requirements of the SGMA regulations §354.44(b)(9) which requires that, "chronic lowering of groundwater levels or depletion of supply during periods of drought is offset by increases in groundwater levels or storage during other periods".

Water recharged by an individual or entity will be recognized by award of recharge credit to the recharging individual or entity on a one acre-foot for one acre-foot basis, subject to losses that the GSAs may elect to impose. Recharge credit balances will be reduced or debited when the recharged water is recovered. The GSAs will develop a system of confirming and accounting for recharge credits and debits (addressed further below). An entity such as a GSA may opt to recharge groundwater for the benefit of all groundwater users. In that case, there will be no need to transfer recharge credits from the entity to the individual groundwater users and the groundwater pumping allowance of all users will be adjusted accordingly.

9.4.1.4 Re-location and Transfer of Pumping Allowances

Pumping allowances may be moved between properties temporarily or permanently. Such re-location of pumping allowances is subject to review by GSAs and applicants will be required to report groundwater levels and extractions annually to minimize impact to nearby groundwater pumpers and ensure that sustainability goals are being met. GSAs will document the re-location using well and hydrogeologic data. The GSP model may be used to assess any significant and unreasonable impacts from the proposed relocation. Re-locating pumping allowances provides pumpers with flexibility, and maintains consistency with San Luis Obispo County's current Agriculture Offset Program. Groundwater pumping allowances could also be permanently or temporarily transferred between different owners, and could be used for another pumping purpose. Protections for neighboring wells will be built into the program. An appropriate application, permitting, reporting and funding process would be evaluated for this program.

9.4.1.5 Non-Irrigated Land

Land that is not under irrigation when the Conservation Program is initiated is not provided an initial pumping allowance. The GSP recognizes that owners of such land may wish to begin pumping in the future consistent with their overlying rights. Such pumping is not limited by this GSP. To enable the Subbasin to attain sustainability in accordance with §354.42 and §354.44 of the SGMA regulations, non-exempt groundwater pumpers who did not receive an initial pumping allowance may:

1. Acquire pumping allowance from willing sellers subject to GSA approval,
2. Buy into a project that delivers surface water to the same area of the Subbasin, and/or
3. Pay the surcharges associated with pumping above their pumping allowance.

9.4.1.6 *De Minimis* Groundwater Users

While the number of *de minimis* groundwater users in the basin is significant, they are not currently regulated under this GSP. Growth of *de minimis* groundwater extractors could warrant regulated use in this GSP in the future. Growth will be monitored and reevaluated periodically.

9.4.1.7 Relevant Measurable Objectives

The groundwater management program would benefit the groundwater elevation, groundwater storage, and land subsidence measurable objectives.

9.4.1.8 Expected Benefits and Evaluation of Benefits

The primary benefit from implementing groundwater conservation program is reduced Subbasin pumping. A connected benefit of reduced pumping is mitigating the decline, or raising, groundwater elevations. An ancillary benefit from stable or increasing groundwater elevations may include avoiding subsidence. The program is designed to ramp down pumping to the sustainable yield; therefore, the quantifiable benefit is to maintain pumping within the sustainable yield.

Reductions in groundwater pumping will be measured directly through the flowmeter program and recorded in the data management system. Changes in groundwater elevation are an important metric for the groundwater conservation program and will be measured with the groundwater level monitoring program. Subsidence will be measured with the CGPS station network. Changes in groundwater storage will be estimated using the groundwater level proxy. Information about the monitoring programs is provided in Chapter 7. Isolating the effect of the groundwater conservation program on sustainability metrics will be challenging because it will be only one of several management actions that may be implemented concurrently in the Subbasin. However, as the pumping ramp down is initiated, the correlation between reduced pumping and higher groundwater levels may become more apparent.

9.4.1.9 Circumstances for Implementation

The groundwater conservation program will be implemented only after it is demonstrated through monitoring data that the Level 1 management actions were insufficient to stabilize groundwater levels, avoid undesirable results, and reduce the amount of pumping to the sustainable yield. Evaluation of monitoring data would be conducted, and public hearings would be held to determine when and where in the Subbasin the groundwater conservation program should be initiated, and to determine a proportional and equitable funding framework for the program.

9.4.1.10 Public Noticing

Public meetings will be held to inform groundwater pumpers and other stakeholders that the groundwater conservation program is being developed. The groundwater conservation program will be developed in an open and transparent process. Groundwater pumpers and other stakeholders will have the opportunity at these meetings to provide input and comments on the process and the program elements.

9.4.1.11 Permitting and Regulatory Process

The groundwater conservation program is subject to CEQA. The groundwater conservation program will be developed in accordance with all applicable groundwater laws and respect all groundwater rights. Depending on the funding approach agreed to for developing this management action, the fee structure implemented as part of the groundwater conservation program would likely be subject to the requirements of proposition 218 or proposition 26.

9.4.1.12 Implementation Schedule

The groundwater conservation program will begin only after the circumstances outlined in Section 9.3.5.8 are met. Developing and implementing the groundwater conservation program will likely take approximately two years, which includes time for a proposition 218 or proposition 26 vote.

9.4.1.13 Legal Authority

California Water Code §10730 provides GSAs the authorities to impose fees, including fees on groundwater pumping.

9.4.1.14 Estimated Cost

The cost to develop and implement the groundwater conservation program is estimated to be $750,000. This does not include the cost of the CEQA permitting or any ongoing program oversight.

9.4.2 Agricultural Land and Pumping Allowance Retirement

Revenues from the groundwater conservation program may be used by a GSA to acquire and retire irrigated land and/or the pumping allowance (and potentially carryover credits and recharge credits) from a property to reduce pumping. All acquisitions will be completed on a voluntary basis from willing sellers at negotiated market prices. GSAs would cease irrigation on acquired land to reduce pumping. All transactions will be recorded with deed restrictions at the SLO County office of the Clerk Recorder. GSAs could coordinate with other local agencies and stakeholders to determine beneficial uses of the acquired land. Acquired pumping allowances would be held in the relevant GSA's pumping allowance account, and would be used only as needed to support re-purposing of acquired irrigated land (e.g. establishment of native vegetation). GSAs could consider selling purchased land with only *de minimis* use attached to recapture funds for further reinvestment in water conservation or to reduce groundwater pumping. GSAs may use flowmeter readings, electric bills and/or aerial photographs to assess and actual value of the water use that is being retired. Reports would be prepared to document the process and value of acquired property; these reports would be made public. The long-term economic loss due to permanent retirement of irrigated agricultural land and proportional loss of tax revenue will be considered. The local taxing agencies will be notified and comments solicited before land is retired.

The Agency may consider allowing landowners to sell pumping allowances to a GSA separate from land in order to convert their land to rural residential use. Hearings will be required to weigh impacts to infrastructure, permanent loss of farmland and the availability and wisdom of expending retired water. The number of *de minimis* wells authorized on converted land will be based on the amount of pumping allowance sold to the GSA. The final ratio of sold pumping allowance to number of *de minimis* wells allowed will be negotiated in the future. For illustrative purposes, one *de minimis* well could be authorized for every 40 to 60 acre-feet of pumping allowance sold to the GSA.

GSAs, property owners and the County could chose to study and later advocate for a County ordinance that might allow a process for conversion of irrigated agricultural land to rural residential development, which could result in substantial reductions in groundwater use. Before this conversion could occur and to ensure any such plan was broadly equitable, substantial analyses would be required to evaluate the consequences, benefits and costs of improving infrastructure and public services to serve the new residential growth.

9.4.2.1 Relevant Measurable Objectives

The groundwater management program would benefit the groundwater elevation, groundwater storage, and land subsidence measurable objectives. Benefits to groundwater elevations and land subsidence would depend on where land retirement occurred.

9.4.2.2 Expected Benefits and Evaluation of Benefits

The primary benefit from land retirement is reduced Subbasin pumping. A connected secondary benefit is mitigating the decline, or raising, groundwater elevations. Depending on the location of the land retirement, ancillary benefits of stable or rising groundwater elevations may include avoiding subsidence. Because it is unknown how many landowners will willingly enter the land retirement program, it is difficult to quantify the expected benefits at this time.

Reductions in groundwater pumping will be measured directly and recorded in the data management system. Changes in groundwater elevation will be measured with the groundwater level monitoring program. Subsidence will be measured with the CGPS station network. Changes in groundwater storage will be estimated using the groundwater level proxy. Information about the monitoring programs is provided in Chapter 7. Isolating the effect of the land retirement program on sustainability metrics will be challenging because it will be only one of several management actions that may be implemented concurrently in the Subbasin.

9.4.2.3 Circumstances for Implementation

The agricultural land retirement program relies on funds from the groundwater conservation program. Therefore, this program is implemented concurrently with the groundwater conservation program. Agricultural land retirement relies on willing sellers.

9.4.2.4 Public Noticing

Public meetings will be held to inform groundwater pumpers and other stakeholders that the agricultural land retirement program is being developed. The agricultural land retirement program will be developed in an open and transparent process. Groundwater pumpers and other stakeholders will have the opportunity at these meetings to provide input and comments on the process and the program.

Any agricultural land retirement achieved through a land sale will be recorded by deed restriction with the County of San Luis Obispo Office of the Tax Assessor. All agricultural land retirement, whether through sale of land or specific restrictions on groundwater extraction, will be recorded by deed restriction on the property title of the affected parcels at the County Assessor's Office and also in the publicly accessible portion of the DMS.

9.4.2.5 Permitting and Regulatory Process

The agricultural land retirement program is subject to CEQA. No other permitting or regulatory processes are necessary for buying land or pumping allowances, beyond those required by the County, GSA Policy, or this GSP.

9.4.2.6 Implementation Schedule

The agricultural land retirement program will begin concurrently with the groundwater conservation program. The agricultural land retirement program will take approximately one year to develop and implement. Although the land retirement program would be ongoing, it would rely on willing sellers and would likely be implemented intermittently.

9.4.2.7 Legal Authority

California Water Code §10726.2 provides GSAs the authority to purchase, among other things, land, water rights, and privileges.

9.4.2.8 Estimated Cost

The cost to develop and implement the agricultural land retirement program is estimated to be $250,000. This does not include the cost of the CEQA permitting or any ongoing oversight of the program.

Market values for agricultural land in the Paso Basin under strict application of SGMA Regulations in the future are unknown. Those willing to offer their property or their pumping rights will seek the best price the current market will bear. Current values are reported to range from $20,000 per acre to above $40,000 per acre (American Society of Farm Managers and Rural Appraisers, 2018).

Annual applied water factors used for the Ordinance range from 1.25 acre-feet per acre to 4.8 acre-feet per acre, depending upon crop type. Retiring one acre of eligible land would reduce pumping by 1.25 acre-feet to 4.8 acre-feet. Assuming the GSAs can acquire and retire land for $20,000 per acre to $40,000 per acre, the cost per acre-foot of pumping reduction will range from approximately $4,200 per acre-foot to $32,000 per acre-foot. If amortized over 30 years at a 4% interest rate, these one-time capital expenditures are equivalent to annualized costs of approximately $240 per acre-foot to $1,850 per acre-foot. In a scenario where groundwater extraction fees are high and are recognized as permanent, land values may change.

9.5 Projects

Projects involve new or improved infrastructure to import or develop new water supplies for the Subbasin. Several potential projects are included in this GSP. Not all projects will necessarily be implemented by the GSAs. Projects will be implemented only if they are deemed cost effective or necessary to achieve sustainability.

The projects presented in this GSP rely on six potential sources of water for groundwater recharge or in-lieu use:

1. Tertiary treated waste water supplied and sold by City of Paso Robles and the San Miguel CSD to private groundwater extractors to us in lieu of groundwater. This water is commonly referred to as recycled water (RW).
2. State Water Project (SWP) water
3. Nacimiento Water Project (NWP) water

4. Salinas Dam/Santa Margarita Reservoir water
5. Local recycled water
6. Flood flows from local rivers and streams

These six water sources are described in more detail in Appendix H. Of these six sources, only RW, SWP, NWP, and Salinas Dam currently have sufficiently reliable volumes of unused water to justify the expense of new infrastructure to be used on a regular basis for supplementing water supplies in the Subbasin. Capturing flood flows from local rivers and streams in permitted projects will be pursued, but because they provide an unknown volume of new supplies on an intermittent basis, the cost of the requisite infrastructure may make this source a lower priority. Therefore, the initial focus of new supply is on developing RW, SWP, NWP, and Salinas Dam projects in the Subbasin. The Agency will pursue availability of these sources while simultaneously creating cost benefit analysis and initial plans to create RFPs and to provide the Agency with information suitable for public outreach, hearings and making decisions.

9.5.1 Overview of Project Types

There are three major types of projects that can be developed to supplement the Subbasin's groundwater supplies:

1. In-lieu use through direct delivery for irrigation or municipal use
2. Direct recharge through recharge basins
3. Direct recharge through injection wells

Each of these projects types is described below, including a generalized discussion of efficiency for each type of project. In this context, project efficiency is the ratio of the amount of water imported by the project to the benefit the project has to the deep aquifers that provide most of the agricultural and municipal water in the Subbasin.

9.5.1.1 In-Lieu Recharge through Direct Delivery

Direct delivery projects use available water supplies for irrigation in lieu of groundwater. This option offsets the use of groundwater, allowing the groundwater basin to recharge naturally. Direct delivery projects rely on the construction of a pipeline to deliver the water to agricultural users, as well as a pump station and storage facility to handle supply and demand variations. Direct delivery is a highly efficient method to reduce groundwater pumping because it directly offsets and decreases the amount of water pumped from the aquifer, allowing the aquifer levels to rebound through natural recharge. One of the drawbacks of direct delivery is that the delivered water must be available during the dry season, a time period when water supplies are less likely to be available, especially during a dry year.

9.5.1.2 Direct Recharge through Recharge Basins

Recharge basins are large artificial ponds that are filled with water which seeps from the basin into the groundwater system. The recharge efficiency of a recharge basin is contingent on the properties of the underlying soil as well as losses to evaporation. Water placed in recharge basins has the potential to seep into streambed alluvium and flow out of the basin before it can recharge the deeper aquifers. Recharge efficiencies can range greatly and it is not always evident how much benefit the recharge has on the groundwater levels in the aquifer below. Recharge through recharge basins can occur all year round; although efficiency might be lower during the rainy seasons if underlying soils are already saturated. Recharge basins have the advantage of generally being less expensive to build and operate than in-lieu distribution systems or injection systems.

The current assumption is that any project using direct recharge through recharge basins will be initiated and owned by the County of San Luis Obispo GSA. This assumption results prevents private ownership of recharged groundwater from these projects, allowing all recharged groundwater to be available to all groundwater pumpers.

9.5.1.3 Direct Recharge through Injection

Injection wells are used to inject available water supplies directly into the groundwater basin. Injection can occur all year round, including during the rainy season. Injection wells are typically more efficient at raising groundwater levels than recharge basins because they can target specific aquifers; although a well's recharge ability is affected by the surrounding aquifer properties. The injected water typically flows through the aquifer from the injection location to locations with lower water levels. The rate of travel depends on the hydraulic conductivity and soil properties. Although they have a very high efficiency, injection wells are generally more expensive to operate than recharge basins. Additionally, injection wells require higher quality water than recharge basins.

The current assumption is that any project using direct recharge through injection will be initiated and owned by the County of San Luis Obispo GSA. This assumption results prevents private ownership of recharged groundwater from these projects, allowing all recharged groundwater to be available to all groundwater pumpers.

9.5.2 General Project Provisions

Many of the priority and substitute projects listed below are subject to similar requirements. These general provisions that are applicable to all projects include certain permitting and regulatory requirements, the methodology for public notice, and the legal authority to initiate and complete the projects.

9.5.2.1 Summary of Permitting and Regulatory Processes

Projects of this magnitude will require an environmental review process via CEQA. Projects will require either an Environmental Impact Report, and Negative Declaration, or a Mitigated Negative Declaration.

There will be a number of local, county and state permits, right of ways, and easements required depending on pipeline alignments, stream crossings, and project type.

Injection and recharge basin projects must adhere to the Salt/Nutrient Management Plan for the Paso Robles Groundwater Basin (RMC 2015). Projects with wells will require a well construction permit.

9.5.2.2 Public Noticing

Before any project initiates construction as part of GSP implementation, it will go through a public notice process to ensure that all groundwater uses and users have ample opportunity to comment on projects before they are built. The general steps in the public notice process will include the following:

- GSA staff will bring an assessment of the need for the project to the Cooperative Committee in a publicly noticed meeting. This assessment will include:
  - A description of the undesirable result that may occur if action is not taken,
  - A description of the proposed project
  - An estimated cost and schedule for the proposed project
  - Any alternatives to the proposed project
- The Cooperative Committee will notice stakeholders in the area of the proposed project and allow at least 30 days for public response
- After the 30-day public response period, the Cooperative Committee will not whether or not to approve construction of the project.
- As water levels respond and stabilize above minimum thresholds, the Board may initiate a process to reassess and reevaluate the project and make adjustments as necessary. This reassessment process will comprise a similar set of initial meetings and activities as the initial project approval including being briefed by staff at a public Cooperative Committee meeting, issuing public notice, receiving public response, and holding a subsequent vote by the Cooperative Committee

In addition to the public noticing detailed above, all projects will follow the public noticing requirements per CEQA.

9.5.2.3 Legal Authority Required for Projects and Basis for That Authority within The Agency

California Water Code §10726.2 provides GSAs the authority to purchase, among other things, land, water rights, and privileges. Additionally, an assessment of the legal rights to acquire and use various water sources is included in Appendix H.

9.5.3 Priority Projects

Eight projects are included in this GSP as priority projects. These projects will not necessarily be implemented, but they represent eight reasonable projects that could help achieve sustainability throughout the Subbasin. Priority projects were developed throughout different regions in the basin to address future localized declines in groundwater elevations. Projects were sized based on the locations of available supplies and pumping demands in different areas of the Paso Robles Basin. Actual projects will be highly dependent on the ability of the GSAs to negotiate with water suppliers and purchase the surface waters described in Appendix H. The eight priority projects are summarized in **Error! Reference source not found.**.

Table 9-1. Priority Projects

Project Name	Water Supply	Project Type	Approximate Location	Average Volume (AFY)
City Recycled Water Delivery	RW	Direct Delivery	Near City of Paso Robles	2,200
San Miguel Recycled Water Delivery	RW	Direct Delivery	Near San Miguel	200 [a]
SWP Injection in Southwestern Subbasin	SWP	Direct Injection	Near O'Donovan Rd. and Lady Amhurst Way	3,000
SWP Injection North of Census-Designated Area Creston	SWP	Direct Injection	Near Geneseo Rd. and Creston Rd.	5,800
NWP Delivery at Salinas and Estrella River Confluence	NWP	Direct Delivery	Near the confluence of the Salinas and Estrella Rivers	2,800
NWP Delivery North of City of Paso Robles	NWP	Direct Delivery	North of Huer Huero Creek, due west of the airport	1,000
NWP Delivery East of City of Paso Robles	NWP	Direct Delivery	East of the City of Paso Robles	2,000
Expansion of Salinas Dam	Salinas River	River Recharge	Along the Salinas River	1,000

Note: (a) Amount may be updated in final GSA based on more recent information

Short descriptions of each priority project are included below, along with a map showing general project locations. Generalized costs are also included for planning purposes. Components of these projects including facility locations, pipeline routes, recharge mechanisms, and other details may change in future analyses. Therefore, each of the projects listed below should be treated as a generalized project that represents a number of potential detailed projects.

9.5.3.1 Assumptions Used in Developing Projects

Assumptions that were used to develop projects and cost estimates are provided in Appendix I. Assumptions and issues for each project need to be carefully reviewed and revised during the pre-design phase of each project. Project designs, and therefore costs, could change considerably as more information is gathered.

The cost estimates included below are class 5, order of magnitude estimates. These estimates were made with little to no detailed engineering data. The expected accuracy range for such an estimate is within +50 percent or –30 percent. The cost estimates are based on our perception of current conditions at the project location. They reflect our professional opinion of costs at this time and are subject to change as project designs mature.

Capital costs include major infrastructure including pipelines, pump stations, customer connections, turnouts, injection wells, recharge basins, and storage tanks. Capital costs also include 30% contingency for plumbing appurtenances, 15% increase for general conditions, 15% for contractor overhead and profit, and 8% for sales tax. Engineering, legal, administrative, and project contingencies was assumed as 30% of the total construction cost and included within the capital cost. Land acquisition at $30,000/acre was also included within capital costs.

Annual operations and maintenance (O&M) fees include the costs to operate and maintain new project infrastructure. O&M costs also include any pumping costs associated with new infrastructure. O&M costs do not include O&M or pumping costs associated with existing infrastructure, such as existing SWP NWP O&M costs because these are assumed to be part of water purchase costs. Water purchase costs were assumed to include repayment of loans for existing infrastructure; however, these purchase costs will need to be negotiated. The terms of such a negotiation could vary widely.

Capital costs were annualized over thirty years and added with annual O&M costs and water purchase costs to determine an annualized dollar per acre-foot ($/AF) cost for each project. This $/AF value might not always represent the $/AF of basin benefit ($/AF-benefit). For instance, if the Department of Water Resources (DWR) delivered less than 60% of SWP allocation, the $/AF-benefit would increase. Similarly, if water that is delivered to a recharge basin recharges into the deep aquifer at a higher efficiency than assumed, the $/AF-benefit would increase.

9.5.3.2 Preferred Project 1: City Recycled Water Delivery

This project will use up to 2,200 AFY of disinfected tertiary effluent for in-lieu recharge in the central portion of the basin near and inside the City of Paso Robles. Water that is not used for recycled water purposes will be discharged to Huer Huero Creek with the potential for additional recharge benefits. The general layout of this project and relevant monitoring wells are shown on Figure 9-2. Infrastructure includes upgraded wastewater treatment plant and pump station, 5.8 miles of pipeline, a storage tank, numerous turnouts, and a discharge to Huer Huero Creek. Additional length of pipeline will also be constructed as part of this project – a private pipeline to the north of the main line which will deliver recycled water to a larger geographical area. The private pipeline is not shown on Figure 9-2 and is not included in the cost estimate. The cost to upgrade the wastewater treatment plant is also not included in the cost estimate, since the upgrades were required per the NPDES permit regardless of use for recycled water. Since this project is already in the predesign phase, the predesign project cost estimate is provided for this GSP.

9.5.3.3 Relevant Measurable Objectives

The measurable objectives benefiting from this groundwater injection project include:

- Groundwater elevation measurable objectives in the central portion of the Subbasin
- The groundwater storage measurable objective
- Land subsidence measurable objectives in the central portion of the Subbasin

9.5.3.4 Expected Benefits and Evaluation of Benefits

The primary benefit from the Paso Robles RW project is higher groundwater elevations in the Central portion of the Subbasin due to in-lieu recharge from the direct use of the RW and recharge through Huer Huero Creek. Ancillary benefits of shallower groundwater elevations may include an increase in groundwater storage, improved groundwater quality from recharge of high-quality water, and avoiding subsidence. The GSP model was used to quantify the expected benefit from this project. Figure 9-3 shows the expected groundwater level benefit predicted by the GSP model after 10 years of project operation. Figure 9-3 expresses the benefit as feet of groundwater. The groundwater level benefit shown on Figure 9-3 is a measure of how much higher groundwater elevations are expected to be with the project rather than without the project.

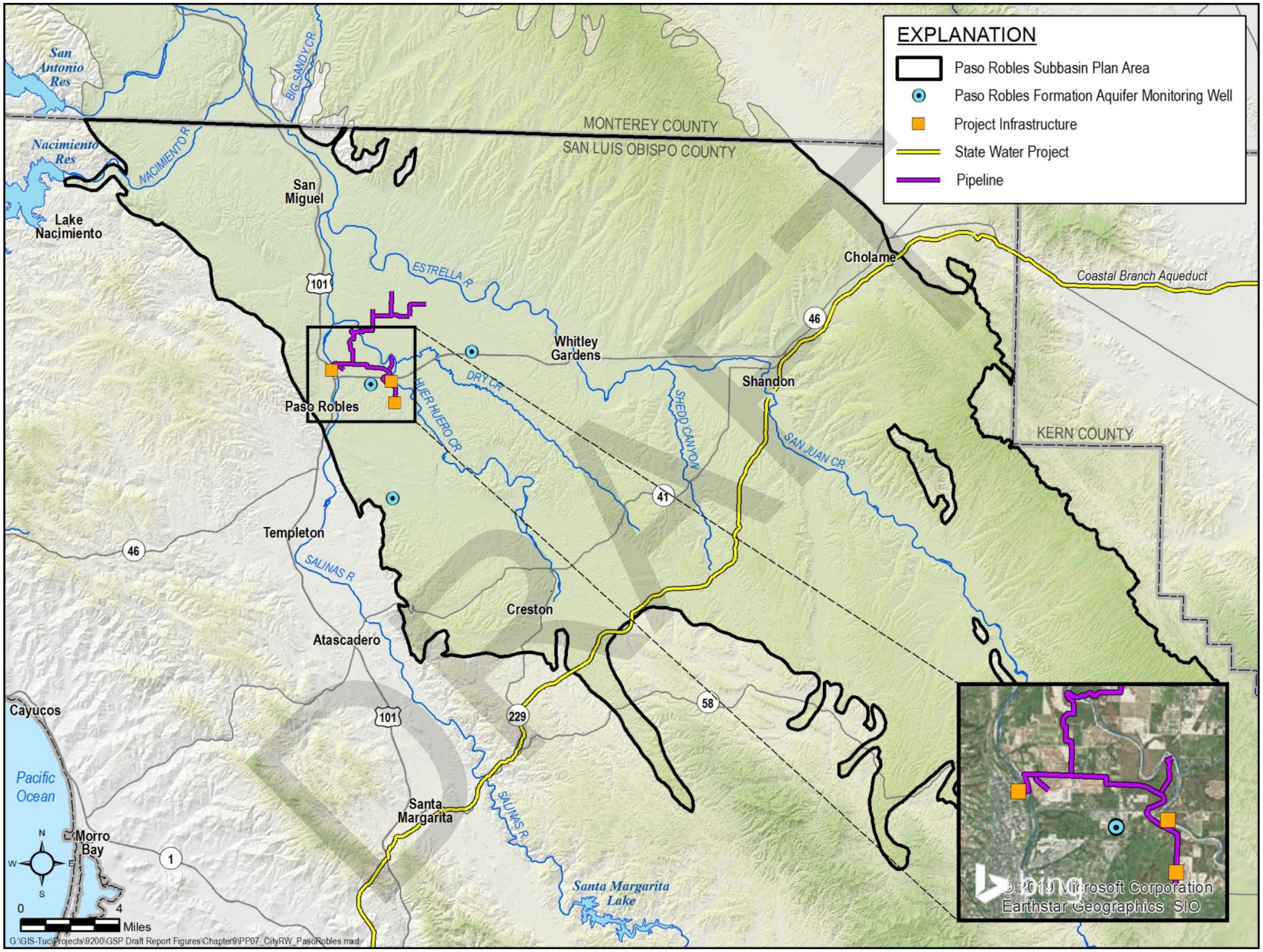

Figure 9-2. Paso Robles RW Project Layout

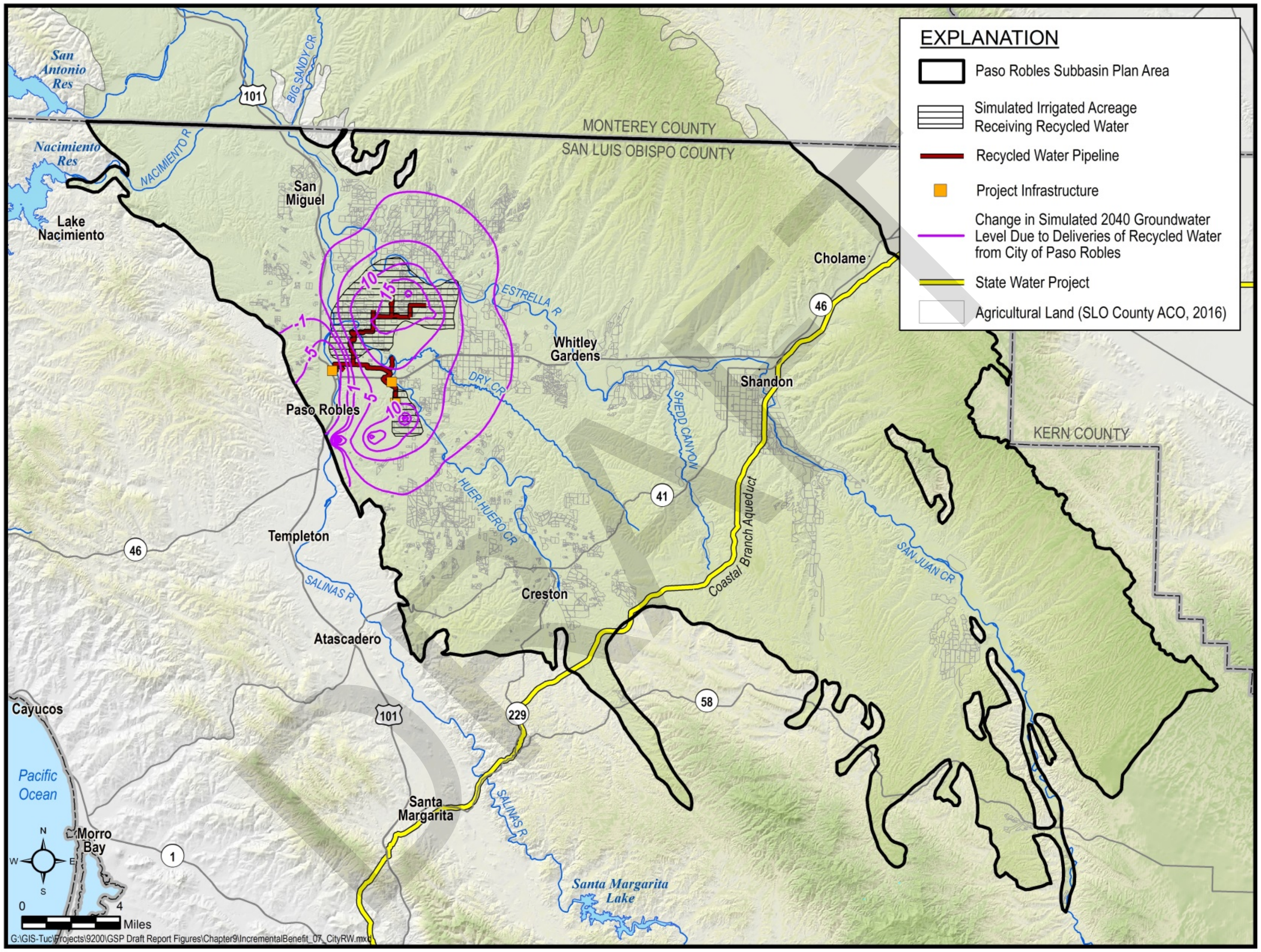

Figure 9-3. Groundwater Level Benefit of Paso Robles RW Project in Central Subbasin

Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured with the CGPS station network detailed in Chapter 7. A direct correlation between the Paso Robles RW project and changes in groundwater levels may not be possible because this is only one among many management actions and projects that might be implemented in the Subbasin.

9.5.3.5 Circumstances for Implementation

This project is already being implemented by the City of Paso Robles. The monitoring wells 26S/12E-26E07, 26S/13E-16N01, and 27S/12E-13N01 will likely be positively impacted by this project.

9.5.3.6 Implementation Schedule

The project is underway. The phase design is expected to be complete by 2019 and construction complete by 2021. The implementation schedule is presented on Figure 9-4.

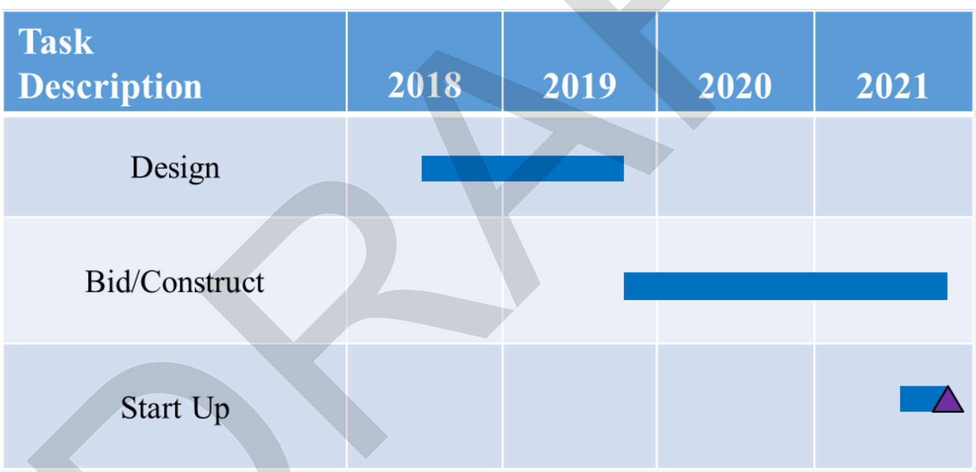

Figure 9-4. Implementation Schedule for Paso Robles RW in Central Subbasin

9.5.3.7 Estimated Cost

The estimated total project cost for this project is $22M. The cost and financing for the project is being determined by the City of Paso Robles. Annual O&M costs are not provided in this GSP. The cost ($/AF) of this water will be set by the City of Paso Robles and is not included in this GSP.

9.5.3.8 Preferred Project 8: San Miguel CSD Recycled Water Delivery

The San Miguel RW project is currently in the planning phases; therefore the project concepts presented herein are preliminary.

This project is a planned project that involves the upgrade of San Miguel Community Services District (CSD) wastewater treatment plant to meet California Code of Regulations (CCR) Title 22 criteria for disinfected secondary recycled water for irrigation use by vineyards. Potential customers include one on the east side of the Salinas River, and a group of customers northwest of the wastewater treatment plant. The project might include the utilization of process discharge from a nearby processing facility for additional water recycling. The project could provide between 200 and 450 AFY of additional water supplies. The general layout of this project and relevant monitoring wells are shown on Figure 9-5. The infrastructure shown here includes a treatment plant upgrade, and two pipelines delivering water to customers. The actual project size and infrastructure will be determined based on project feasibility and negotiations with suppliers and customers. For more information on technical assumptions and cost assumptions, refer to Appendix I.

9.5.3.9 Relevant Measurable Objectives

The measurable objectives benefiting from this groundwater injection project include:

- Groundwater elevation measurable objectives in the northern portion of the Subbasin
- The groundwater storage measurable objective
- Land subsidence measurable objectives in the northern portion of the Subbasin

9.5.3.10 Expected Benefits and Evaluation of Benefits

The primary benefit from RW use for irrigation is higher groundwater elevations in the northern portion of the Subbasin due to in-lieu recharge from the direct use of the RW. Ancillary benefits may include an increase in groundwater storage, and avoiding subsidence. The GSP model was used to quantify the expected benefit from this project. Figure 9-6 shows the expected groundwater level benefit predicted by the GSP model after 10 years of project operation. Figure 9-6 expresses the benefit as feet of groundwater. The groundwater level benefit shown on Figure 9-6 is a measure of how much higher groundwater elevations are expected to be with the project rather than without the project

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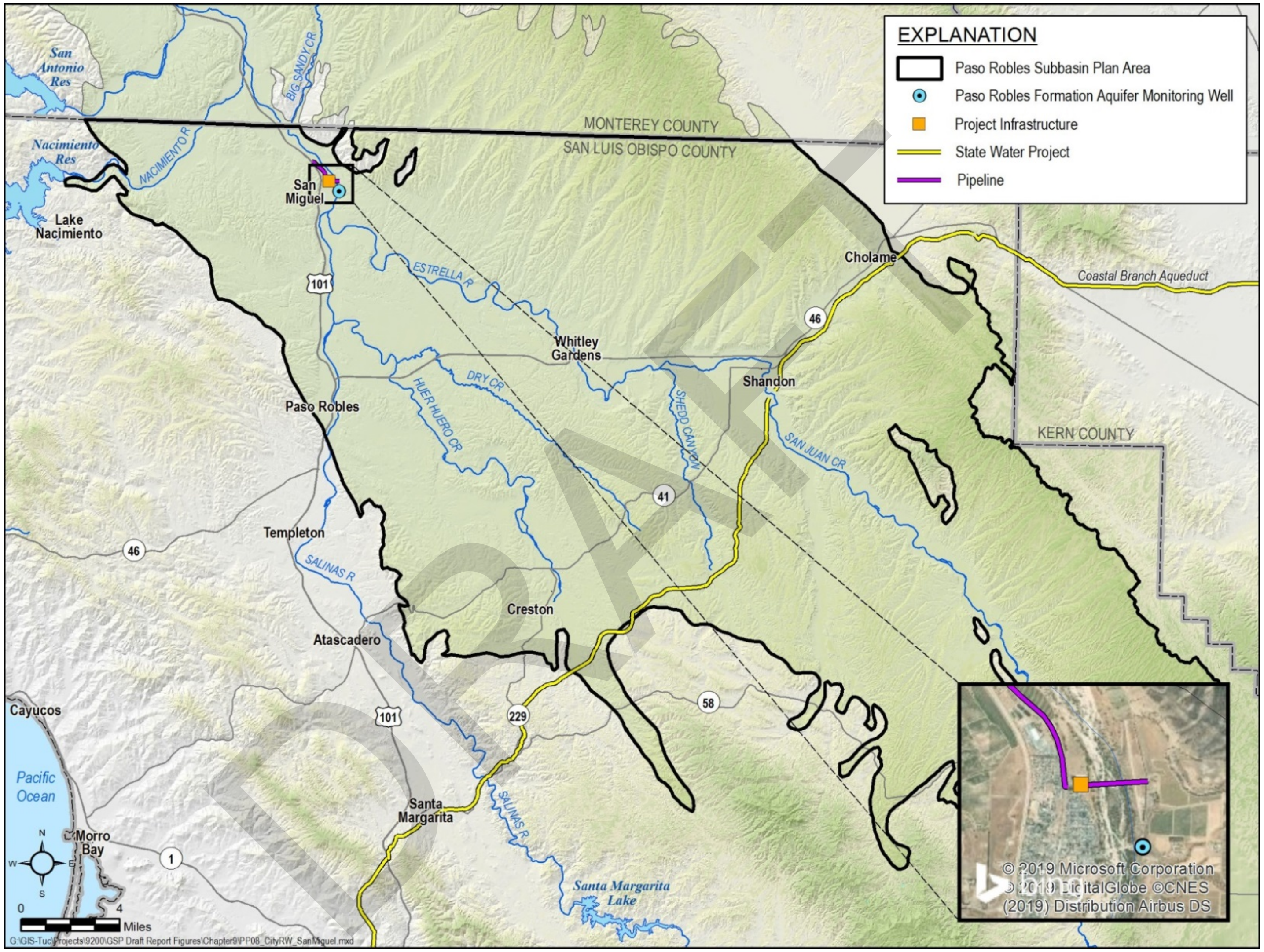

Figure 9-5. Conceptual San Miguel CSD RW Project Layout

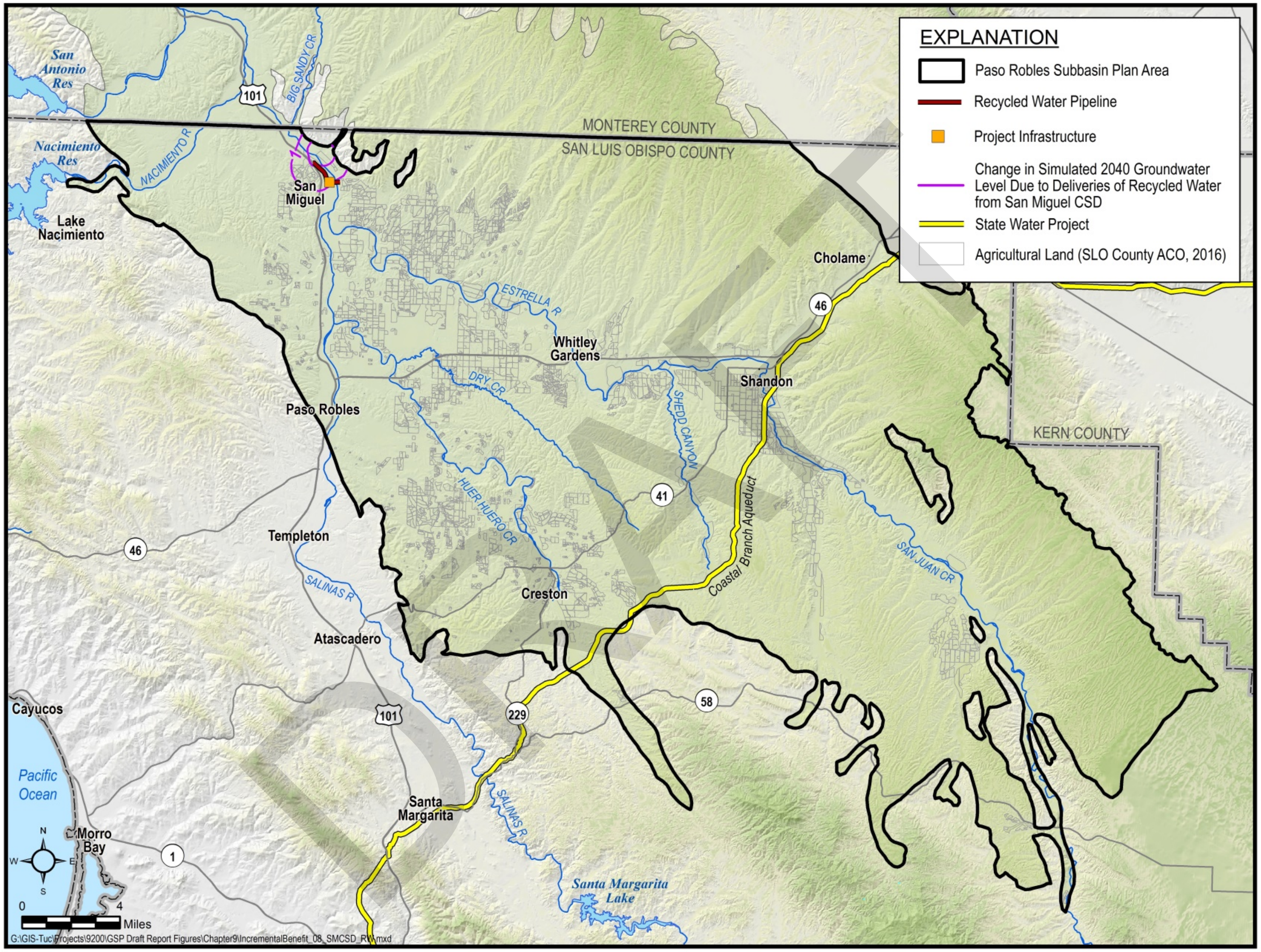

Figure 9-6. Groundwater Level Benefit of San Miguel CSD RW Project

Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured with the CGPS station network detailed in Chapter 7. A direct correlation between the San Miguel CSD RW Project and changes in groundwater levels may not be possible because this is only one among many management actions and projects that might be implemented in the Subbasin.

9.5.3.11 Circumstances for Implementation

Most projects are implemented on an as-needed basis. The primary approach to attaining sustainability relies on pumping reductions in response to the groundwater conservation program. If pumping reductions are inadequate for achieving sustainability, the funds raised by the water charge framework will be used to initiate projects throughout the Subbasin. The San Miguel CSD RW Project will be initiated if, after five years, groundwater levels in the northern portion of the monitoring network continue to decline at unsustainable rates. In particular, continued unsustainable groundwater level declines in monitoring well 25S/12E-16K05 will trigger implementation of this project. Additional triggers will be added as the monitoring well network expands.

This project is a planned project being undertaken by San Miguel CSD and may be implemented regardless of the triggered implementation scheme presented herein.

9.5.3.12 Implementation Schedule

The implementation schedule is presented on Figure 9-7. The project will take 4 to 6 years to implement. The actual project start date is to be determined on an as-needed basis or by San Miguel CSD.

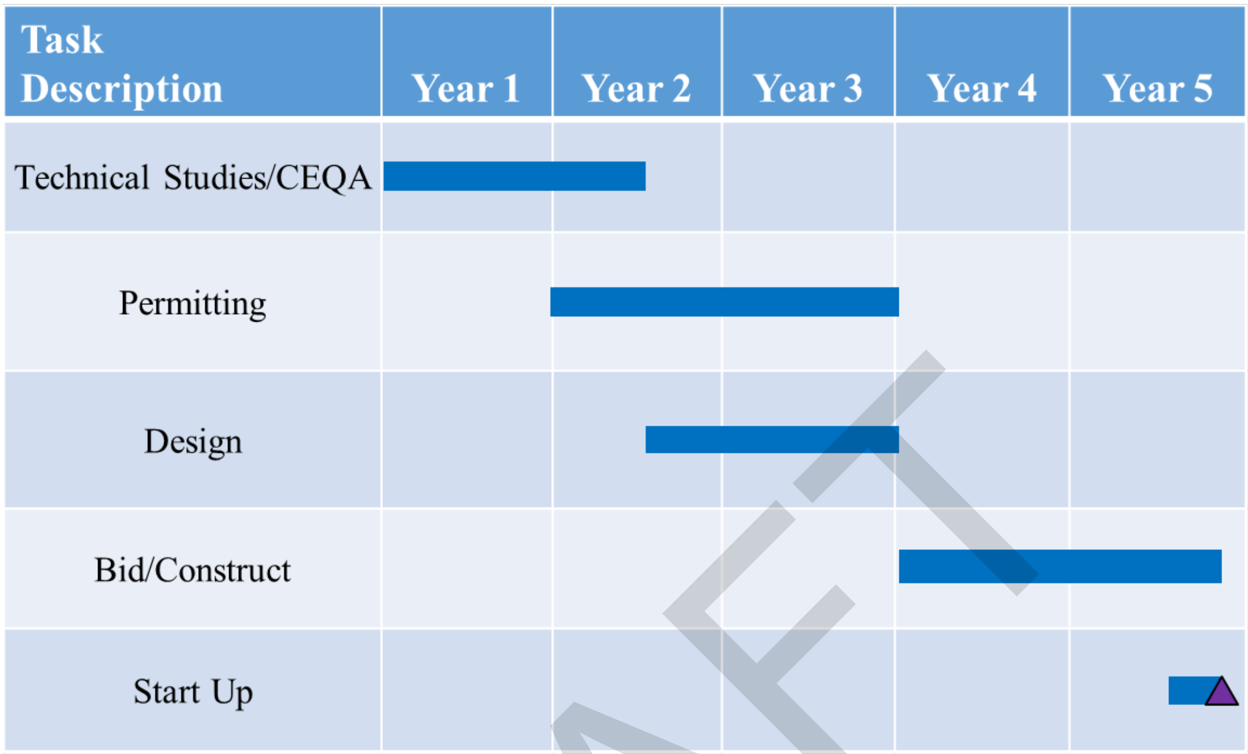

Figure 9-7. Implementation Schedule for San Migeul RW

9.5.3.13 Estimated Cost

This project is currently in the planning phases, and the San Miguel RW project presented herein might not accurately reflect the most current design concept. The cost of the potential project that is described herein was estimated for the purposes of the GSP. The estimated total project cost for this project is $15M, not including wastewater treatment plant upgrades. Cost can be covered by the bonding capacity developed through the groundwater conservation program. Annual O&M costs are estimated at $340,000. O&M costs would be covered by the overproduction surcharges. Based on a 30-year loan at a 5% interest rate, the cost of water for this project would be approximately $2,900/AF. Additional details regarding how costs were developed are included in Appendix I.

9.5.3.14 Preferred Project 3: SWP Injection in Southwestern Subbasin

This project injects of up to 5,000 AFY of treated water from the SWP Coastal Branch pipeline into the Paso Robles Formation Aquifer in the southwest portion of the Subbasin. On average, 3,000 AFY would be injected, based on historical SWP delivery data. The general layout of this project and relevant monitoring wells are shown on Figure 9-8. Infrastructure includes a new SWP Coastal Branch turnout, a one-mile long pipeline, and 11 injection wells. No pumps are necessary to deliver water to the wellheads because the pressure in the SWP Coastal Branch is likely sufficient.

An injection capacity of 300 gallons per minute (gpm) was assumed for each well. This represents 75% of the average production capacity in the region of 400 gpm. The actual injection capacity would need to be determined through a pilot study. The cost of the pilot study was included in the project capital cost. For more information on technical assumptions and cost assumptions, refer to Appendix I.

Other factors would also impact feasibility, including hydrogeological characteristics, land available for purchase, Coastal Branch capacity, and water quality impacts.

9.5.3.15 Relevant Measurable Objectives

The measurable objectives benefiting from this groundwater injection project include:

- Groundwater elevation measurable objectives in the southwest portion of the Subbasin
- The groundwater storage measurable objective
- Land subsidence measurable objectives in the southwest portion of the Subbasin
- Possibly groundwater quality measurable objectives in the southwest portion of the Subbasin

9.5.3.16 Expected Benefits and Evaluation of Benefits

The primary benefit from SWP injection is higher groundwater elevations in the Southwest portion of the Subbasin. Ancillary benefits of shallower groundwater elevations may include an increase in groundwater storage, improved groundwater quality from recharge of high-quality water, and avoiding subsidence. The GSP model was used to quantify the expected benefit from this project. Figure 9-9 shows the expected groundwater level benefit predicted by the GSP model after 10 years of project operation. Figure 9-9 expresses the benefit as feet of groundwater. The groundwater level benefit shown on Figure 9-9 is a measure of how much higher groundwater elevations are expected to be with the project rather than without the project

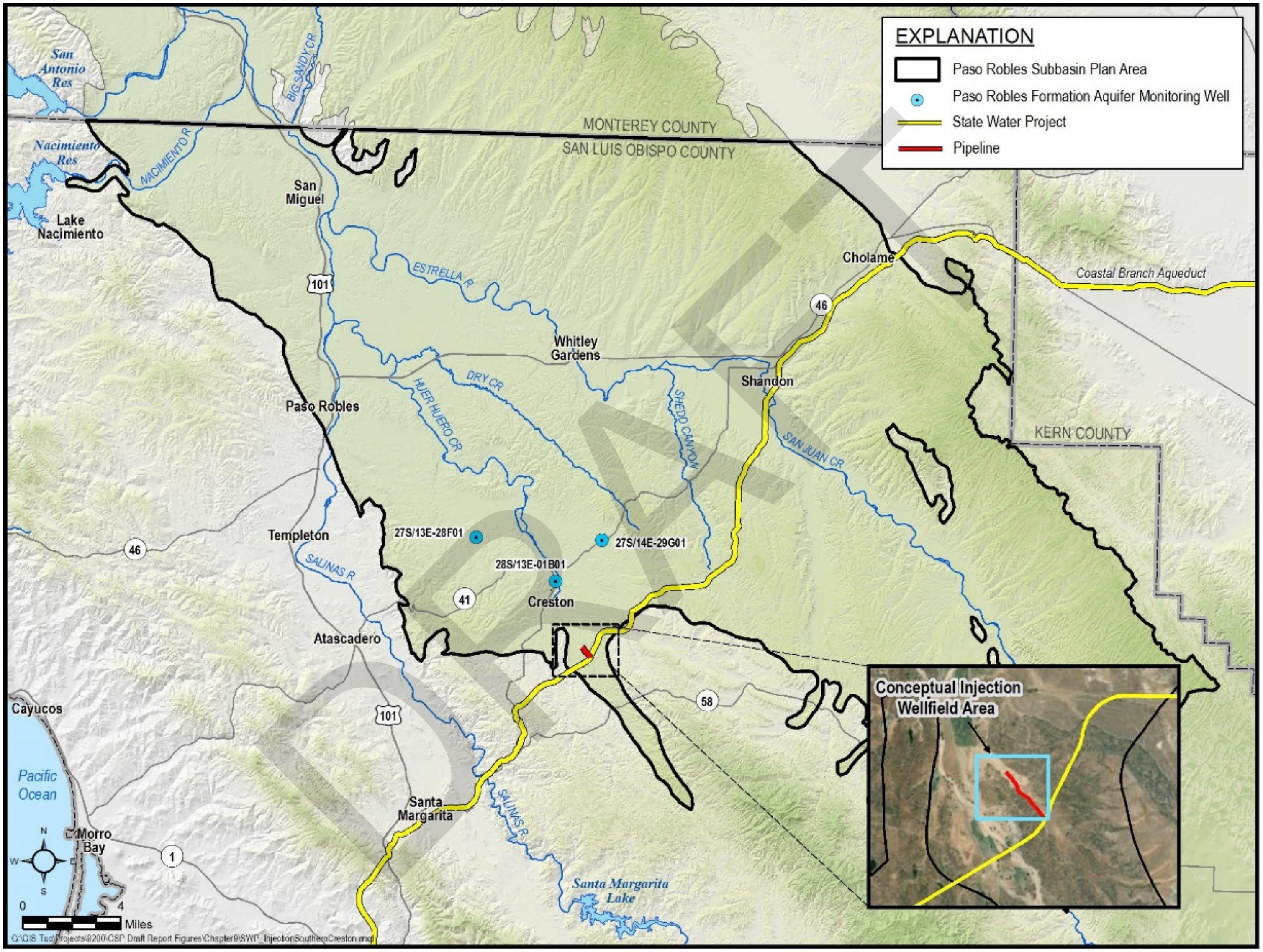

Figure 9-8. Conceptual SWP Injection in Southwestern Subbasin Project Layout

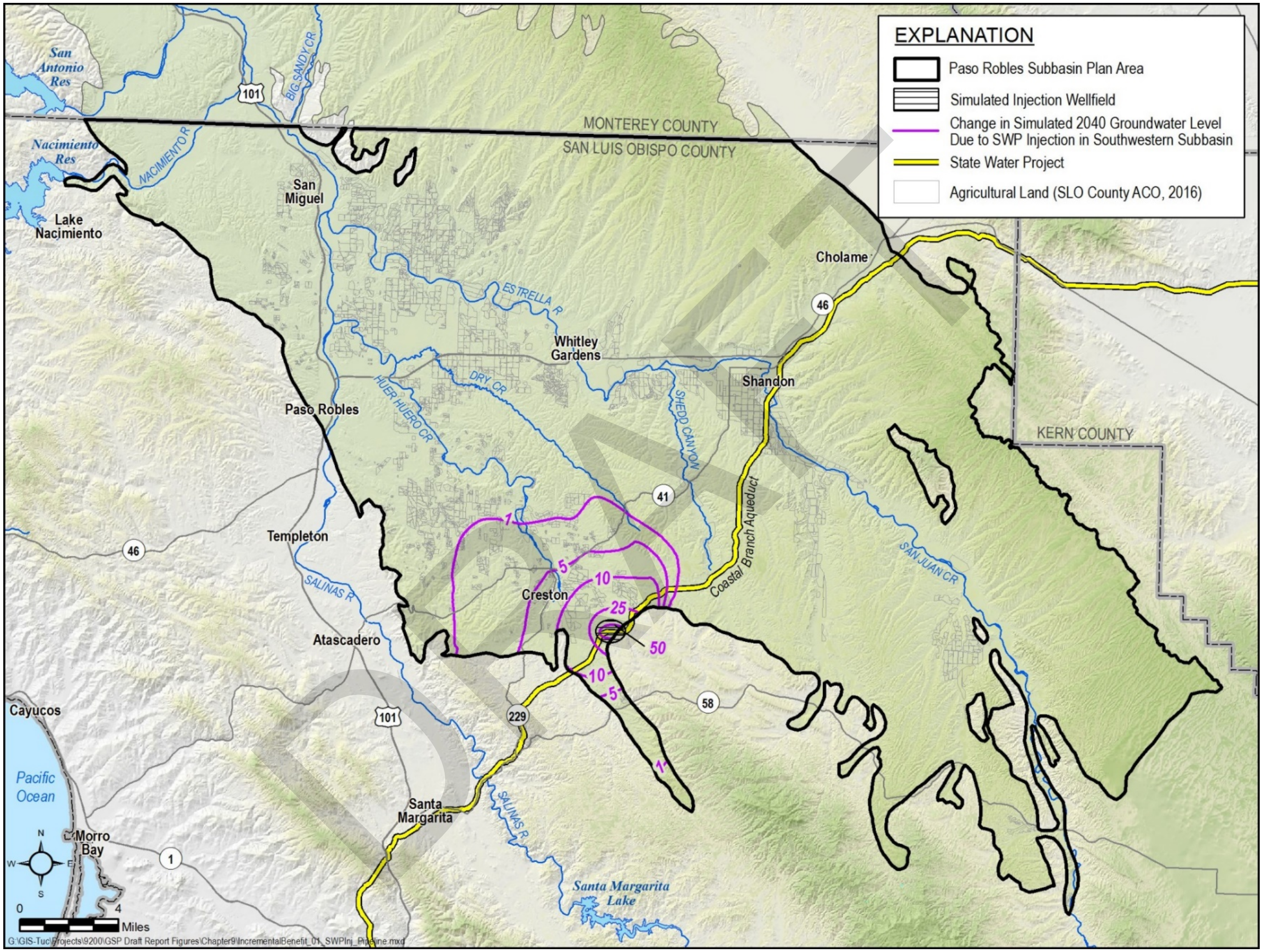

Figure 9-9. Groundwater Level Benefit of SWP Injection in Southwestern Subbasin

Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured with the CGPS station network detailed in Chapter 7. A direct correlation between SWP injection and changes in groundwater levels may not be possible because this is only one among many management actions and projects that might be implemented in the Subbasin.

9.5.3.17 Circumstances for Implementation

All projects are implemented on an as-needed basis. The primary approach to attaining sustainability relies on pumping reductions in response to the water charges framework. If pumping reductions are inadequate for achieving sustainability, the funds raised by the water charge framework will be used to initiate projects throughout the Subbasin. The project to inject SWP water in the southwestern corner of the Subbasin will be initiated if, after five years, groundwater levels in the southwestern portion of the monitoring network continue to decline at unsustainable rates. In particular, continued unsustainable groundwater level declines in monitoring wells 28S/13E-01B01, 27S/14E-29G01, and 27S/13E-28F01 will trigger implementation of this project. Additional triggers will be added as the monitoring well network expands.

9.5.3.18 Implementation Schedule

The implementation schedule is presented on Figure 9-10. The project will take 4 to 6 years to implement depending on the time required to negotiate procurement of SWP water. The actual project start date is to be determined on an as-needed basis.

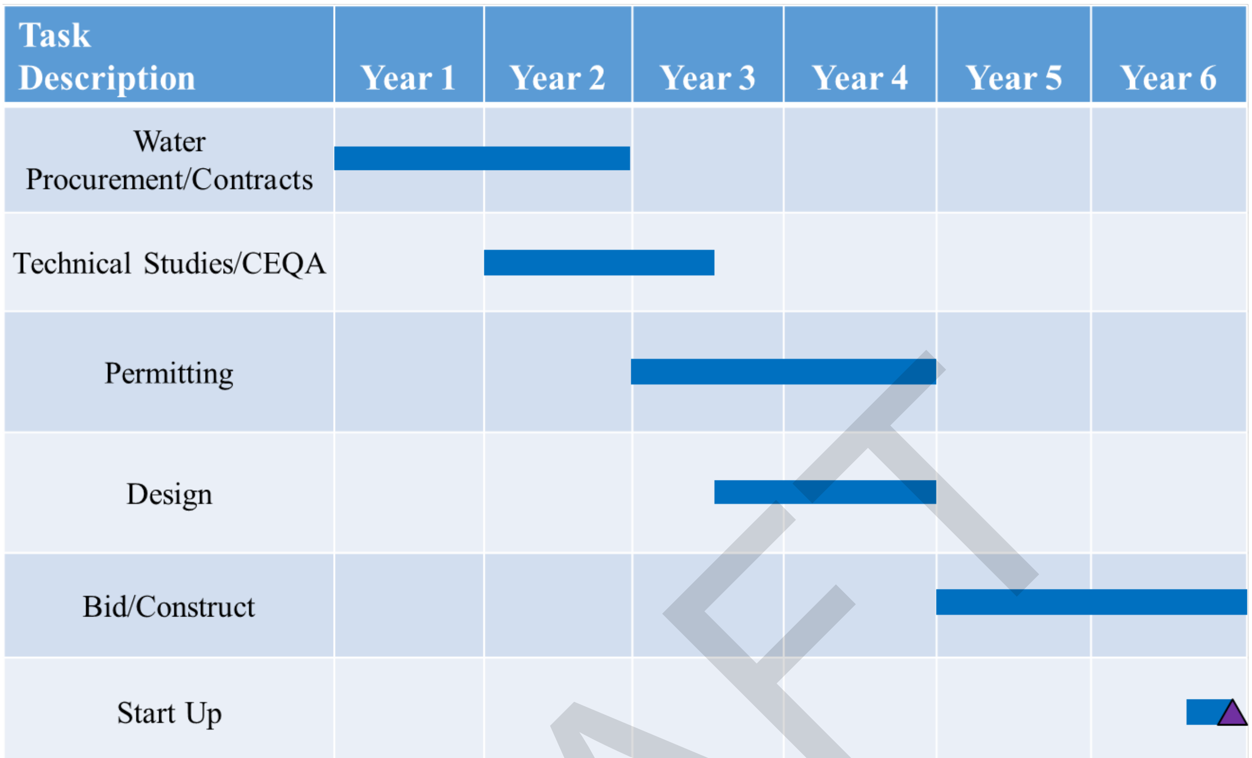

Figure 9-10. Implementation Schedule for SWP Injection in Southwestern Subbasin

9.5.3.19 Estimated Cost

The estimated total project cost for this project is $27M. Cost will be covered by the bonding capacity developed through the water charges framework. Annual operation and maintenance (O&M) costs are estimated at $170,000. The average annual cost of SWP purchased water is $3.6M based on an average year delivery of 3,000 AFY. However, the unit price would need to be negotiated, and the actual amount of water available will vary year to year thereby affecting the actual annual purchase cost. O&M and water purchase costs would be covered by the overproduction surcharges. Based on a 30-year loan at a 5% interest rate, the cost of water for this project would be approximately $1,900/AF. Additional details regarding how costs were developed are included in Appendix I.

9.5.3.20 Preferred Project 4: SWP Injection North of Census-Designated Area Creston

This project injects of up to 9,670 AFY of treated water from the SWP Coastal Branch pipeline into the Paso Robles Formation Aquifer in the southwest portion of the Subbasin north of the census area Creston. On average, 5,800 AFY would be injected, based on historical SWP delivery data. The general layout of this project and relevant monitoring wells are shown on Figure 9-11. Infrastructure includes a new SWP Coastal Branch turnout, a 7.7-mile pipeline, and 20 injection wells. No pumps are necessary to deliver water to the wellheads because the pressure in the Coastal Branch is likely sufficient; and the location of the well field is 185 ft lower than the elevation of the SWP Coastal Branch.

An injection capacity of 300 gallons per minute (gpm) was assumed for each well. This represents 75% of the average production capacity in the region of 400 gpm. The actual injection capacity would need to be determined through a pilot study. The cost of the pilot study was included in the project capital cost. For more information on technical assumptions and cost assumptions, refer to Appendix I.

Other factors would also impact feasibility, including hydrogeological characteristics, land available for purchase, Coastal Branch capacity, and water quality impacts.

9.5.3.21 Relevant Measurable Objectives

The measurable objectives benefiting from aquifer injection include:

- Groundwater elevation measurable objectives in the southwest portion of the Subbasin
- The groundwater storage measurable objective
- Land subsidence measurable objectives in the southwest portion of the Subbasin
- Possibly groundwater quality measurable objectives in the southwest portion of the Subbasin

9.5.3.22 Expected Benefits and Evaluation of Benefits

The primary benefit from SWP injection is higher groundwater elevations in the Southwest portion of the Subbasin. Ancillary benefits of shallower groundwater elevations may include an increase in groundwater storage, improved groundwater quality from recharge of high-quality water, and avoiding subsidence. The GSP model was used to quantify the expected benefit from this project. Figure 9-12 shows the expected groundwater level benefit predicted by the GSP model after 10 years of project operation. Figure 9-12 expresses the benefit as feet of groundwater. The groundwater level benefit shown on Figure 9-12 is a measure of how much higher groundwater elevations are expected to be with the project rather than without the project.

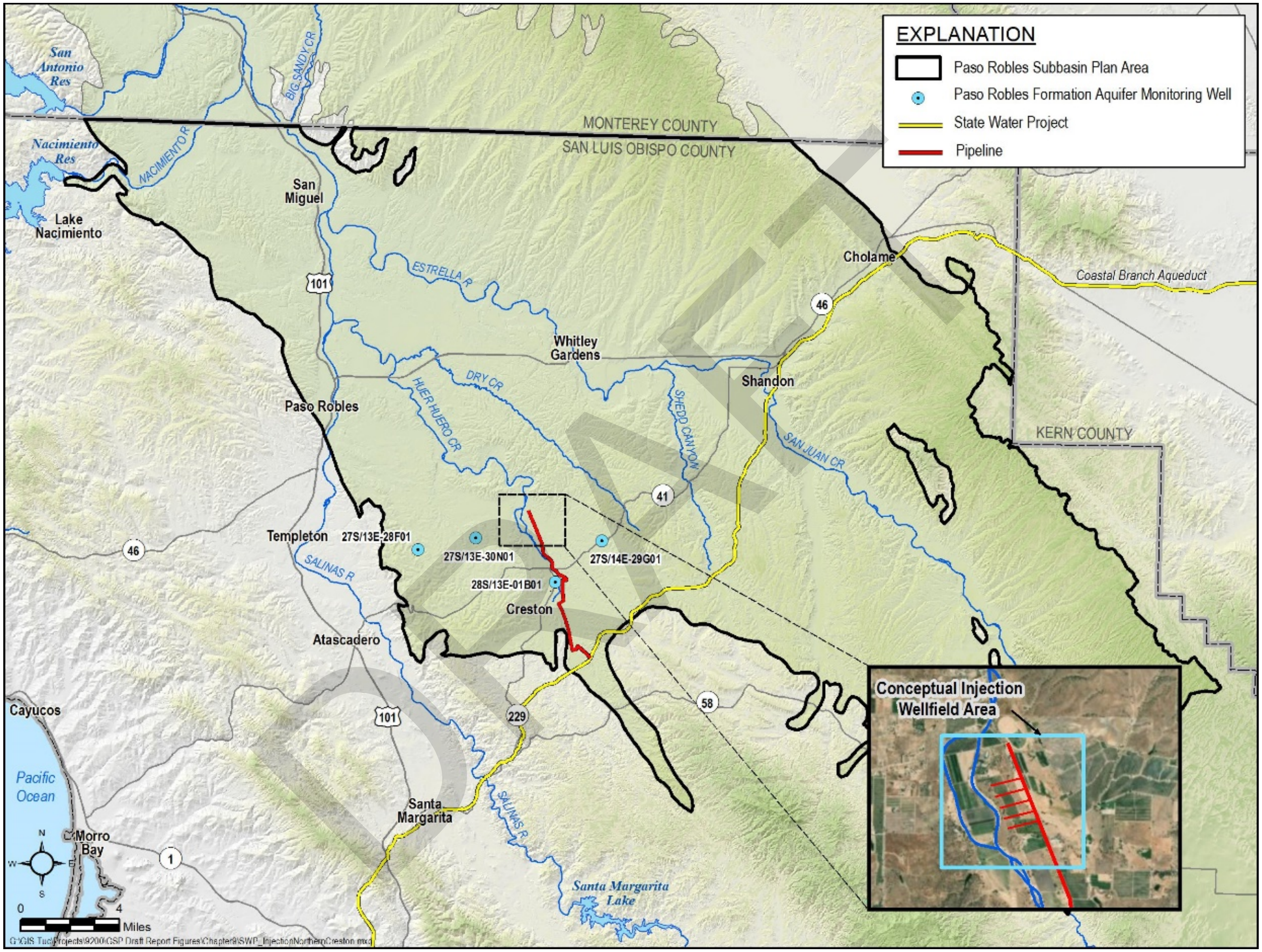

Figure 9-11. Conceptual SWP Injection North of Creston Census-Designated Area Project Layout

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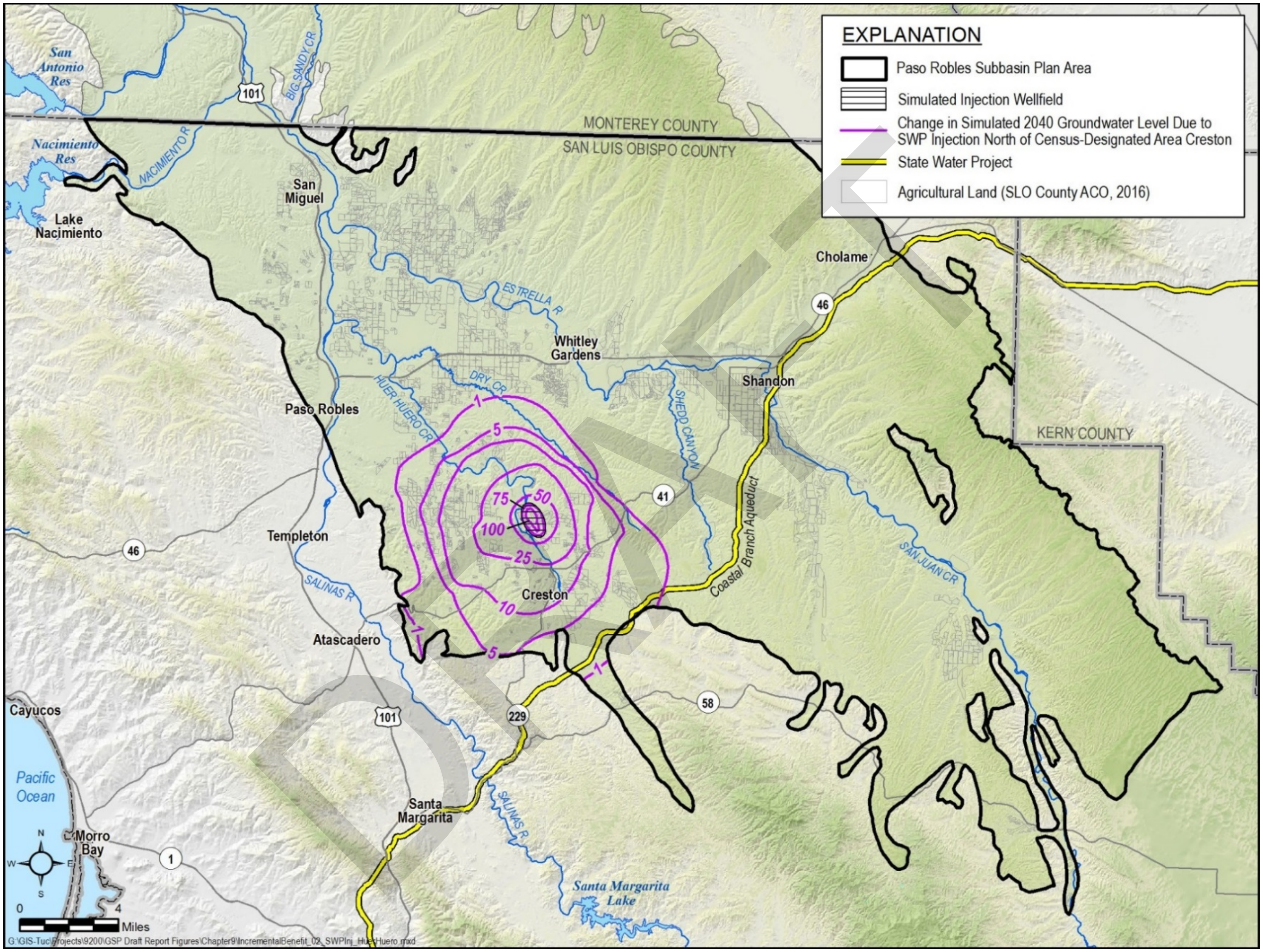

Figure 9-12. Groundwater Level Benefit of Injection North of Creston Census-Designated Area

Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured with the CGPS station network detailed in Chapter 7. A direct correlation between SWP injection and changes in groundwater levels may not be possible because this is only one of many management actions and projects that may be implemented in the Subbasin.

9.5.3.23 Circumstances for Implementation

All projects are implemented on an as-needed basis. The primary approach to attaining sustainability relies on pumping reductions in response to the water charges framework. If pumping reductions are inadequate for achieving sustainability, the funds raised by the water charge framework will be used to initiate projects throughout the Subbasin. The project to inject SWP water in the southwestern corner of the Subbasin will be initiated if, after five years, groundwater levels in the southwestern portion of the monitoring network continue to decline at unsustainable rates. In particular, continued unsustainable groundwater level declines in monitoring wells 28S/13E-01B01, 27S/14E-29G01, 27S/13E-28F01, 27S/13E-30N01, and 27S/12E-13N01 will trigger implementation of this project. Additional triggers will be added as the monitoring well network expands.

9.5.3.24 Implementation Schedule

The implementation schedule is presented on Figure 9-13. The project will take 4 to 6 years to implement depending on the time required to negotiate procurement of SWP water. The actual project start date is to be determined on an as-needed basis.

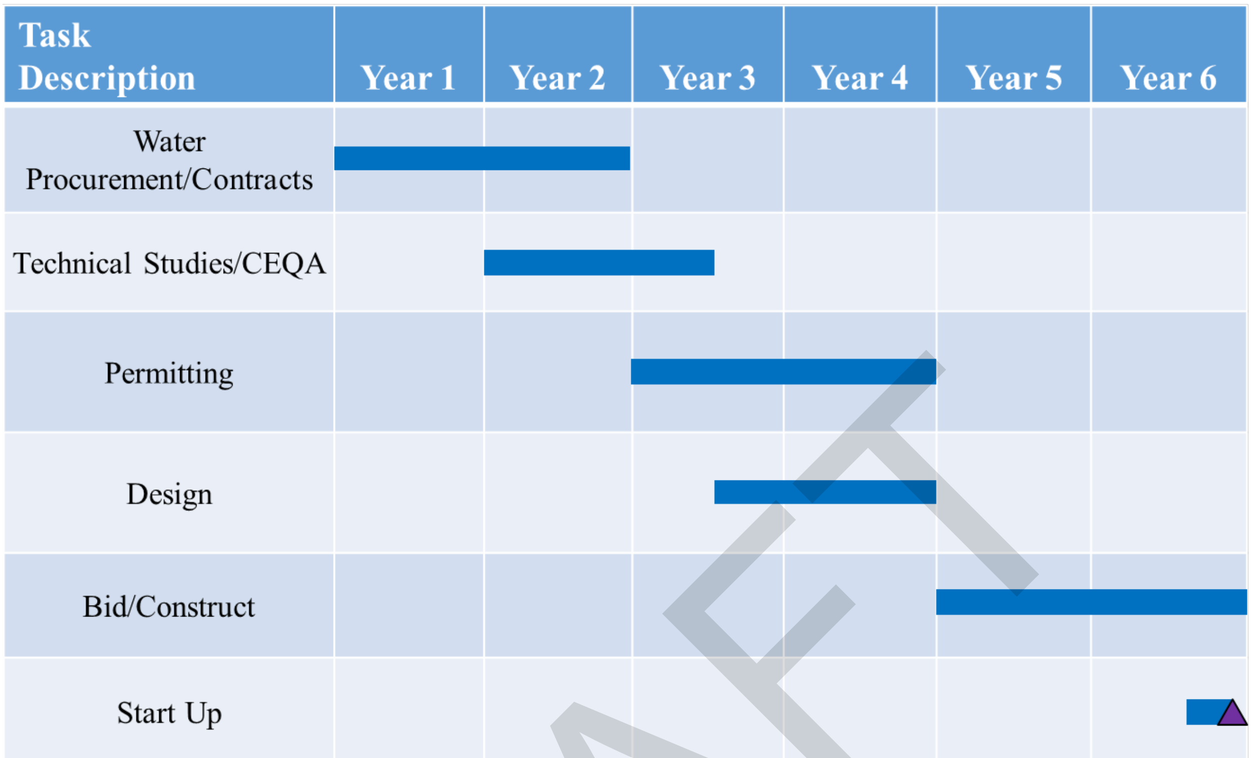

Figure 9-13. Implementation Schedule for SWP Injection North of Census-Designated Area Creston

9.5.3.25 Estimated Cost

The estimated total project cost for this project is $72M. The project cost will be covered by the bonding capacity developed through the water charges framework. Annual O&M costs are estimated at $365,000. The average annual cost of SWP purchased water is estimated at $7M based on an average year delivery of 5,800 AFY. However, the unit price would need to be negotiated, and the actual amount of water available will vary year to year thereby affecting the actual annual purchase cost. Based on a 30-year loan at a 5% interest rate, the cost of water for this project would be approximately $2,100/AF. Additional details regarding how costs were developed are included in Appendix I.

9.5.3.26 Preferred Project 5: NWP Delivery at Salinas and Estrella River Confluence

This project directly delivers up to 3,500 AFY of NWP water to agricultural water users near the confluence of the Salinas and Estrella Rivers, and an area north of the Estrella River. On average, this project will provide 2,800 AFY of water for use in lieu of groundwater pumping in the region.

The general layout of this project and relevant monitoring wells are shown on Figure 9-14. Infrastructure includes a new NWP turnout, 13 miles of pipeline, a 700 horsepower (hp) pump station, and two river crossings: one crossing of the Salinas River and one crossing of the

Estrella River. For more information on technical assumptions and cost assumptions, refer to Appendix I.

9.5.3.27 Relevant Measurable Objectives

The measurable objectives benefiting from this project include:

- Groundwater elevation measurable objectives in the central portion of the Subbasin
- The groundwater storage measurable objective
- Land subsidence measurable objectives in the central portion of the Subbasin

9.5.3.28 Expected Benefits and Evaluation of Benefits

The primary benefit from in-lieu recharge using NWP water is higher groundwater elevations in the central portion of the Subbasin. Ancillary benefits of shallower groundwater elevations may include an increase in groundwater storage and avoiding subsidence. The GSP model was used to quantify the expected benefit from this project. Figure 9-15 shows the expected groundwater level benefit predicted by the GSP model after 10 years of project operation. Figure 9-15 expresses the benefit as feet of groundwater. The groundwater level benefit shown on Figure 9-15 is a measure of how much higher groundwater elevations are expected to be with the project rather than without the project.

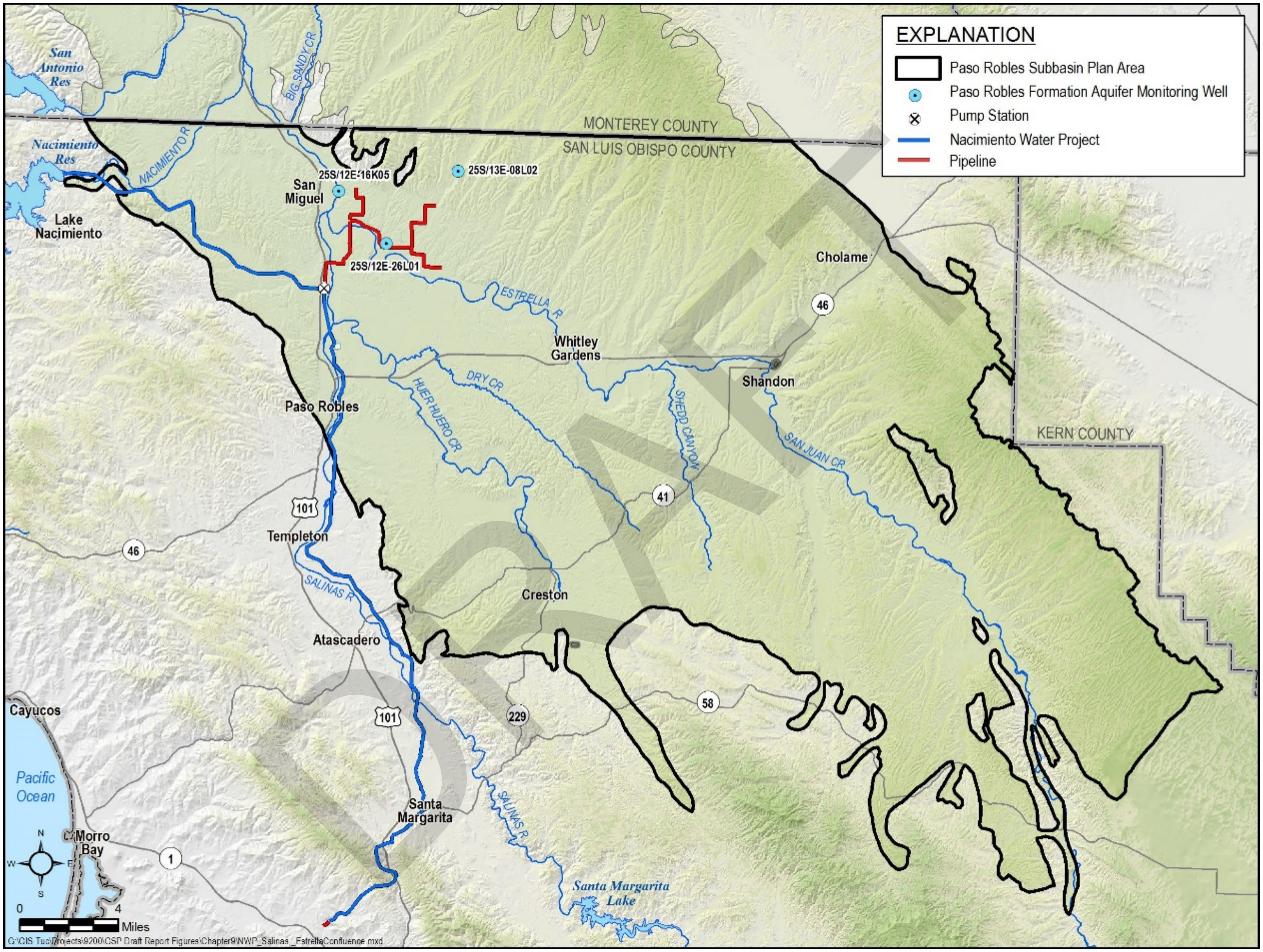

Figure 9-14. Conceptual NWP Delivery at Salinas and Estrella River Confluence Project Layout

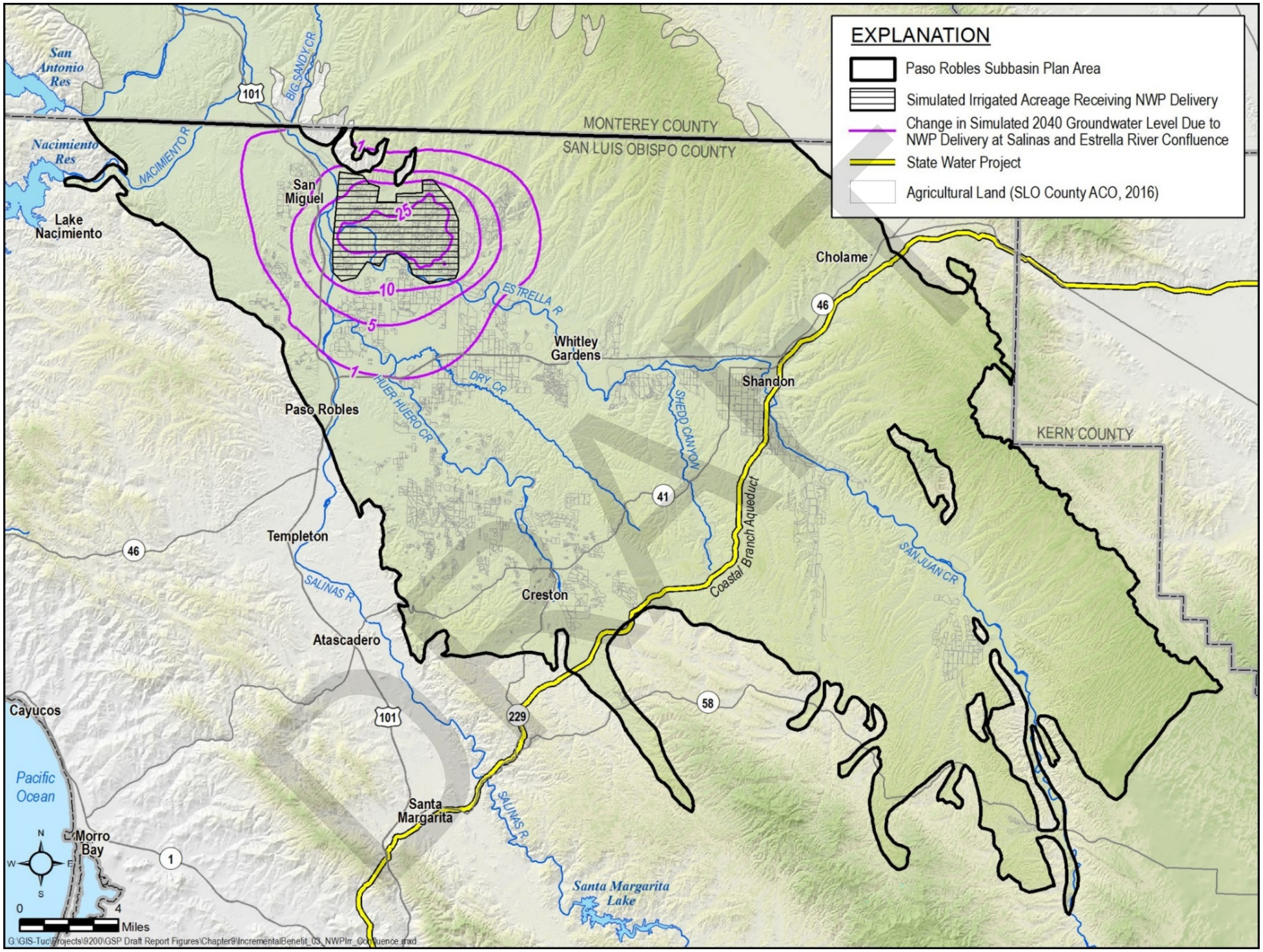

Figure 9-15. Groundwater Level Benefit of NWP Delivery at Salinas and Estrella River Confluence

Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured with the CGPS station network detailed in Chapter 7. A direct correlation between in-lieu recharge and changes in groundwater levels may not be possible because this is only one among many management actions and projects that may be implemented in the Subbasin.

9.5.3.29 Circumstances for Implementation

All projects are implemented on an as-needed basis. The primary approach to attaining sustainability relies on pumping reductions in response to the water charges framework. If pumping reductions are inadequate for achieving sustainability, the funds raised by the water charge framework will be used to initiate projects throughout the Subbasin. The project to deliver water for in-lieu recharge near the Salinas and Estrella confluence will be initiated if, after five years, groundwater levels in the northern portion of the monitoring network continue to decline at unsustainable rates. In particular, continued unsustainable groundwater level declines in monitoring wells 25S/12E-16K05, 25S/12E-26L01, and 25S/13E-08L02 will trigger implementation of this project. Additional triggers will be added as the monitoring well network expands.

9.5.3.30 Implementation Schedule

The implementation schedule is presented on Figure 9-16. The project will take 4 to 6 years to implement depending on the time required to negotiate procurement of NWP water.

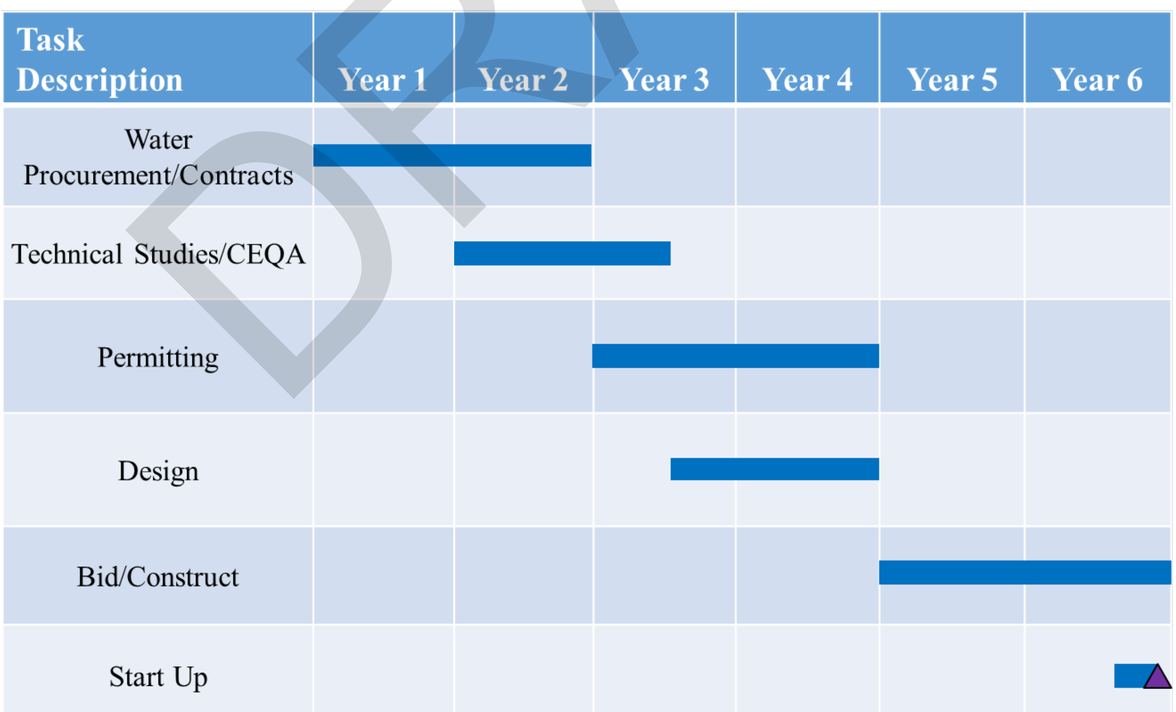

Figure 9-16. Implementation Schedule for NWP Delivery at Salinas and Estrella River Confluence

9.5.3.31 Estimated Cost

The estimated total project cost for this project is $50M. The project cost will be covered by the bonding capacity developed through the water charges framework. Annual O&M costs are estimated at $740,000. The average annual cost of NWP purchased water is estimated at $2.4M based on an average year delivery of 2,800 AFY. However, the unit price would need to be negotiated, and the actual amount of water available will vary year to year thereby affecting the actual annual purchase cost. O&M and water purchase costs would be covered by the overproduction surcharges. Based on a 30-year loan at a 5% interest rate, the cost of water for this project would be approximately $3,200/AF. Additional details regarding how costs were developed are included in Appendix I.

9.5.3.32 Preferred Project 6: NWP Delivery North of City of Paso Robles

This project provides up to 1,250 AFY of NWP water for direct delivery to agricultural water users north of the Paso Robles airport. On average, this project will provide 1,000 AFY of water for use in lieu of groundwater pumping in the region.

The general layout of this project and relevant monitoring wells are shown on Figure 9-17. Infrastructure includes a new NWP turnout, 5.6 miles of pipeline, a 130 hp pump station, and one river crossing for the Salinas River. For more information on technical assumptions and cost assumptions, refer to Appendix I.

9.5.3.33 Relevant Measurable Objectives

The measurable objectives benefiting from this project include:

- Groundwater elevation measurable objectives in the central portion of the Subbasin
- The groundwater storage measurable objective
- Land subsidence measurable objectives in the central portion of the Subbasin

9.5.3.34 Expected Benefits and Evaluation of Benefits

The primary benefit from in-lieu recharge using NWP water is higher groundwater elevations in the central portion of the Subbasin. Ancillary benefits of shallower groundwater elevations may include an increase in groundwater storage and avoiding subsidence. The GSP model was used to quantify the expected benefit from this project. Figure 9-18 shows the expected groundwater level benefit predicted by the GSP model after 10 years of project operation. Figure 9-18 expresses the benefit as feet of groundwater. The groundwater level benefit shown on Figure 9-18 is a measure of how much higher groundwater elevations are expected to be with the project rather than without the project.

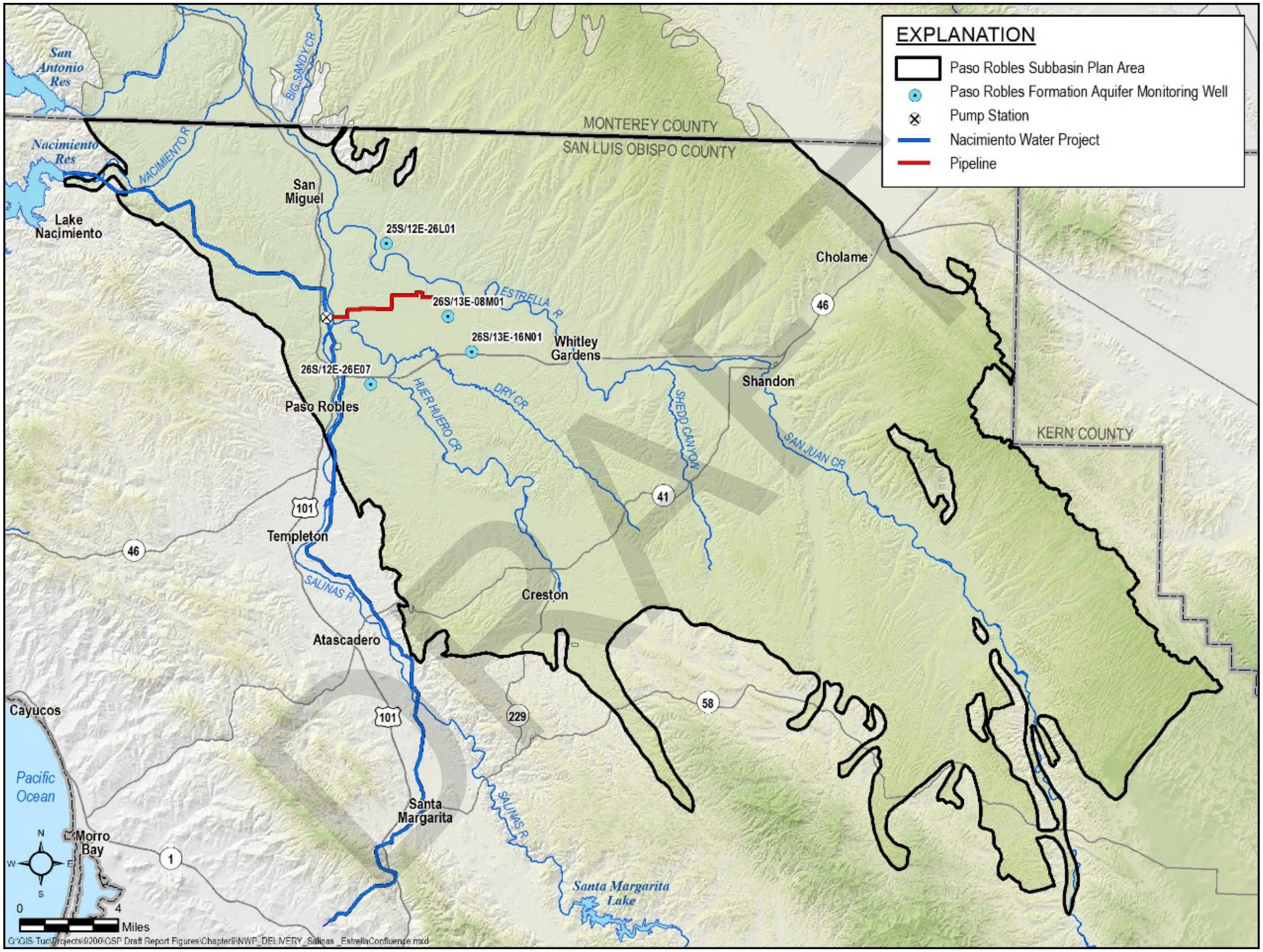

Figure 9-17. Conceptual NWP Delivery North of City of Paso Robles Project Layout

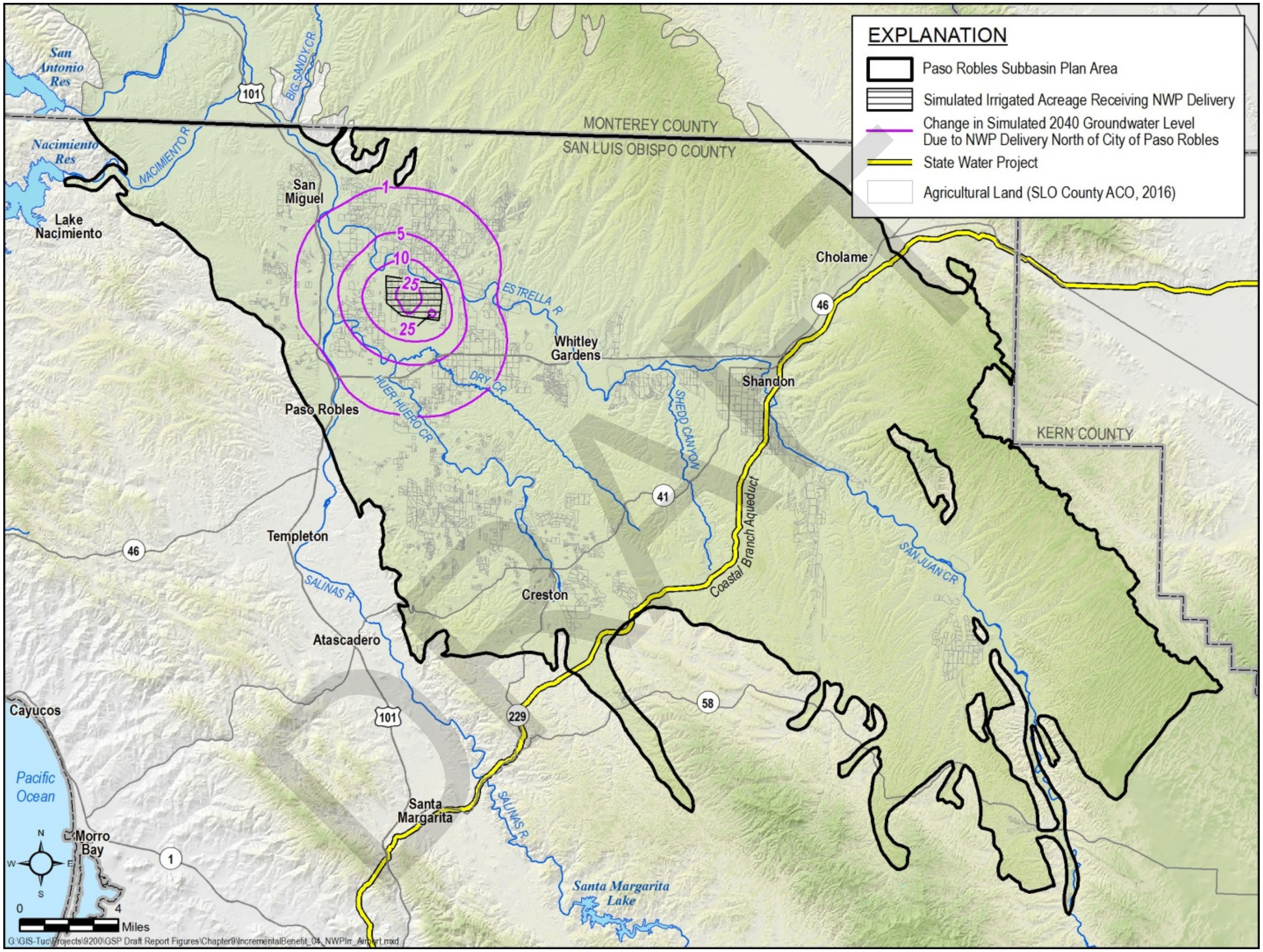

Figure 9-18. Groundwater Level Benefit from NWP Delivery North of City of Paso Robles

Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured with the CGPS station network detailed in Chapter 7. A direct correlation between in-lieu recharge and changes in groundwater levels may not be possible because this is only one among many management actions and projects that may be implemented in the Subbasin.

9.5.3.35 Circumstances for Implementation

All projects are implemented on an as-needed basis. The primary approach to attaining sustainability relies on pumping reductions in response to the water charges framework. If pumping reductions are inadequate for achieving sustainability, the funds raised by the water charge framework will be used to initiate projects throughout the Subbasin. The project to deliver water for in-lieu recharge north of the airport will be initiated if, after five years, groundwater levels in the northern portion of the monitoring network continue to decline at unsustainable rates. In particular, continued unsustainable groundwater level declines in monitoring wells 26S/13E-08M01, 26S/13E-16N01, 25S/12E-26L01, and 26S/12E-26E07 will trigger implementation of this project. Additional triggers will be added as the monitoring well network expands.

9.5.3.36 Implementation Schedule

The implementation schedule is presented on Figure 9-19. The project will take 4 to 6 years to implement depending on the time required to negotiate procurement of NWP water.

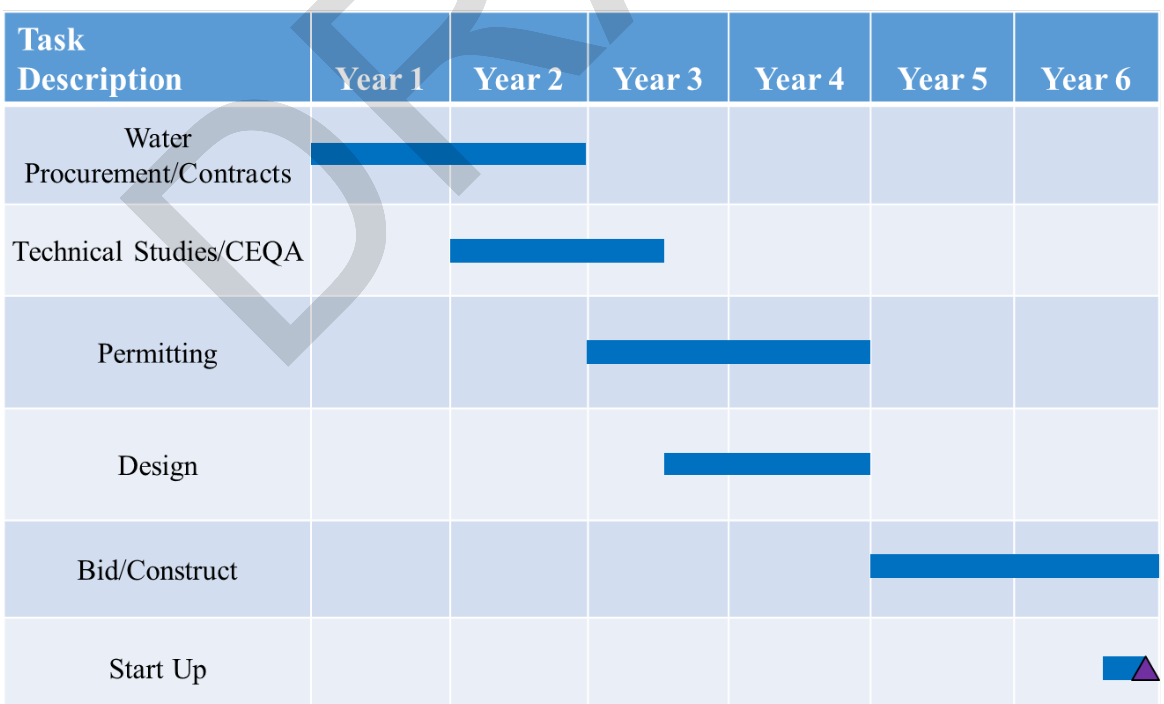

Figure 9-19. Implementation Schedule for NWP Delivery North of City of Paso Robles

9.5.3.37 Estimated Cost

The estimated total project cost for this project is $22M. The project cost will be covered by the bonding capacity developed through the water charges framework. Annual O&M costs are estimated at $150,000. The average annual cost of NWP purchased water is estimated at $1.2M based on an average year delivery of 1,000 AFY. However, the unit price would need to be negotiated, and the actual amount of water available will vary year to year thereby affecting the actual annual purchase cost. O&M and water purchase costs would be covered by the overproduction surcharges. Based on a 30-year loan at a 5% interest rate, the cost of water for this project would be approximately $2,800/AF. Additional details regarding how costs were developed are included in Appendix I.

9.5.3.38 Preferred Project 7: NWP Delivery East of City of Paso Robles

This project provides up to 2,500 AFY of NWP water to for direct delivery to agricultural water users east of the City of Paso Robles. On average, this project will provide 2,000 AFY of water for use in lieu of groundwater pumping in the region.

The general layout of this project and relevant monitoring wells are shown on Figure 9-20. Infrastructure includes a new NWP turnout, 5.6 miles of pipeline, a 130 hp pump station, and two river crossings one crossing of the Estrella River and one crossing of a tributary to the Estrella River. For more information on technical assumptions and cost assumptions, refer to Appendix I.

9.5.3.39 Relevant Measurable Objectives

The measurable objectives benefiting from this project include:

- Groundwater elevation measurable objectives in the central portion of the Subbasin
- The groundwater storage measurable objective
- Land subsidence measurable objectives in the central portion of the Subbasin

9.5.3.40 Expected Benefits and Evaluation of Benefits

The primary benefit from in-lieu recharge using NWP water is higher groundwater elevations in the central portion of the Subbasin. Ancillary benefits of shallower groundwater elevations may include an increase in groundwater storage and avoiding subsidence. The GSP model was used to quantify the expected benefit from this project. Figure 9-21 shows the expected groundwater level benefit predicted by the GSP model after 10 years of project operation. Figure 9-21 expresses the benefit as feet of groundwater. The groundwater level benefit shown on Figure 9-21 is a measure of how much higher groundwater elevations are expected to be with the project rather than without the project.

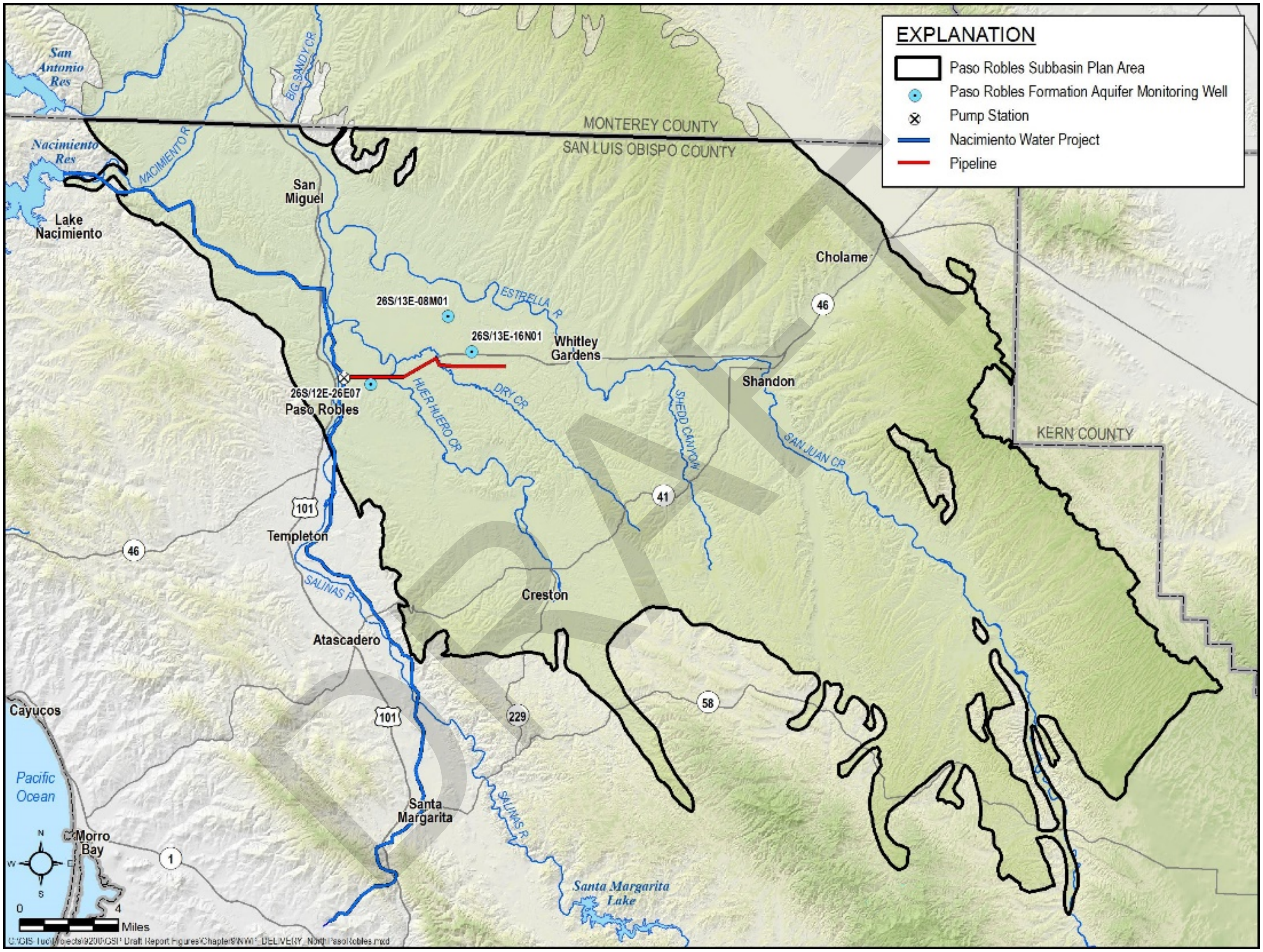

Figure 9-20. Conceptual NWP Delivery East of City of Paso Robles Project Layout

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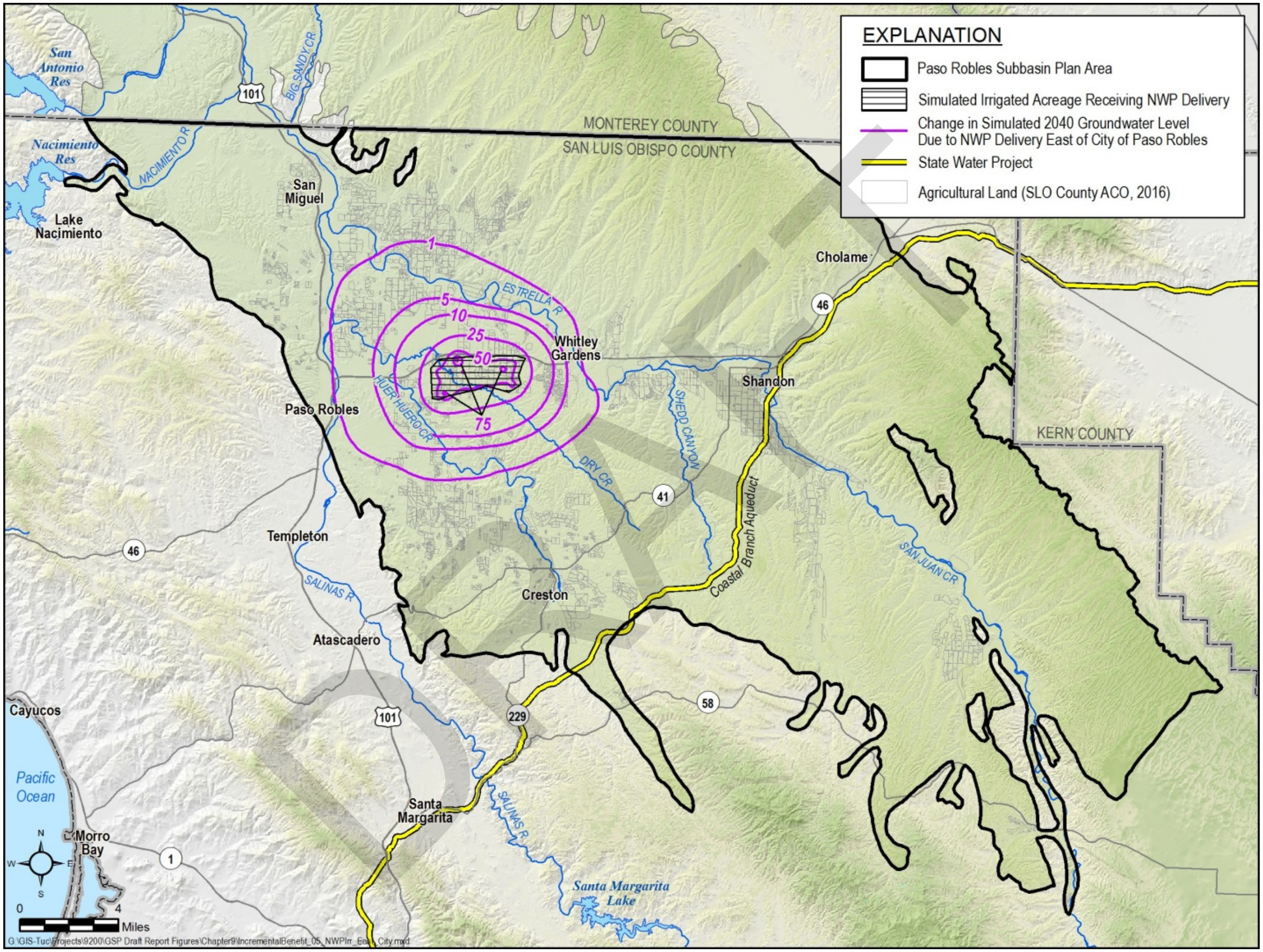


Figure 9-21. Groundwater Level Benefit from NWP Delivery East of City of Paso Robles

Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured with the CGPS station network detailed in Chapter 7. A direct correlation between in-lieu recharge and changes in groundwater levels may not be possible because this is only one among many management actions and projects that may be implemented in the Subbasin.

9.5.3.41 Circumstances for Implementation

All projects are implemented on an as-needed basis. The primary approach to attaining sustainability relies on pumping reductions in response to the water charges framework. If pumping reductions are inadequate for achieving sustainability, the funds raised by the water charge framework will be used to initiate projects throughout the Subbasin. The project to deliver water for in-lieu recharge east of the City of Paso Robles will be initiated if, after five years, groundwater levels in the central portion of the monitoring network continue to decline at unsustainable rates. In particular, continued unsustainable groundwater level declines in monitoring wells 26S/13E-16N01, 26S/13E-08M01 and 26S/12E-26E07 will trigger implementation of this project. Additional triggers will be added as the monitoring well network expands.

9.5.3.42 Implementation Schedule

The implementation schedule is presented on Figure 9-22. The project will take 4 to 6 years to implement depending on the time required to negotiate procurement of NWP water.

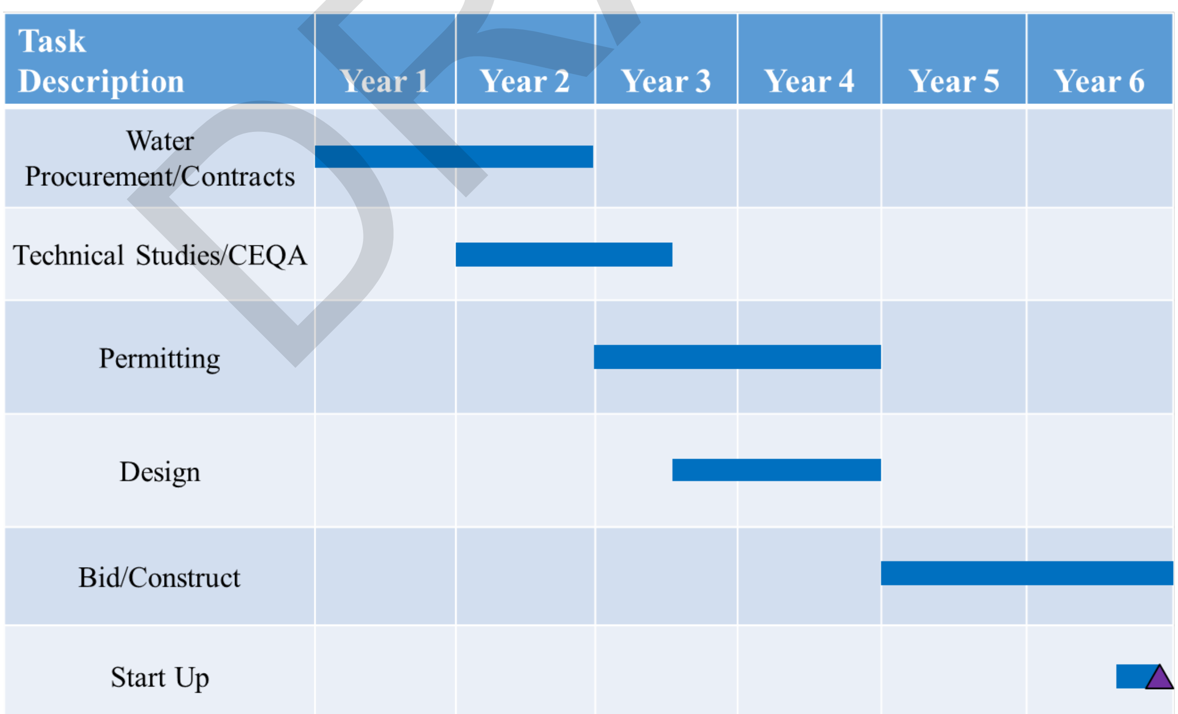


Figure 9-22. Implementation Schedule for NWP Delivery East of City of Paso Robles

9.5.3.43 Estimated Cost

The estimated total project cost for this project is $32M. The project cost will be covered by the bonding capacity developed through the water charges framework. Annual O&M costs are estimated at $380,000. The average annual cost of NWP purchased water is estimated at $2.4M based on an average year delivery of 2,000 AFY. However, the unit price would need to be negotiated, and the actual amount of water available will vary year to year thereby affecting the actual annual purchase cost. O&M and water purchase costs would be covered by the overproduction surcharges. Based on a 30-year loan at a 5% interest rate, the cost of water for this project would be approximately $2,400/AF. Additional details regarding how costs were developed are included in Appendix I.

9.5.3.44 Preferred Project 8: Expansion of Salinas Dam

SLOCFCWCD operates the Salinas Dam to provide water to the City of San Luis Obispo. The storage capacity of the lake is 23,843 AF; however, the City has existing water rights of 45,000 AF of storage. It is anticipated that funding would be sought to help the cost of retrofitting the dam and expanding the storage capacity by installing gates along the spillway. A risk assessment for the Dam is scheduled for the summer of 2019.

There may be opportunities to use the water from the expanded reservoir storage to benefit the Subbasin. One possibility would be to schedule summer releases from the storage to the Salinas River, which would benefit the Subbasin by recharging the basin through the Salinas River. Another way this project might indirectly benefit the Subbasin is if the City of San Luis Obispo were to use more of their Salinas River water allocation, thereby freeing up the NWP water for purchase by the GSAs.

9.5.3.45 Relevant Measurable Objectives

The measurable objectives benefiting from this project include:

- Groundwater elevation measurable objectives in the central portion of the Subbasin
- The groundwater storage measurable objective
- Land subsidence measurable objectives in the central portion of the Subbasin

9.5.3.46 Expected Benefits and Evaluation of Benefits

The primary benefit from releasing additional water to the Salinas River during the summer is higher groundwater elevations along the Salinas River. Ancillary benefits of shallower groundwater elevations may include an increase in groundwater storage and avoiding subsidence. The GSP model was used to quantify the expected benefit from this project. Figure 9-23 shows the expected groundwater level benefit predicted by the GSP model after 10 years of project operation. Figure 9-23 expresses the benefit as feet of groundwater. The groundwater level benefit shown on Figure 9-23 is a measure of how much higher groundwater elevations are expected to be with the project rather than without the project.

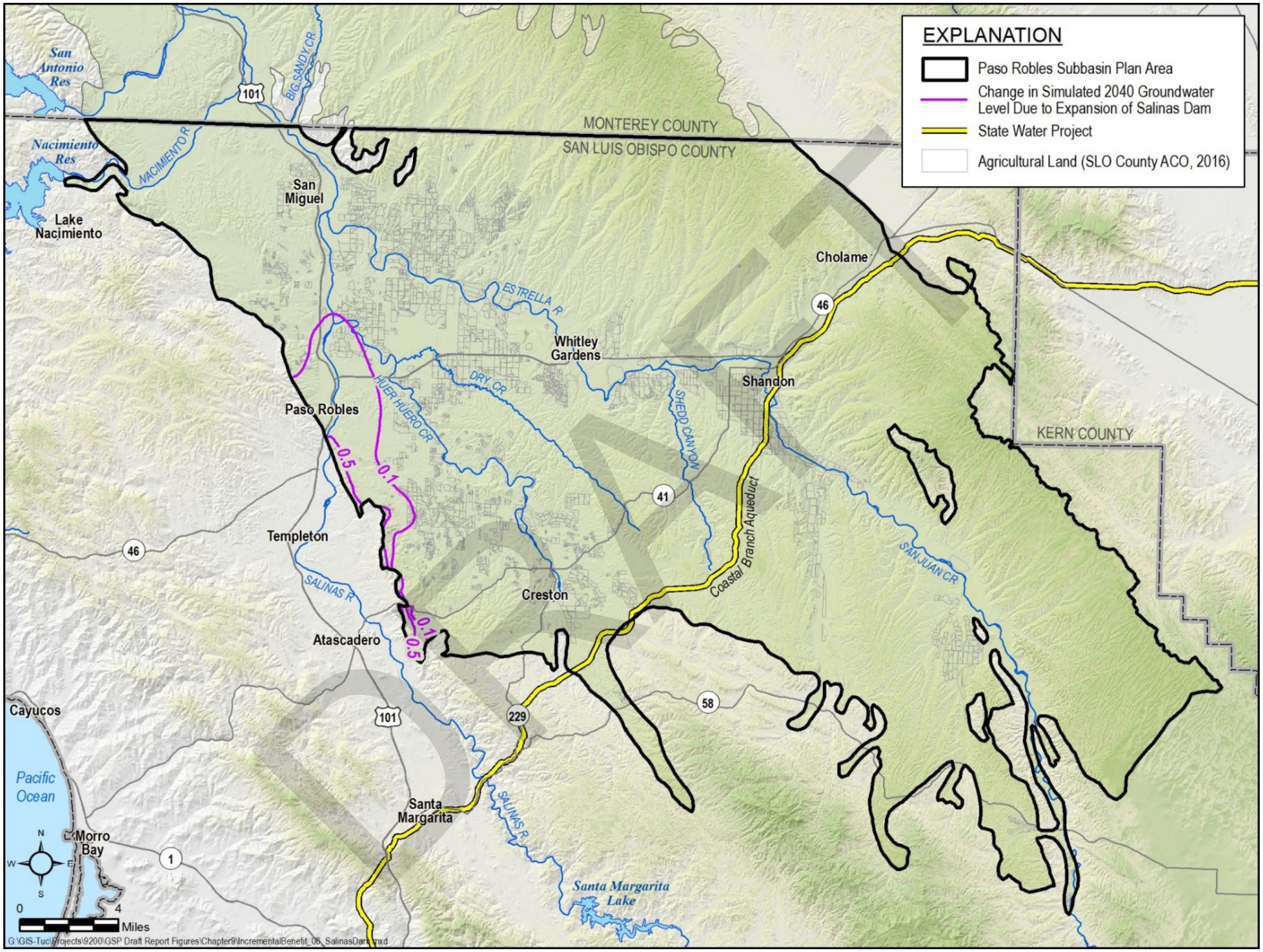


Figure 9-23. Groundwater Level Benefit from Salinas River Summer Releases

9.5.3.47 Circumstances for Implementation

All projects are implemented on an as-needed basis. The primary approach to attaining sustainability relies on pumping reductions in response to the water charges framework. If pumping reductions are inadequate for achieving sustainability, the funds raised by the water charge framework will be used to initiate projects throughout the Subbasin. The project to release Salinas River water during the summer will be initiated if, after five years, groundwater levels near the Salinas River continue to decline at unsustainable rates. In particular, continued unsustainable groundwater level declines in monitoring wells 25S/12E-16K05, 26S/13E-16N01, 27S/12E-13N01 and 27S/13E-30N01 will trigger implementation of this project. Additional triggers will be added as the monitoring well network expands.

9.5.3.48 Implementation Schedule

The implementation schedule is presented on Figure 9-24. The project will take 4 to 5 years to implement.

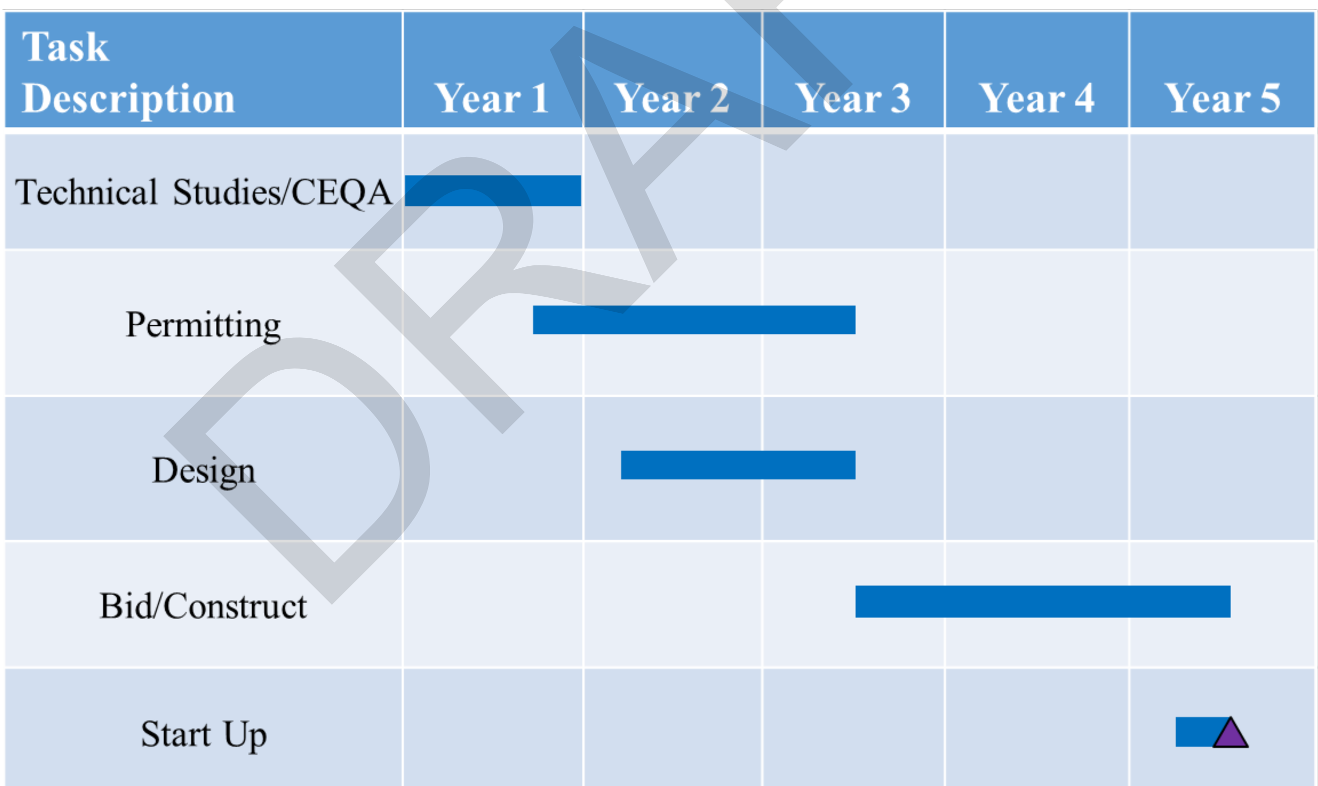


Figure 9-24. Implementation Schedule for Expansion of Salinas Dam

9.5.3.49 Estimated Cost

The cost to increase the storage capacity behind the Salinas Dam has been estimated at between $30M and $50M. O&M costs have not been estimated at this time. Some of these costs may be available from federal sources. No additional capital cost would be required to release water to the Salinas River for recharge during the summer months.

9.5.4 Substitute Projects

Four substitute projects are included within this GSP. They are summarized in Table 9-2 and described below.

Table 9-2. Substitute Projects

Project Name	Water Supply	Project Type	Approximate Location	Amount (AFY)
Recharge Basin in Southwestern Subbasin	SWP	Recharge Basin	Near the intersection of O'Donovan Rd and Lady Amhurst Way	2,200
Recharge Basin in Eastern Subbasin	SWP	Recharge Basin	Near E. Centre St and San Juan Rd	930
Recharge Basin North of City of Paso Robles	NWP	Recharge Basin	Near the confluence of the Salinas and Huer Huero Creek	1,500
Flood Flow Capture and Recharge North of City of Paso Robles	Salinas River	Recharge Basin	Near the confluence of the Salinas and Huer Huero Creek	164

9.5.4.1 Relevant Measurable Objectives

The measurable objectives benefiting from a recharge basin include:

- Groundwater elevation measurable objectives in the southwest portion of the Subbasin
- The groundwater storage measurable objective
- Land subsidence measurable objectives in the southwest portion of the Subbasin

9.5.4.2 Substitute Project 1: Recharge Basin in Southwestern Subbasin

This project uses recharge basins to recharge up to 3,800 AFY of treated water from the SWP Coastal Branch pipeline into the Paso Robles Formation Aquifer in the southwest portion of the Subbasin. On average, 2,280 AFY would be discharged to the recharge basin. With an assumed recharge efficiency of 50%, an average of 1,140 AFY would benefit the basin by percolating into the deeper aquifer. The actual recharge efficiency is currently unknown.

The general layout of this project and relevant monitoring wells are shown on Figure 9-25. Infrastructure includes a new SWP Coastal Branch turnout, a 3,900 ft long pipeline, and a 20-acre recharge basin. No pumps are necessary to deliver water to the recharge basin in this location, as the pressure in the Coastal Branch is likely sufficient. A recharge rate of 6-inches/ day was assumed for this region. For more information on technical assumptions and cost development, refer to Appendix I.

Other factors would also impact feasibility, including hydrogeological characteristics, land available for purchase, and Coastal Branch capacity.

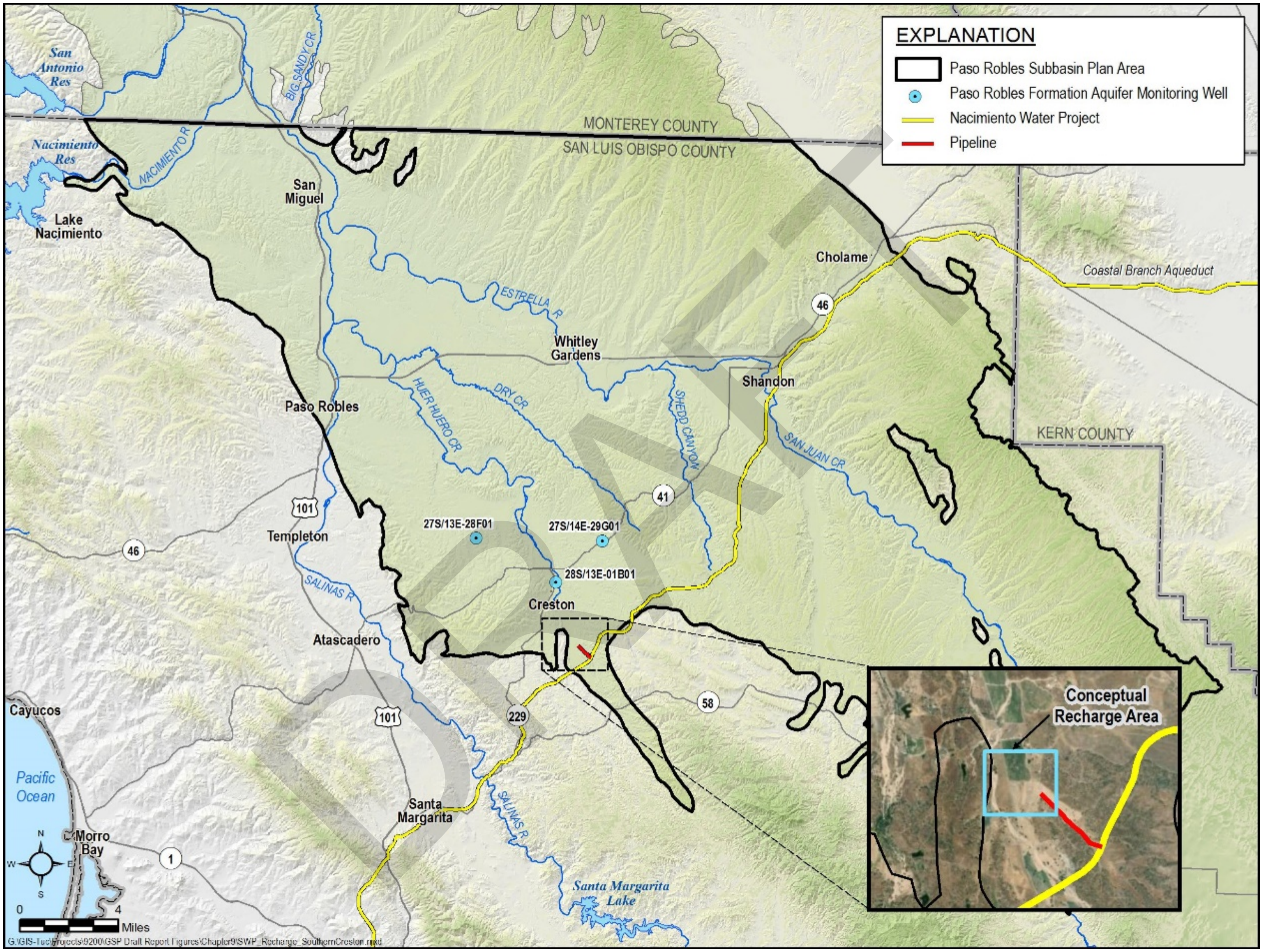
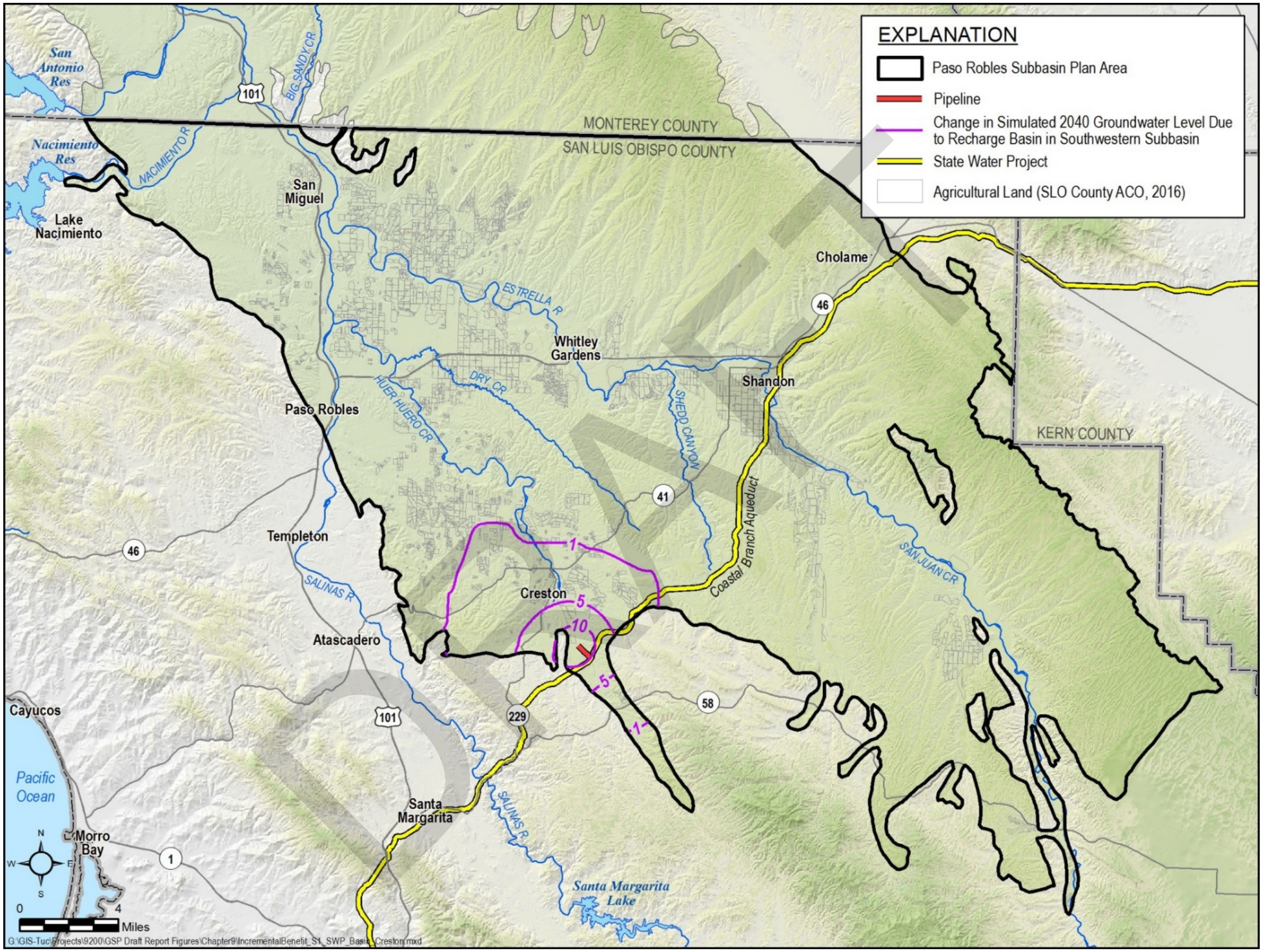


Figure 9-25. Conceptual Recharge Basin in Southwestern Subbasin Project Layout

9.5.4.3 Expected Benefits and Evaluation of Benefits

The primary benefit from SWP recharge via recharge basins is higher groundwater elevations in the Southwest portion of the Subbasin. Ancillary benefits of shallower groundwater elevations may include an increase in groundwater storage and avoiding subsidence. The GSP model was used to quantify the expected benefit from this project. Figure 9-26 shows the expected groundwater level benefit predicted by the GSP model after 10 years of project operation. Figure 9-26 expresses the benefit as feet of groundwater. The groundwater level benefit shown on Figure 9-26 is a measure of how much higher groundwater elevations are expected to be with the project rather than without the project.


EXPLANATION
Paso Robles Subbasin Plan Area
Pipeline
Change in Simulated 2040 Groundwater Level Due to Recharge Basin in Southwestern Subbasin
State Water Project
Agricultural Land (SLO County ACO, 2016)
MONTEREY COUNTY
SAN LUIS OBISPO COUNTY
KERN COUNTY
San Antonio Res
Nacimiento Res
Lake Nacimiento
San Miguel
Paso Robles
Templeton
Atascadero
Creston
Whitley Gardens
Shandon
Cholame
Santa Margarita
Cayucos
Morro Bay
Pacific Ocean
Santa Margarita Lake
ESTRELLA R
DRY CR
HUER HUERO CR
SHEDD CANYON
SALINAS R
SAN JUAN CR
NACIMIENTO R
BIG SANDY CR
Coastal Branch Aqueduct
DRAFT
Miles

Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured with the CGPS station network detailed in Chapter 7. A direct correlation between SWP recharge and changes in groundwater levels may not be possible because this is only one among many management actions and projects that may be implemented in the Subbasin.

9.5.4.4 Circumstances for Implementation

All projects are implemented on an as-needed basis. The primary approach to attaining sustainability relies on pumping reductions in response to the water charges framework. If pumping reductions are inadequate for achieving sustainability, the funds raised by the water charge framework will be used to initiate projects throughout the Subbasin. The project to recharge SWP water in the southwestern corner of the Subbasin will be initiated if, after five years, groundwater levels in the southwestern portion of the monitoring network continue to decline at unsustainable rates. In particular, continued unsustainable groundwater level declines in monitoring wells 28S/13E-01B01, 27S/14E-29G01 and 27S/13E-28F01 will trigger implementation of this project. Additional triggers will be added as the monitoring well network expands.

9.5.4.5 Implementation Schedule

The implementation schedule is presented on Figure 9-27. The project will take 4 to 6 years to implement depending on the time required to negotiate procurement of SWP water. The actual project start date is to be determined.

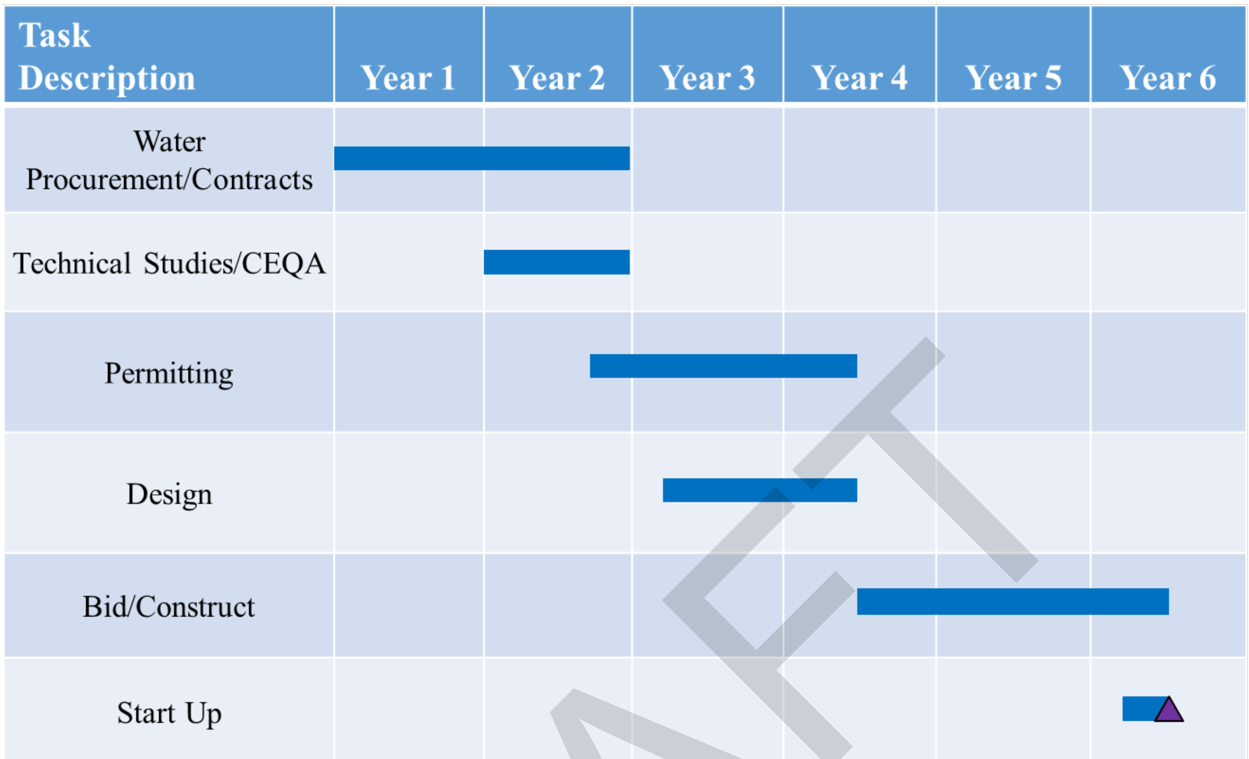


Figure 9-27. Implementation Schedule for Recharge Basin in Southwestern Subbasin

9.5.4.6 Estimated Ccost

The estimated total project cost for this project is $4.3M. The project cost will be covered by the bonding capacity developed through the water charges framework. Annual O&M costs are estimated at $42,000. The average annual cost of SWP purchased water is estimated at $2.7M based on an average year delivery of 2,280 AF. However, the unit price would need to be negotiated, and the actual amount of water available will vary year to year thereby affecting the actual annual purchase cost. O&M and water purchase costs would be covered by the overproduction surcharges. Based on a 30-year loan at a 5% interest rate, the cost of water for this project would be approximately $1,400/AF. Additional details regarding how costs were developed are included in Appendix I.

9.5.4.7 Substitute Project 2: Recharge Basin in Eastern Subbasin

This project uses recharge basins to recharge up to 1,400 AFY of treated water from the SWP Coastal Branch pipeline into the Paso Robles Formation Aquifer in the central eastern portion of the Subbasin. On average, 840 AFY would be delivered to the recharge basin. With an assumed recharge efficiency of 50%, an average of 420 AFY would benefit the basin by percolating into the deeper aquifer. The actual recharge efficiency is currently unknown.

The general layout of this project and relevant monitoring wells are shown on Figure 9-28. Infrastructure includes a new SWP Coastal Branch turnout, a 1,200 ft long pipeline, and an 8-acre recharge basin. No pumps are necessary to deliver water to the recharge basin in this location, as the pressure in the Coastal Branch is likely sufficient. A recharge rate of 6-inches/ day was assumed for this region. For more information on technical assumptions and cost development, refer to Appendix I.

Other factors would also impact feasibility, including hydrogeological characteristics, land available for purchase, and Coastal Branch capacity.

9.5.4.8 Relevant Measurable Objectives

The measurable objectives benefiting from a recharge basin include:

- Groundwater elevation measurable objectives in the eastern central portion of the Subbasin
- The groundwater storage measurable objective
- Land subsidence measurable objectives in the eastern central portion of the Subbasin

9.5.4.9 Expected Benefits and Evaluation of Benefits

The primary benefit from SWP recharge via recharge basins is higher groundwater elevations in the Southwest portion of the Subbasin. Ancillary benefits of shallower groundwater elevations may include an increase in groundwater storage and avoiding subsidence. The GSP model was used to quantify the expected benefit from this project. Figure 9-29 shows the expected groundwater level benefit predicted by the GSP model after 10 years of project operation. Figure 9-29 expresses the benefit as feet of groundwater. The groundwater level benefit shown on Figure 9-29 is a measure of how much higher groundwater elevations are expected to be with the project rather than without the project.

MONTGOMERY & ASSOCIATES

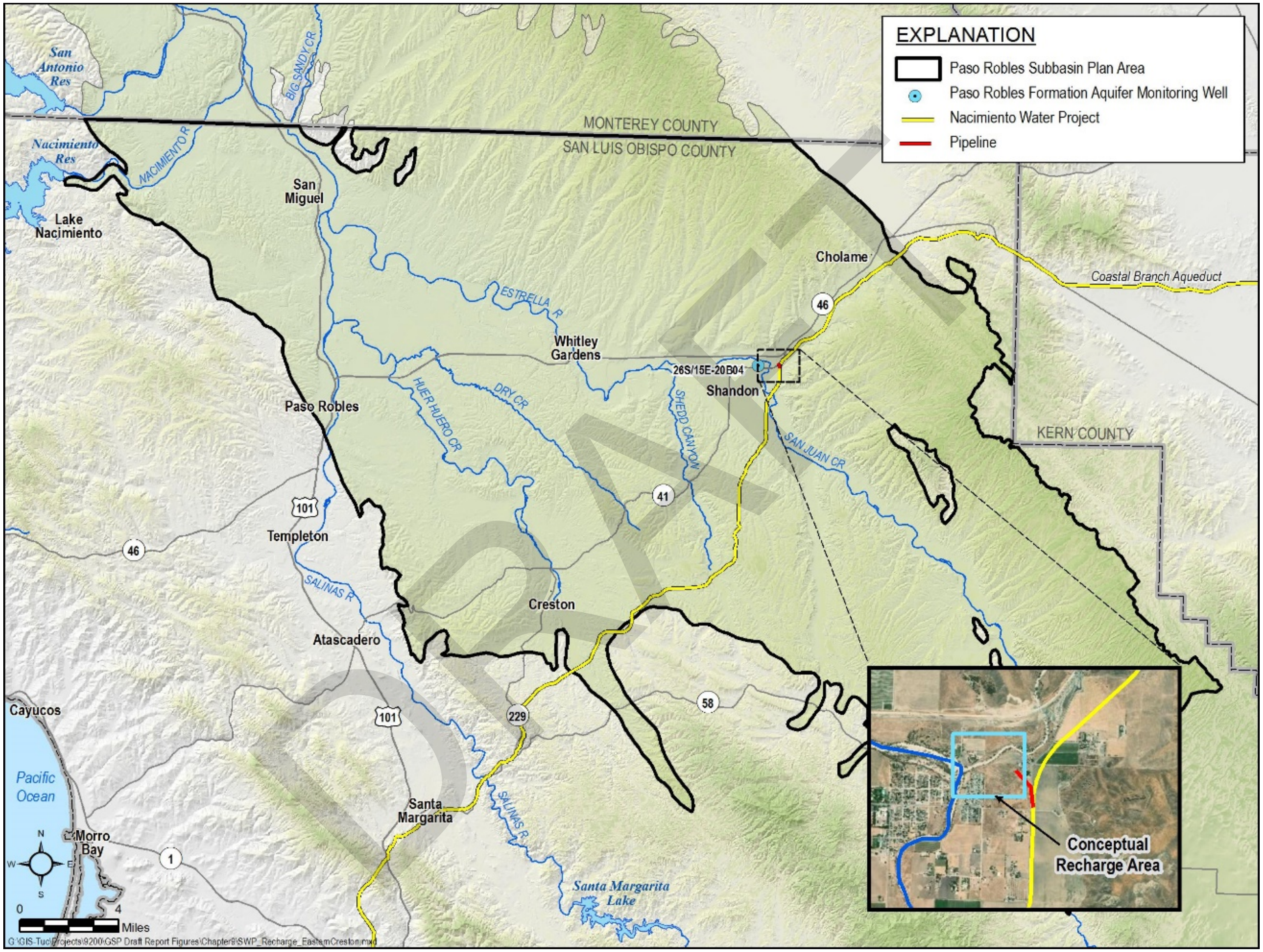


Figure 9-28. Conceptual Recharge Basin in Eastern Subbasin Project Layout

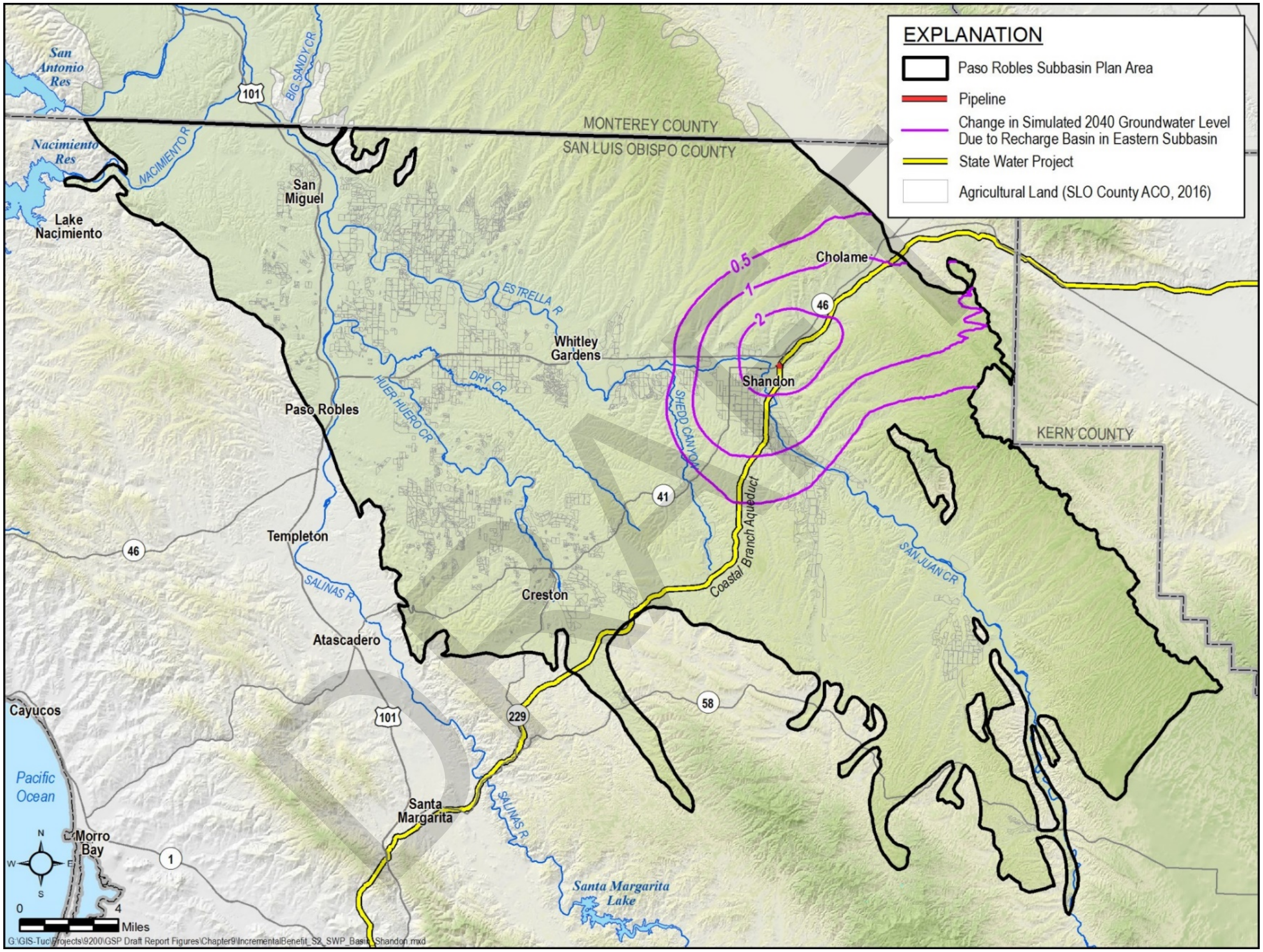


Figure 9-29. Groundwater Level Benefit from Recharge Basin in Eastern Subbasin

Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured with the CGPS station network detailed in Chapter 7. A direct correlation between SWP recharge and changes in groundwater levels may not be possible because this is only one among many management actions and projects that may be implemented in the Subbasin.

9.5.4.10 Circumstances for Implementation

All projects are implemented on an as-needed basis. The primary approach to attaining sustainability relies on pumping reductions in response to the water charges framework. If pumping reductions are inadequate for achieving sustainability, the funds raised by the water charge framework will be used to initiate projects throughout the Subbasin. The project to recharge SWP water in the central eastern portion of the Subbasin will be initiated if, after five years, groundwater levels in the southwestern portion of the monitoring network continue to decline at unsustainable rates. In particular, continued unsustainable groundwater level declines in monitoring well 26S/15E-20B04 would trigger implementation of this project. Additional triggers will be added as the monitoring well network expands.

9.5.4.11 Implementation Schedule

The implementation schedule is presented on Figure 9-30. The project will take 4 to 6 years to implement depending on the time required to negotiate procurement of SWP water. The actual project start date is to be determined.

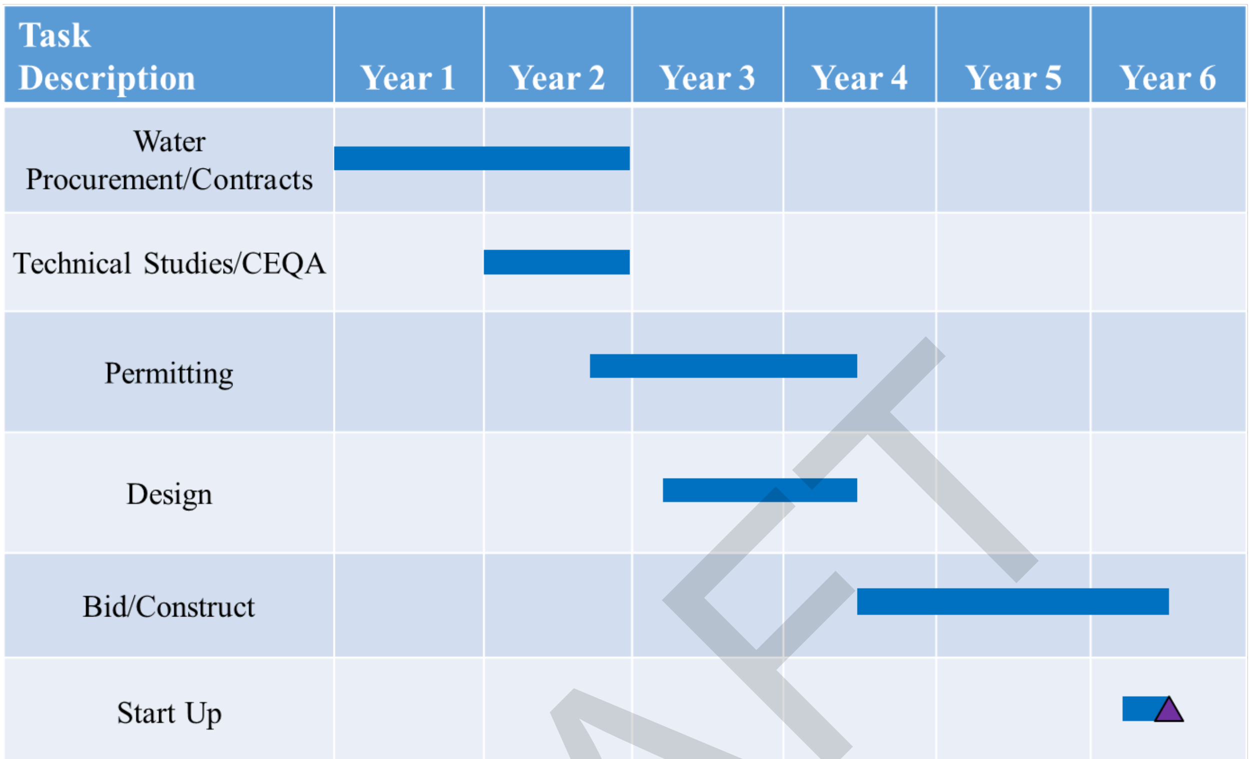


Figure 9-30. Implementation Schedule for Recharge Basin in Eastern Subbasin

9.5.4.12 Estimated Cost

The estimated total project cost for this project is $1.9M. The project cost will be covered by the bonding capacity developed through the water charges framework. Annual O&M costs are estimated at $39,000. The average annual cost of SWP purchased water is estimated at $1M based on an average year delivery of 840 AF. However, the unit price would need to be negotiated, and the actual amount of water available will vary year to year thereby affecting the actual annual purchase cost. O&M and water purchase costs would be covered by the overproduction surcharges. Based on a 30-year loan at a 5% interest rate, the cost of water for this project would be approximately $1,400/AF. Additional details regarding how costs were developed are included in Appendix I.

9.5.4.13 Substitute Project 3: Recharge Basin North of City of Paso Robles

This project uses recharge basins to recharge up to 1,880 AFY of treated water from the SWP Coastal Branch pipeline into the Paso Robles Formation Aquifer in the central western portion of the Subbasin, just north of the City of Paso Robles. On average, 1,500 AFY would be discharged to the recharge basin. With an assumed recharge efficiency of 50%, an average of 750 AFY would benefit the basin by percolating into the deeper aquifer. The actual recharge efficiency is currently unknown.

The general layout of this project and relevant monitoring wells are shown on Figure 9-31. Infrastructure includes a new NWP turnout, a 640 ft long pipeline, and a 12-acre recharge basin. No pumps are necessary to deliver water to the recharge basin in this location. The location of the recharge basin is approximately 30’ higher than the NWP pipeline with a short pipeline length of 640’, and there is likely sufficient pressure in the NWP pipeline to move water through this pipe length. A recharge rate of 6-inches/day was assumed for this region. For more information on technical assumptions and cost development, refer to Appendix I.

Other factors would also impact feasibility, including hydrogeological characteristics, land available for purchase, and NWP pipeline capacity.

9.5.4.14 Relevant Measurable Objectives

The measurable objectives benefiting from recharge basins include:

- Groundwater elevation measurable objectives in the western central portion of the Subbasin
- The groundwater storage measurable objective
- Land subsidence measurable objectives in the western central portion of the Subbasin

9.5.4.15 Expected Benefits and Evaluation of Benefits

The primary benefit from NWP recharge via recharge basins is higher groundwater elevations in the western central portion of the Subbasin. Ancillary benefits of shallower groundwater elevations may include an increase in groundwater storage and avoiding subsidence. The GSP model was used to quantify the expected benefit from this project. Figure 9-32 shows the expected groundwater level benefit predicted by the GSP model after 10 years of project operation. Figure 9-32 expresses the benefit as feet of groundwater. The groundwater level benefit shown on Figure 9-32 is a measure of how much higher groundwater elevations are expected to be with the project rather than without the project.

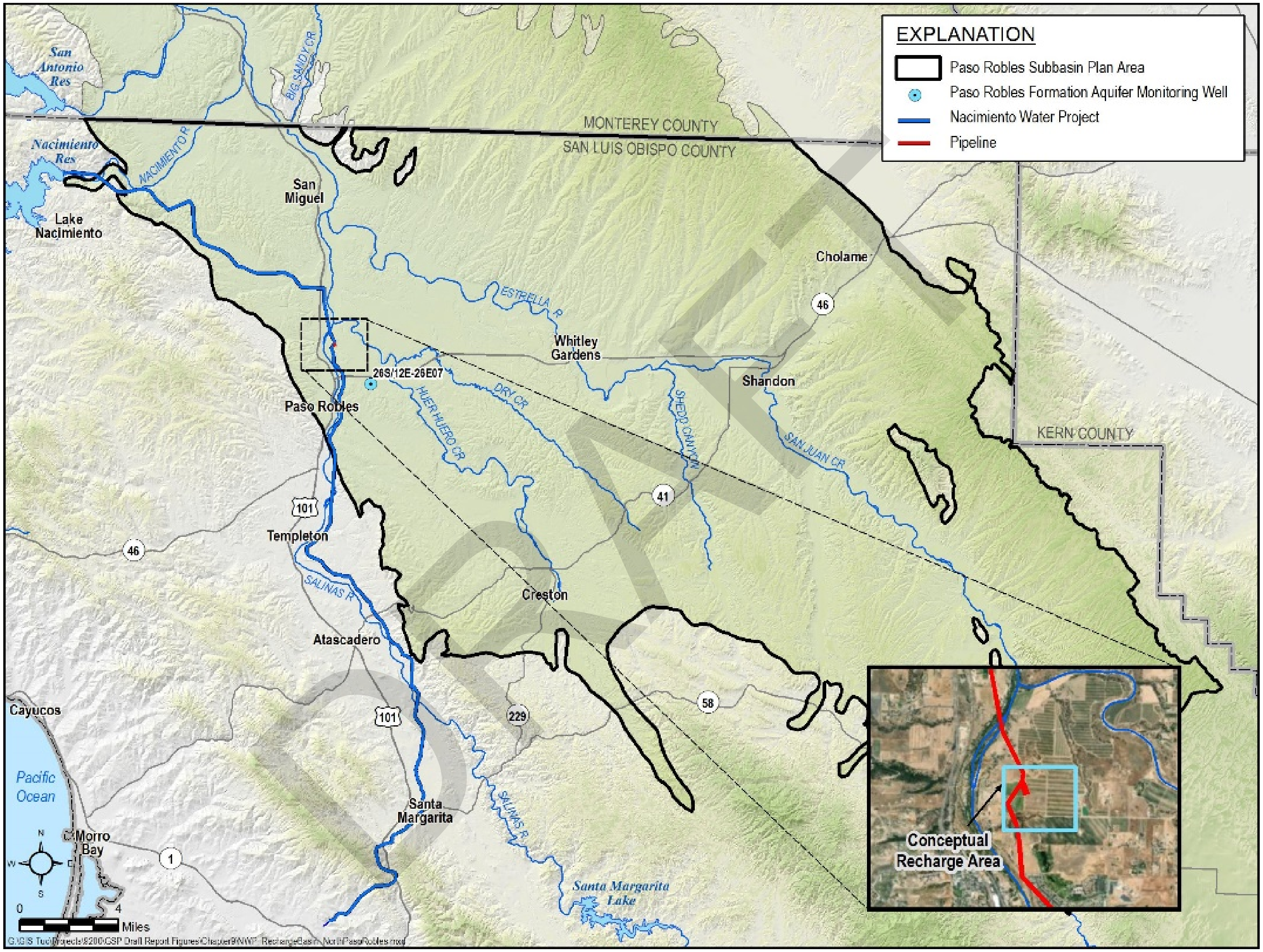


Figure 9-31. Conceptual Recharge Basin North of City of Paso Robles Project Layout

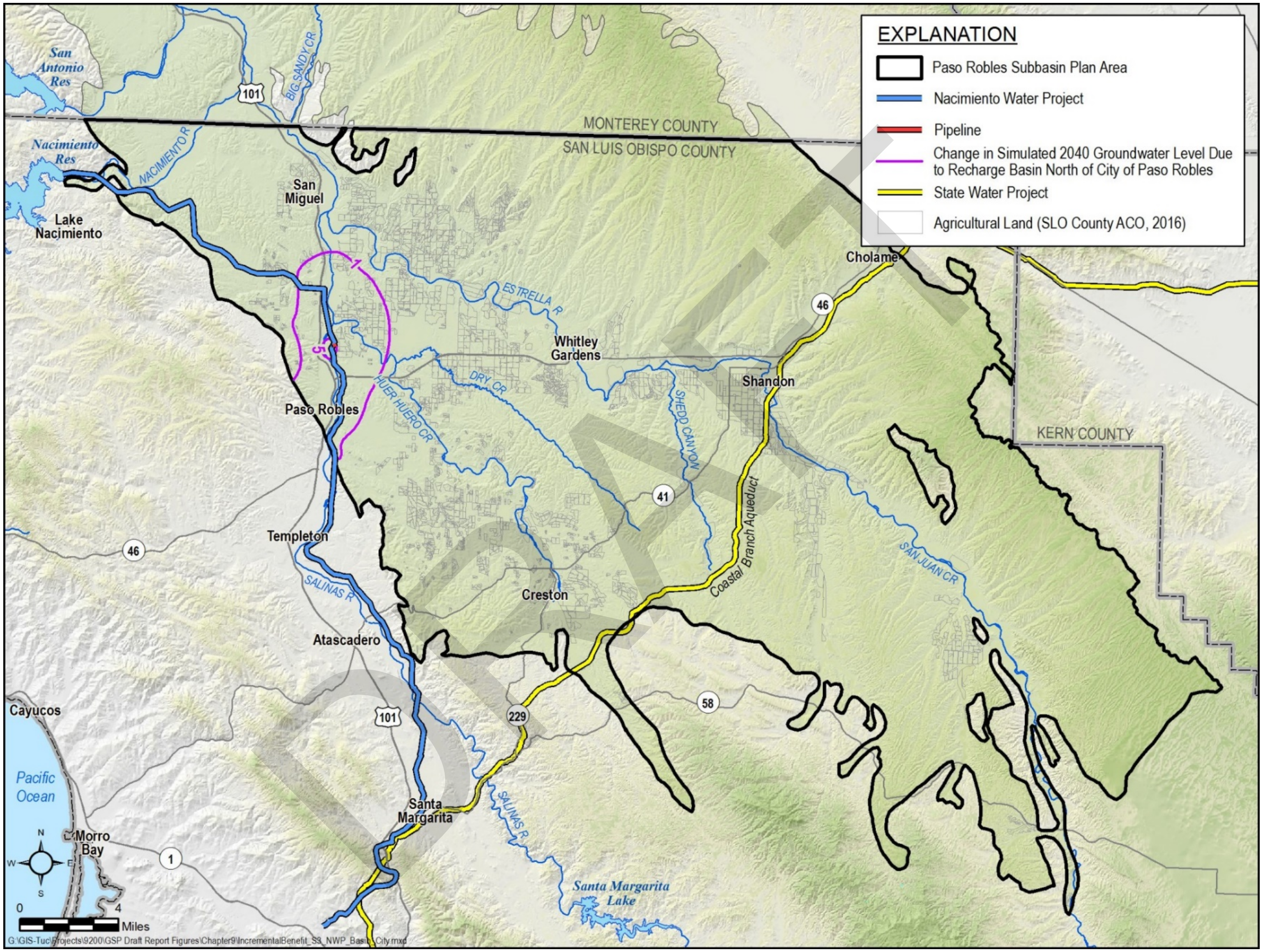


Figure 9-32. Groundwater Level Benefit from Recharge Basin North of City of Paso Robles

Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured with the CGPS station network detailed in Chapter 7. A direct correlation between NWP recharge and changes in groundwater levels may not be possible because this is only one among many management actions and projects that will be implemented in the Subbasin.

9.5.4.16 Circumstances for implementation

All projects are implemented on an as-needed basis. The primary approach to attaining sustainability relies on pumping reductions in response to the water charges framework. If pumping reductions are inadequate for achieving sustainability, the funds raised by the water charge framework will be used to initiate projects throughout the Subbasin. The project to recharge SWP water in the western central region of the Subbasin will be initiated if, after five years, groundwater levels in the western central portion of the monitoring network continue to decline at unsustainable rates. In particular, continued unsustainable groundwater level declines in monitoring well 26S/12E-26E07 would trigger implementation of this project. Additional triggers will be added as the monitoring well network expands.

9.5.4.17 Implementation Schedule

The implementation schedule is presented on Figure 9-33. The project will take 4 to 6 years to implement depending on the time required to negotiate procurement of NWP water. The actual project start date is to be determined.

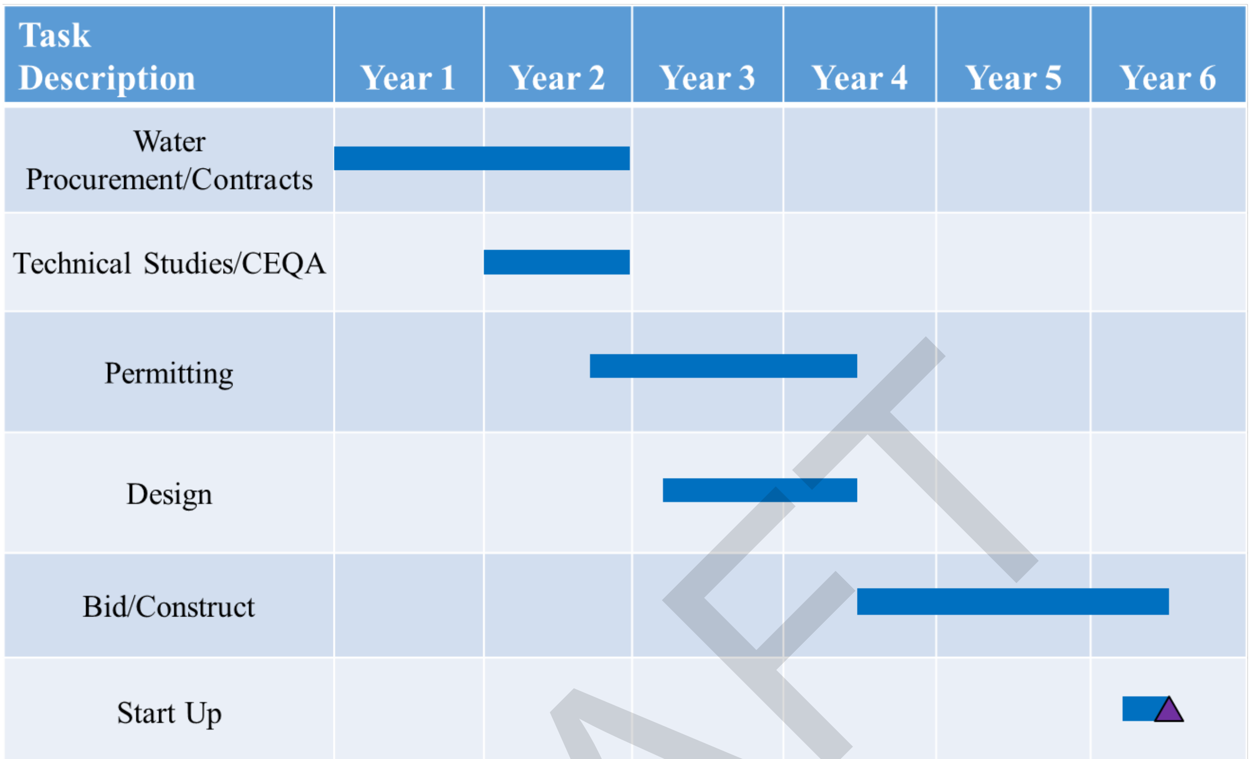


Figure 9-33. Implementation Schedule for Recharge Basin North of City of Paso Robles

9.5.4.18 Estimated Cost

The estimated total project cost for this project is $1.8M. The project cost will be covered by the bonding capacity developed through the water charges framework. Annual O&M costs are estimated at $53,000. The average annual cost of NWP purchased water is estimated at $1.8M based on an average year delivery of 1,500 AF. However, the unit price would need to be negotiated, and the actual amount of water available will vary year to year thereby affecting the actual annual purchase cost. O&M and water purchase costs would be covered by the overproduction surcharges. Based on a 30-year loan at a 5% interest rate, the cost of water for this project would be approximately $1,300/AF. Additional details regarding how costs were developed are included in Appendix I.

9.5.4.19 Substitute Project 4: Flood Flow Capture and Recharge North of City of Paso Robles

This project uses recharge basins to recharge up to 10 cfs of Salinas River water. Under DWR's draft streamlined permit, an average of 164 AFY would be diverted from the Salinas River and discharged to a 40-acre recharge basin.

The general layout of this project and relevant monitoring wells are shown on Figure 9-34. Infrastructure includes six new Ranney wells, 2,600 ft of pipeline, a 150 hp pump station, and a

40-acre recharge basin. One factor that could increase the cost of this project is the availability of land for purchase near the Salinas River. It is worth noting that the land used for recharge is available for use in the summer months, since recharge from the Salinas River would only occur during the winter months. Based on a 30-year loan at a 5% interest rate, the cost of water for this project would be approximately $6,800/AF. For more information on technical assumptions and cost development, refer to Appendix I.

Other factors would also impact feasibility, including hydrogeological characteristics and the finalized language in the DWR streamlined permit.

9.5.4.20 Relevant measurable objectives

The measurable objectives benefiting from a recharge basin include:

- Groundwater elevation measurable objectives in the central portion of the Subbasin
- The groundwater storage measurable objective
- Land subsidence measurable objectives in the central portion of the Subbasin

9.5.4.21 Expected benefits and evaluation of benefits

The primary benefit from local recharge from the Salinas River is higher groundwater elevations in the central portion of the Subbasin. Ancillary benefits of shallower groundwater elevations may include an increase in groundwater storage and avoiding subsidence. The GSP model was used to quantify the expected benefit from this project. Figure 9-35 shows the expected groundwater level benefit predicted by the GSP model after 10 years of project operation. Figure 9-35 expresses the benefit as feet of groundwater. The groundwater level benefit shown on Figure 9-35 is a measure of how much higher groundwater elevations are expected to be with the project rather than without the project.

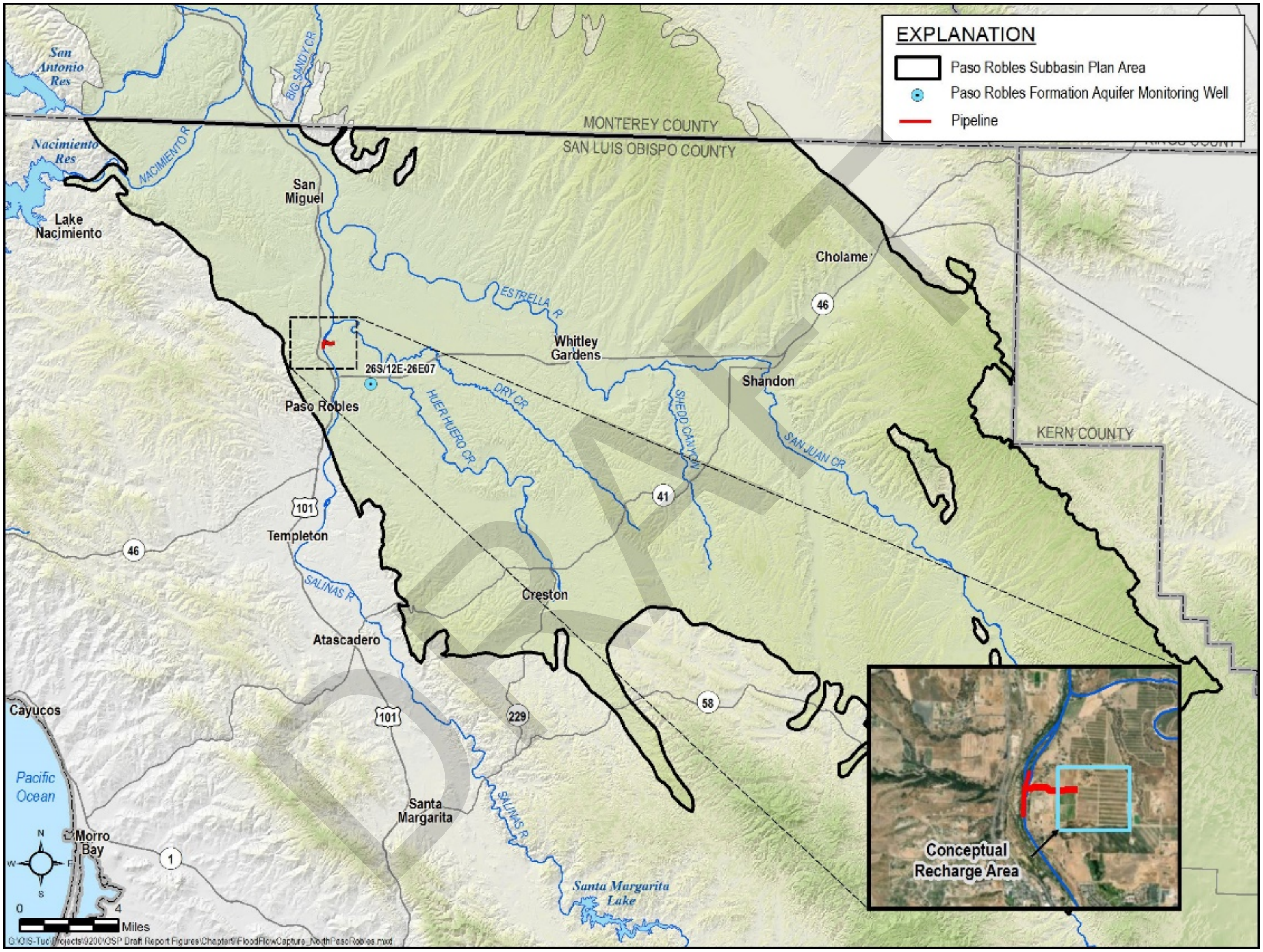


Figure 9-34. Conceptual Flood Flow Capture and Recharge North of City of Paso Robles Project Layout

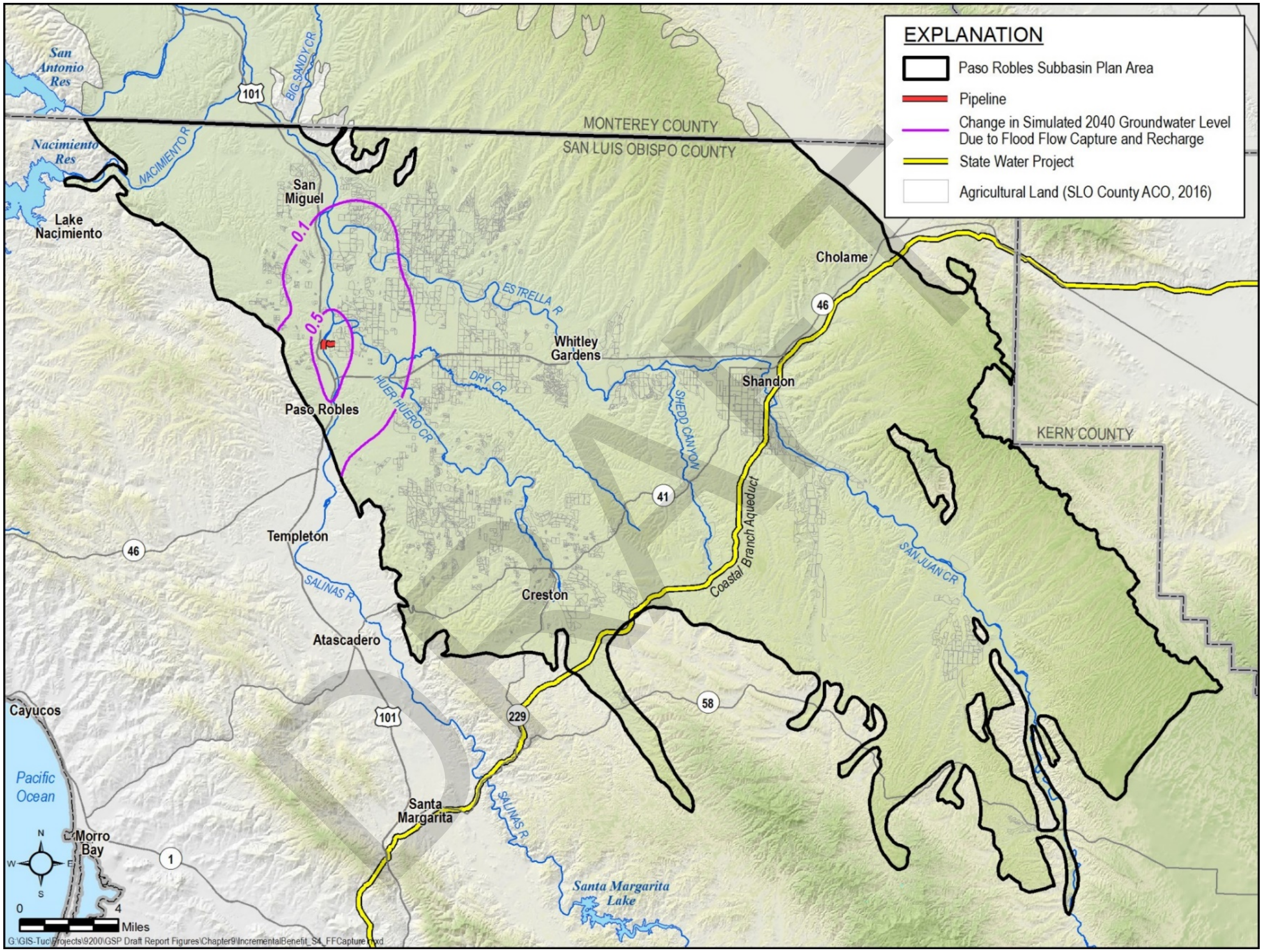


Figure 9-35. Groundwater Level Benefit from Flood Flow Capture and Recharge North of City of Paso Robles

Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured with the CGPS station network detailed in Chapter 7. A direct correlation between local recharge and changes in groundwater levels may not be possible because this is only one among many management actions and projects that will be implemented in the Subbasin.

9.5.4.22 Circumstances for implementation

All projects are implemented on an as-needed basis. The primary approach to attaining sustainability relies on pumping reductions in response to the water charges framework. If pumping reductions are inadequate for achieving sustainability, the funds raised by the water charge framework will be used to initiate projects throughout the Subbasin. The project to recharge SWP water in the southwestern corner of the Subbasin will be initiated if, after five years, groundwater levels in the southwestern portion of the monitoring network continue to decline at unsustainable rates. In particular, continued unsustainable groundwater level declines in monitoring well 26S/12E-26E07 would trigger implementation of this project. Additional triggers will be added as the monitoring well network expands.

9.5.4.23 Implementation Schedule

The implementation schedule is presented on Figure 9-36. The project will take 4 to 6 years to implement depending on the time required to negotiate procurement of NWP water. The actual project start date is to be determined.

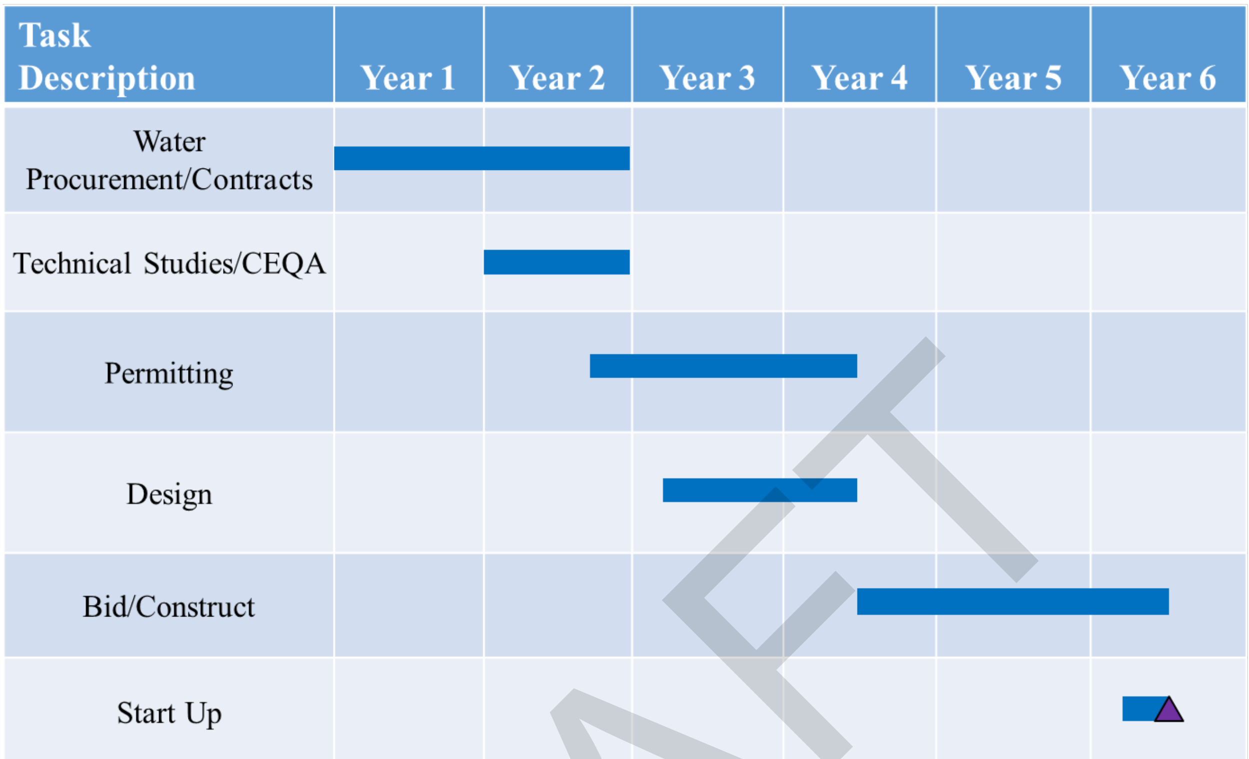


Figure 9-36. Implementation Schedule for Flood Flow Capture and Recharge North of City of Paso Robles

9.5.4.24 Estimated cost

The estimated total project cost for this project is $13M. The project cost will be covered by the bonding capacity developed through the water charges framework. Annual O&M costs are estimated at $200,000 for 164 AF of water. This water would not be available every year. There is no direct cost associated with the diversion of Salinas River water. O&M costs would be covered by the overproduction surcharges. Additional details regarding how costs were developed are included in Appendix I.

9.6 Other Groundwater Management Activities

Although not specifically funded or managed by this GSP, a number of associated groundwater management activities will be promoted and encouraged by the GSAs as part of general good groundwater management practices.

9.6.1 Continue Urban and Rural Residential Conservation

Existing water conservation measures should be continued, and new water conservation measures promoted for residential users. Conservation measures may include the use of low flow toilet fixtures, or laundry-to-landscape greywater reuse systems. Conservation projects can reduce demand for groundwater pumping, thereby acting as in-lieu recharge.

9.6.2 Watershed Protection and Management

Watershed restoration and management can reduce stormwater runoff and improving stormwater recharge into the groundwater basin. While not easily quantified and therefore not included as projects in this document, watershed management activities may be worthwhile and benefit the basin.

9.6.3 Retain and Enforce the Existing Water Export Ordinance

San Luis Obispo County's existing water export ordinance should be enforced and retained. The ordinance requires a permit for the movement of sale of groundwater across the county line. To obtain a permit, the water sale cannot negatively impact a nearby overlier, result in seawater intrusion, or result in a cone of depression greater than the landowner's property line. This ordinance will continue to protect the county's water supplies.

9.7 Demonstrated Ability to Attain Sustainability

The GSAs have the ability to attain sustainability through a combination of projects and management actions. To demonstrate the ability to attain sustainability, a groundwater management scenario that included both projects and management actions was modeled. The scenario included all of the priority projects listed in Section 9.4.3. In addition to the priority projects, pumping was reduced to bring groundwater elevations to the measurable objectives by 2040, and maintain the same groundwater elevations through 2070.

The GSP model was adapted to simulate the scenario described above over the GSP implementation period from 2020 through 2040. The ability to achieve sustainability was quantified by comparing 2040 simulated groundwater levels under each of the two scenarios against the Measurable Objective surface – as described in Chapter 8 – for both the Paso Robles formation aquifer and the Alluvial aquifer.

Individual hydrographs comparing the predicted groundwater elevations to the measurable objectives at each representative monitoring site are included in Appendix J.

9.8 Management of Groundwater Extractions and Recharge and Mitigation of Overdraft

The implementation plan in this Chapter is specifically designed to mitigate the decline in groundwater storage with a combined program of management actions designed to reduce pumping and projects designed to develop new water supplies. Funds collected through the pumping fees program will support fallowing of existing land and reducing pumping, and supplementing the groundwater resource with imported water, either through direct recharge or in-lieu means.

REFERENCES

SWRP 2018. San Luis Obispo County Stormwater Resource Plan. Public Draft. September 2018. https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Committees-Programs/Stormwater-Resource-Plan/Documents/2018-09-10-SWRP-Public-Draft.aspx

WSC 2011. Water Systems Consulting, Inc. *Capacity Assessment of the Coastal Branch, Chorro Valley & Lopez Pipelines.* 2011.

DRAFT

Paso Robles Subbasin
Groundwater Sustainability Plan
Chapter 11 Notice and Communications

Prepared for the Paso Robles Subbasin Cooperative Committee and the Groundwater Sustainability Agencies

April 17, 2019

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11 NOTICE AND COMMUNICATION

This chapter describes the notification and communication with interested parties and stakeholders in the Subbasin regarding the GSP. The information presented in this chapter is prepared in accordance with the SGMA regulations §354.10 to provide a description of beneficial uses, a list of public meetings, and comments and a summary of responses. It also contains a communication section with an explanation of the decision-making process, identification of opportunities for public engagement, a description of outreach to diverse populations, and the method for keeping the public updated about the plan and related activities. These requirements are met by the Communications and Engagement (C&E) Plan that is included in Appendix F. Table 11-1 lists the specific regulatory and statutory requirements for notice and communication and refers to sections of the C&E Plan.

The plan was written early in the process of GSP development and approved by the Cooperative Committee in June 2018 as a stand-alone document to guide notice and communication throughout GSP development. The C&E Plan (Appendix F) will be updated prior to adoption of the final GSP to include an updated list of public meetings and comments and a summary of responses.

Table 11-1. Requirements of statutes and regulations pertaining to notice and communications.

Legislative/Regulatory Requirement	Legislative/Regulatory Section Reference	C&E Plan Section
Publish public notices and conduct public meetings when establishing a GSA, adopting or amending a GSP, or imposing or increasing a fee.	SGMA Sections 10723(b), 10728.4, and 10730(b)(1).	7.0
Maintain a list of, and communicate directly with, interested parties.	SGMA Sections 10723.4, 10730(b)(2), and 10723.8(a)	4.0
Consider the interests of all beneficial uses and users of groundwater.	SGMA Section 10723.2	4.0
Provide a written statement describing how interested parties may participate in plan [GSP] development and implementation, as well as a list of interested parties, at the time of GSA formation.	SGMA Sections 10723.8(a) and 10727.8(a)	4.0
Encourage active involvement of diverse social, cultural, and economic elements of the population within the groundwater basin.	SGMA Section 10727.8(a)	7.0
Understand that any federally recognized Indian Tribe may voluntarily agree to participate in the planning, financing, and management of groundwater basins – refer to DWR's Engagement with Tribal Governments Guidance Document for Tribal recommended communication procedures.	SGMA 10720.3(c)	7.0
Description of beneficial uses and users of groundwater in the basin	GSP Regulations §354.10	3.0
List of public meetings at which the Plan [GSP] was discussed or considered	GSP Regulations §354.10	Appendix E
Comments regarding the Plan [GSP] received by the Agency and a summary of responses	GSP Regulations §354.10	N/A at time of publication
A communication section that includes the following (GSP Regulations §354.10):		
Explanation of the Agency's decision-making process	GSP Regulations §354.10	4.0
Identification of opportunities for public engagement and discussion of how public input and response will be used	GSP Regulations §354.10	7.0
Description of how the Agency encourages active involvement of diverse social, cultural, and economic elements of the population within the basin	GSP Regulations §354.10	7.0
The method the Agency will follow to inform the public about progress implementing the Plan [GSP], including the status of projects and actions	GSP Regulations §354.10	7.0

APPENDIX H – WATER SUPPLIES

1.1 Overview and Acquisition of Available Water Supplies

There are four types of surface waters available for use in the Paso Robles Subbasin for groundwater recharge or in-lieu use – State Water Project (SWP) water, Nacimiento Water Project (NWP) water, local recycled water, and flood flows from local rivers and streams. Below is a description of each supply, including a discussion of reliability and contracting issues.

1.1.1 State Water Project

The SWP is a water storage and delivery system of reservoirs, aqueducts, power plants, and pumping plants that extend from Northern to Southern California for over 600 miles. Its main purpose is to divert and store surplus water during wet periods and distribute it to 29 contractors in Northern California, the San Francisco Bay Area, the San Joaquin Valley, the Central Coast, and Southern California. The SWP is operated by the California Department of Water Resources (DWR).

The SWP's Coastal Branch passes through the southern portion of the Subbasin, through the Shandon and Creston regions. The Coastal Branch of this system extends from the California Aqueduct for 160 miles through the southern portion of Subbasin. Figure 1 shows the Coastal Branch and Polonio Pass Treatment Plant (PPWTP). Prior to treatment at PPWTP, water in the Coastal Branch is untreated. Water is treated at the PPWTP, and southeast of the PPWTP the water in the Coastal Branch pipeline is of potable water standards.

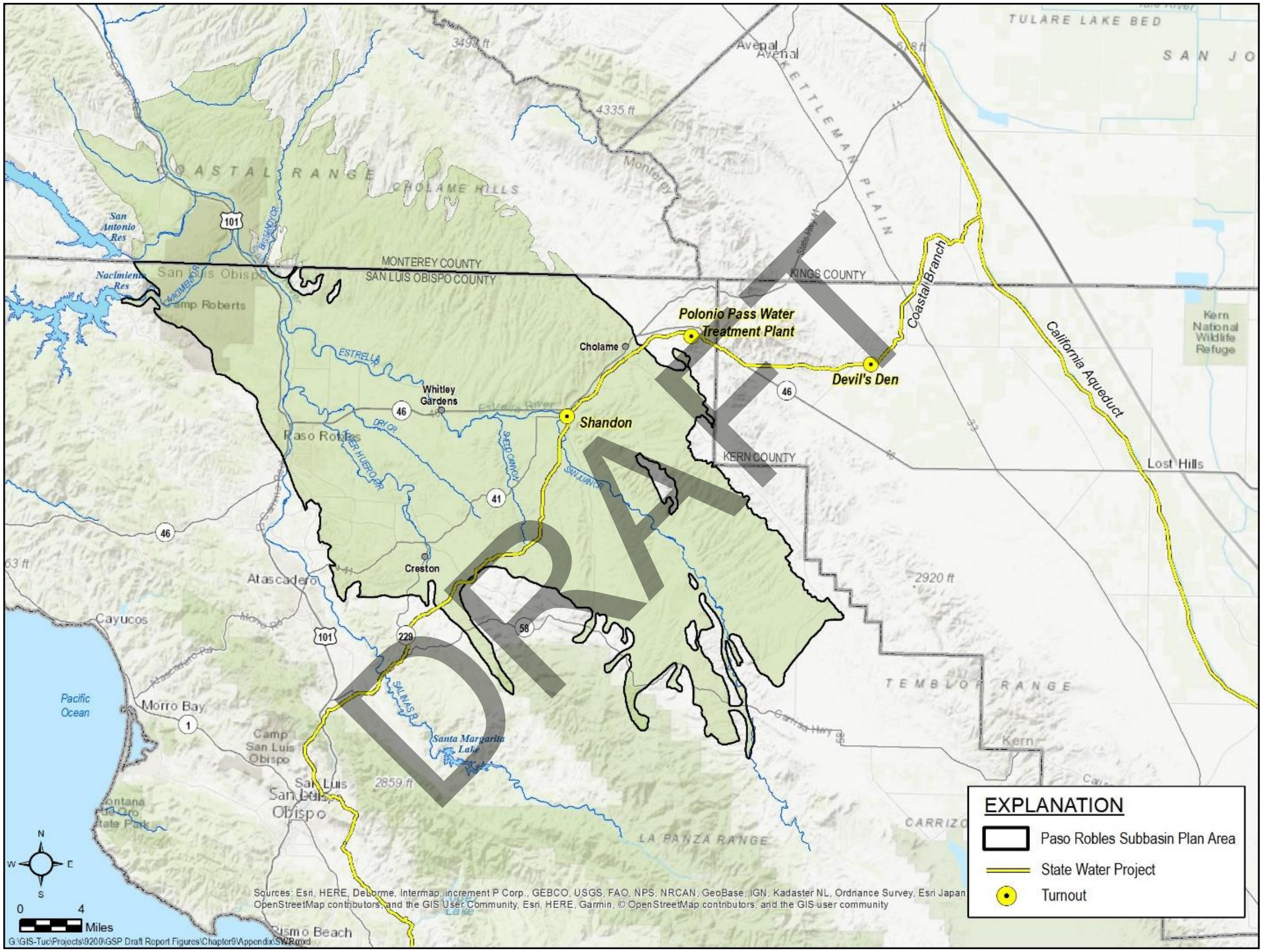

Figure 1: SWP Coastal Branch Infrastructure

The San Luis Obispo County Flood Control and Water Conservation District (SLOCFCWD) is one of DWR's 29 SWP contractors. DWR has contracts with both Santa Barbara County Flood Control and Water Conservation District (SBCFCWCD) and SLOCFCWD to deliver SWP water through the Coastal Branch. The Central Coast Water Authority (CCWA) owns, operates, and maintains the PPWTP and operates the portion of the Coastal Branch that is downstream of Polonio Pass.

SLOCFCWD currently has 25,000 AFY of Table A allocation contracted with DWR. Of this amount, 10,477 AFY is allocated to subcontractors through Water Supply Agreements. SLOCFCWD retains an excess allocation of 14,523 AFY; however, DWR estimates availability of SWP water to average around 58-62% of total allocations (DWR 2014, SWR 2015, DWR 2018). For SLOCFCWD's excess allocation of 14,523, 58-62% corresponds to between 8,400 and 9,000 AFY. For the purpose of the GSP, a value of 8,800 AFY has been assumed as the long-term average annual availability for SLOCFCWD's excess Table A allocation. The actual amount available for delivery by DWR would vary from year to year between zero and 14,523 AF.

1.1.1.1 Physical and Contractual Constraints

According to a study on the Coastal Branch (WSC 2011), enough hydraulic capacity exists to deliver water that exceeds SLOCFCWD's contracted capacity within the Coastal Branch pipeline; however, contractual capacity limits currently constrain the amount of excess allocation available to SLOCFCWD and would need to be renegotiated if SLOCFCWD were to take water at any location downstream of the PPWTP. In particular the Master Water Supply Agreement with DWR dictates:

- District's contractual capacity for Reach 1 is 7.17 cfs (5,191 AFY).
- District's contractual capacity for Reaches 2 through 4 is 7.17 cfs (5,191 AFY).

And the Master Water Treatment Agreement with CCWA dictates:

- District's contractual capacity in the PPWTP is 4,830 AFY

Additionally, existing District subcontractors can increase their SWP allocations. For example, the Oceano Community Services District recently contracted with SLOCFCWD for 750 AFY of additional drought buffer. These increases could limit the amount of excess allocation water available to the Subbasin.

Historical and anticipated future costs for existing subcontractors were analyzed in a supply options study by SLOCFCWD (Carollo, 2017). The analysis determined the range of costs for raw and treated water, shown in Table 1.

Table 1: SWP Estimated Costs Paid by Existing Subcontractors Based on Point of Delivery

Turnout Location	Water Quality	Estimated Unit Cost ($/AF)
SWP & Coastal Branch Intersection	Raw	$467
Devil's Den Pumping Station	Raw	$1,793
PPWTP	Treated	$2,292
Shandon Turnout	Treated	$2,503

The unit costs shown in 1 were estimated average values that were developed to account for a capacity buy-in that includes back payment of capacity allocation and anticipated payment for 20 years. The back payments and future payments were summed and divided over a 20-year payback period. These costs also factor in the SWP system's anticipated future reliability of an average annual delivery of 59% of the total allocation, meaning they are intended to represent costs for actual delivered water.

Raw water is available only east of the PPWTP. To secure the lower raw water cost, new infrastructure would need to be constructed to bring water from upstream of PPWTP to the Subbasin. A previous analysis showed that the annualized cost of the new infrastructure plus the cost of the raw water equated to a similar unit cost as that of treated water. The new infrastructure would also greatly increase the total capital cost of a project. The SWP projects analyzed for the purposes of the GSP assumed the use of treated water; however, the planning and predesign stages of a future SWP project could include an analysis of using treated vs. raw water.

SWP water can be procured by GSAs in two ways: negotiating with a current District or CCWA subcontractor, or negotiating with SLOCFCWD to receive an annual allocation as a new subcontractor.

Under the first method, the purchaser would hold a sub-agreement with an existing subcontractor (that has excess allocation) and not have a direct relationship with SLOCFCWD. The second method would come with an annual buy-in cost and a unit cost of water. It would also, however, increase the potential volume and certainty of supply. Given the amount of water being considered for projects in this GSP, it is likely that being a new subcontractor would be the only feasible route.

Contractual and legal information as it applies to the SWP is described in further detail in Attachment 1 to this appendix.

1.1.1.2 Nacimiento Water Project

The Nacimiento Water Project (NWP) consists of 45 miles of pipeline that conveys raw water from Lake Nacimiento in the northern portion of San Luis Obispo County to communities within San Luis Obispo County. Figure 2 shows an overview of the NWP.

Monterey County Water Resource Agency (MCWRA) manages and operates Lake Nacimiento. SLOCFCWD has an entitlement of 17,500 AFY through a Master Water Agreement with MCWRA negotiated in 1959. Of this amount, 1,750 AFY is permanently allocated to lakeside customers, and the rest is allocated to seven participants. Any surplus NWP water must be obtained through the existing participants. Table 2 shows the allocations of each of the seven participants. These allocations established in 2016 and fully allocated SLOVCWD's entitlement.

Table 2: Nacimiento Water Project Participants and Allocations

Agency	New Allocation
City of Paso Robles	6,488
Templeton Community Services District (CSD)	406
Atascadero Mutual Water Company (MWC)	3,244
City of San Luis Obispo	5,482
County Service Area 10A (CSA 10A)	40
Bella Vista Mobile Home Park	10
Santa Margarita Ranch Mutual Water Company	80
Total	**15,750**

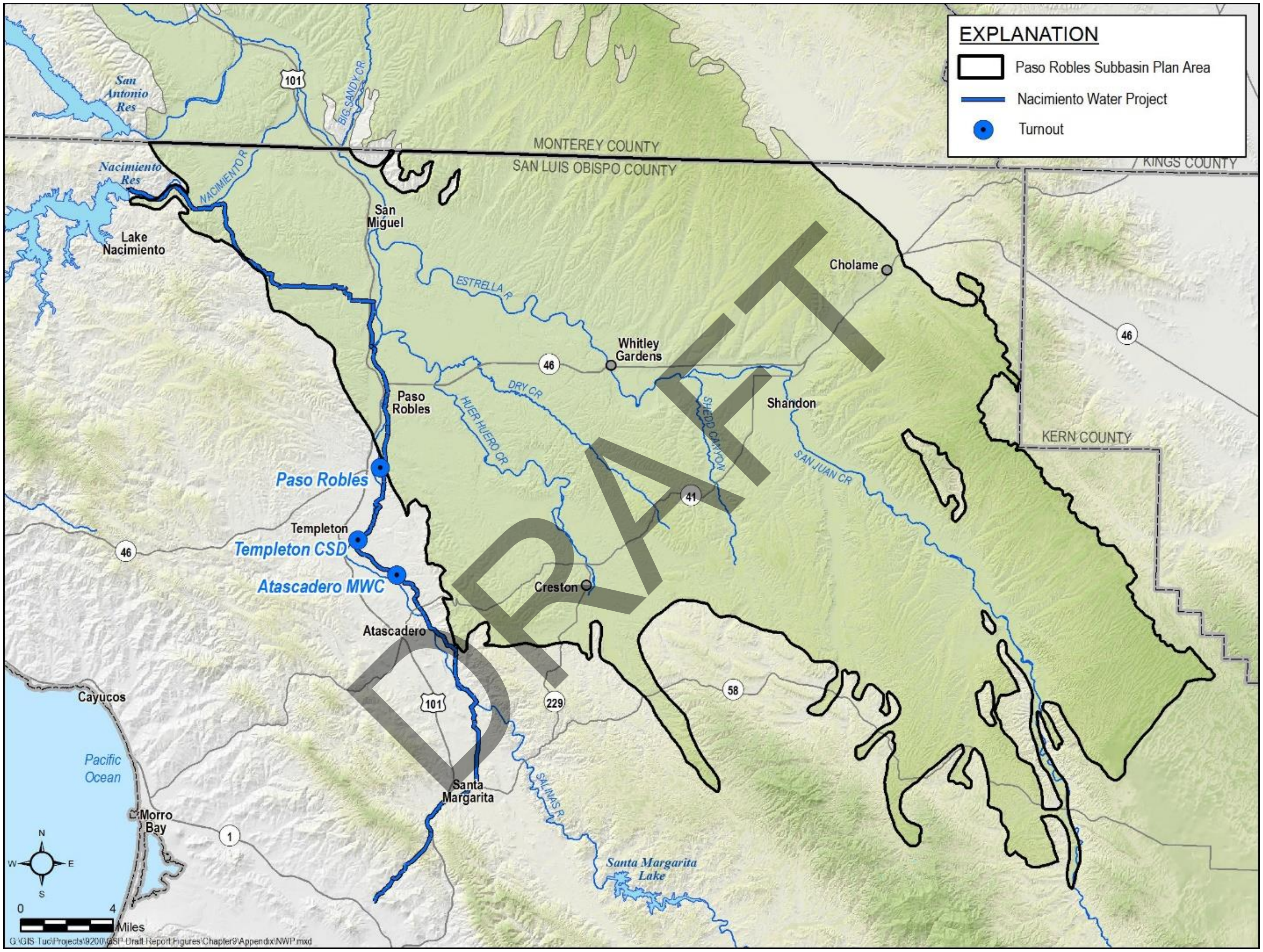

Figure 2: NWP Infrastructure

A previous study projected surplus NWP water based on participant's projected use (Carollo, 2017). The projected surplus is shown in Table 3. NWP is a very reliable supply, since SLOCFCWD's entitlement is for the lowest pool in the reservoir, and therefore is largely immune to level fluctuations. However, as seen in Table 3, NWP participants tend to use more during drought conditions, leaving less surplus water.

To determine how much NWP water might be available for purchase by the GSAs, the 2040 projected annual average surplus supply amounts were used. Dry years were assumed to occur one year out of every three years. A weighted average of the 2040 dry and wet year supplies was calculated as 5,800 AFY. While 5,800 AFY was assumed to be available to the Paso Robles GSAs, the actual amount would need to be negotiated with existing NWP project participants as there may be other entities interested in acquiring surplus NWP water.

Table 3: Nacimiento Water Project Projected Annual Surplus Supply

	Normal Year (AFY)	Dry Year (AFY)
2020	10,135	5,577
2030	8,473	4,045
2040	7,269	2,852

The NWP contract established the process for determining the cost per acre-foot of surplus water, which was applicable prior to full allocation of NWP water among the existing participants. According to the contract, the cost of surplus water to each NWP participant had two components:

1. Operations and maintenance costs per AF of surplus water for the prior year
2. Variable energy costs associated with delivering the surplus water.

For non-participants, a third component is added consisting of debt service costs for surplus water delivered for the current year. Table 4 shows the estimated costs for FY 2015/16, which was the last year when there was non-allocated NWP water available.

Table 4: Nacimiento Water Project Estimated Costs

Location	For Participants	For Non-Participants(2)
City of Paso Robles	$216/AF	$1,299/AF
Templeton CSD	$234/AF	$1,967/AF
Atascadero MWC	$235/AF	$1,554/AF

Under full allocation, the NWP contract requires selling surplus water at a cost the market can bear but not less than costs participants pay for the delivery of the same unit or units of water. At the time of this report, no surplus water sales have occurred after full allocation approval in April 2016. Thus, a range of purchase costs is possible.

The minimum cost of $250/AF is based on FY 2015/16 costs for participants, representing the cost to convey the water to a turnout. The maximum cost of $2,000/AF is assumed based on FY 2015/16 costs for non-participants, including the debt service cost. However, the actual cost must be negotiated between the purchaser and the NWP participants.

A non-participant may purchase NWP water from an NWP participant every year. However, the non-participant will not have permanent rights to the water unless a participant is willing to sell a portion of its NWP allotment. Thus, a multi-year purchase agreement from a non-participant is likely required to support capital investment in conveyance facilities.

1.1.1.3 Recycled Water

The Paso Subbasin contains two wastewater treatment plants (WWTPs): Paso Robles WWTP and San Miguel WWTP. Recycled water meeting high quality standards established by the State of California is available from these plants year-round. Most demand or recycled water is non-potable demand, such as irrigation. This demand is seasonal, with much greater demand in the summer.

Water quality is a potential issue for irrigation projects using recycled water. Because the water is high in salinity, only a portion of the total amount of water used for irrigation can be recycled water without damaging the crops. To mitigate this issue, recycled water projects in the Subbasin would either be blended with groundwater supplies or occasional flushing would be performed to prevent buildup of salts in the root zone.

The City of Paso Robles is in the process of planning and constructing a recycled water project which could provide up to 2,900-5,000 AFY of in-lieu and direct recharge by providing recycled water for use on golf courses, City parks, nearby vineyards, and recharge through discharge into Huer Huero Creek.

According to the Recycled Water Distribution System Final Design (Carollo, 2018), 1,320 AFY of recycled water will be available during Phase 1 of the project. Some of this water will be used for park irrigation and industrial use, offsetting the City of Paso Robles' potable water demand. Some of this water will be used to offset agricultural pumping. Excess water supply will be discharged to Huer Huero Creek as a recharge project. Phase 1 of the project is modeled in the modified baseline simulation of this GSP, beginning in 2025.

Phase 2 of the project is less well defined. Phase 2 is based on the assumption that as the City grows, the available wastewater for recycled water use will increase. In Phase 2, an assumed additional 902 AFY of recycled water will be available for use for both in-City and out of city demands. Excess tertiary treated water will be discharged to Huer Huero creek. Phase 2 of the project is modeled in the modified baseline simulation of this GSP beginning in 2040.

Phase 1 of the recycled water project planned by the City of Paso Robles is shown in Figure 3. Private pipelines that will use recycled water for agricultural purposes are not shown in Figure 3; however, the in-lieu recharge has been modeled as part of the modified baseline simulation.

The City of San Miguel is also planning to reuse some or all of its centrally-treated wastewater which could amount to up to 200+ AFY. This additional recycled water is also available for irrigation or other non-potable projects that could offset groundwater pumping.

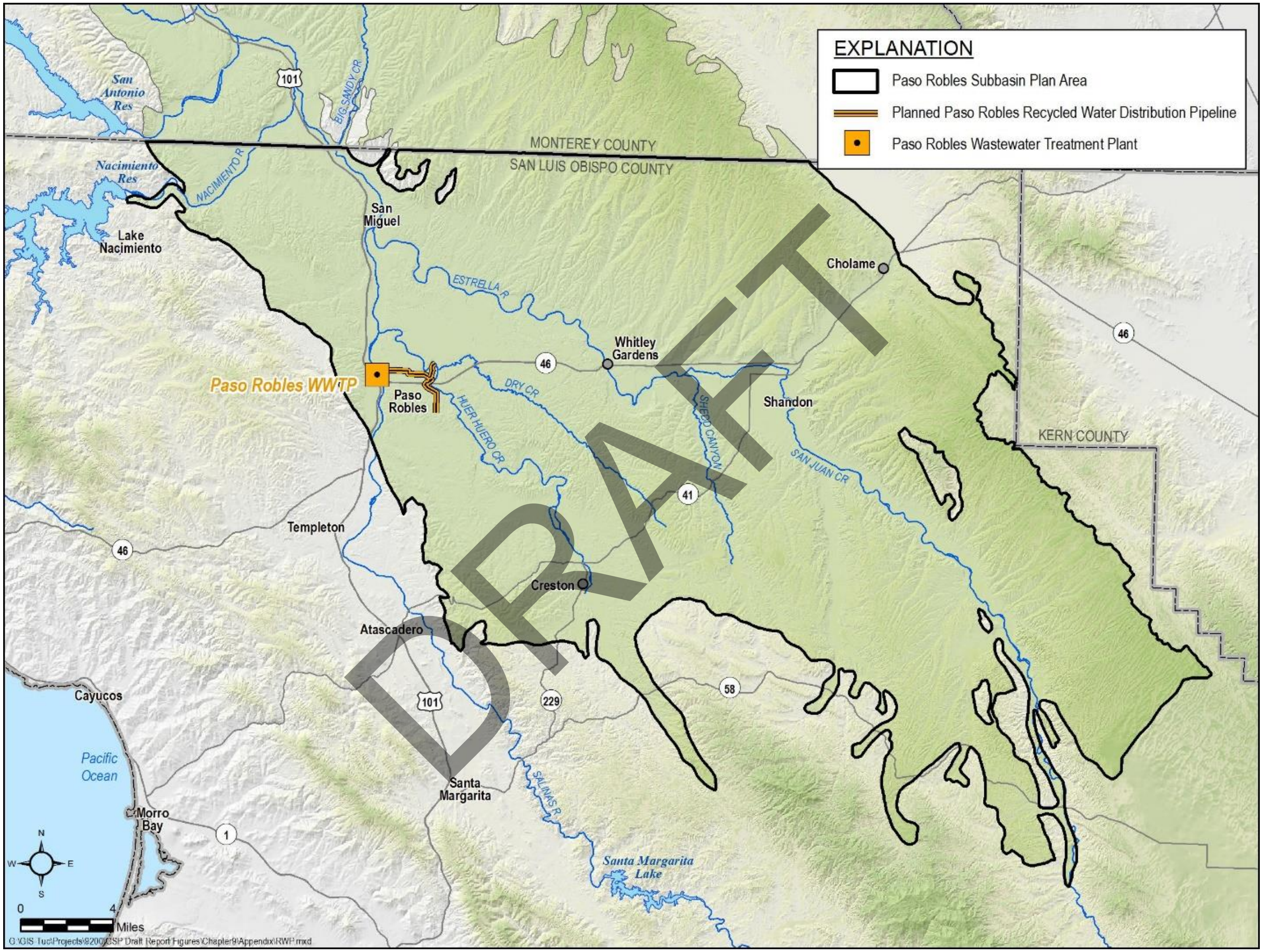

Figure 3: City of Paso Robles Planned Recycled Water Project

1.1.1.4 Surface Water

Three large perennial streams flow through the Paso Robles Basin – the Salinas River, the Estrella River, and Huer Huero Creek, as shown in Figure 4. There are two ways to acquire rights to use surface water from these streams – a standard surface water diversion permit or a temporary flood flow permit, both discussed below.

Acquiring a standard diversion permit is a lengthy and complicated process. A standard permit is likely to be very difficult to acquire, since any downstream user can protest a permit application. Furthermore, the Salinas River between Salinas Dam and the inlet of the Nacimiento is fully allocated throughout the year, except between January and May 1. The acquisition of a standard water diversion permit was not explored further.

DWR has circulated a proposed approach to streamline applicants that seek to divert water only during high flow events (SWRCB 2018). Under the proposed administrative approach, applicants could apply for a temporary permit to divert flows that exceed the 90^{th} percentile daily flow up to 10 or 20% of the total flow between December 1 and March 31.

For example, the 90^{th} percentile flood flow of the Salinas River for January 26^{th} is 1,250 cfs; however, the 90^{th} percentile flood flow for January 27^{th} is 876 cfs. If the river were to flow at 1,000 cfs for both days, water could only be captured during January 27^{th} but not during January 26^{th}. What this means is that flood flows could only be captured infrequently and the large scale infrastucture required to capture these flows could sit idle many years at a time.

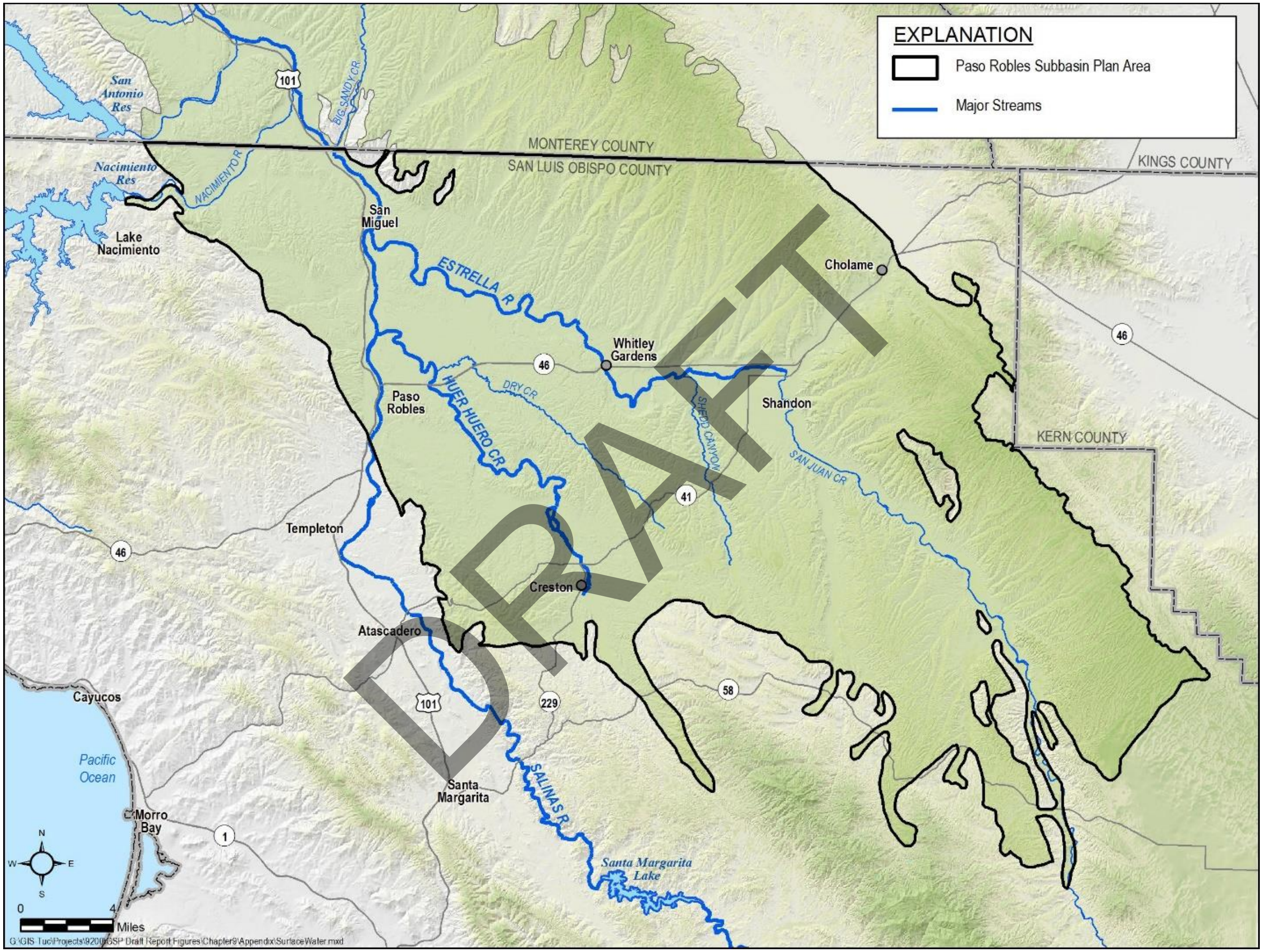

Figure 4: Major Streams in the Paso Robles Subbasin

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WSC 2011. Capacity Assessment of the Coastal Branch, Chorro Valley & Lopez Pipelines. 2011.

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ATTACHMENT 1: MEMORANDUM REGARDING STATE WATER PROJECT EXCESS ALLOCATION

O'Laughlin & Paris LLP Attorneys at Law

MEMORANDUM

To:	HydroMetrics – Paso Robles GSP
From:	OLP
Issue:	San Luis Obispo County Flood Control and Water Conservation District's State Water Project "Excess Allocation"
Date:	June 6, 2018
Client No.:	1902

San Luis Obispo County's State Water Project ("SWP") contract is between the San Luis Obispo Flood Control and Water Conservation District ("District") and the Department of Water Resources ("DWR"). (District SWP Water Supply Contract, at 1.) This Water Supply Contract gives the District the right to 25,000 acre-feet of SWP water each year. (District SWP Water Supply Contract, at 78.) The District then subcontracts its SWP allocation to ten subcontractors.

The SWP water is delivered to the District via the Coastal Branch of the California Aqueduct. Although the District is entitled to 25,000 acre-feet of SWP water each year, contractual provisions from agreements entered during the Coastal Branch's construction substantially limit the District's Coastal Branch conveyance capacity. Consequently, the District possesses an "Excess Allocation," which represents the difference between the District's annual allocation and the water reserved and delivered to its subcontractors. The following discussion begins with a primer on the District's involvement with the SWP. It then addresses the District's Excess Allocation and concludes by discussing factors influencing how much Excess Allocation water is currently available.

I. <u>State Water Project: Coastal Branch – Background.</u>

The SWP is a water storage and delivery system of reservoirs, aqueducts, power plants, and pumping plants extending for more than 600 miles from northern to southern California. ((SLO Technical Memorandum #3, at 3-6) ("Tech. Memo 3").) The California Aqueduct ("Aqueduct") is one of the key features of the SWP by conveying water from the Delta to central and southern California. (*Id.*) Of relevance here, the Coastal Branch of the SWP connects to the Aqueduct approximately 11 miles south of Kettleman City. (*Id.*) The Coastal Branch extends for approximately 160 miles through Kings, Kern, San Luis Obispo, and Santa Barbara Counties and terminates in Northern Santa Barbara County. (*Id.*)

DWR delivers SWP water through the Coastal Branch to two SWP contractors: (1) the District; and (2) the Santa Barbara County Flood Control and Water Conservation District ("SBCFCWCD"), via the Central Coast Water Authority ("CCWA"), a joint powers authority. Both the District and CCWA then subcontract out their SWP entitlements via "Water Supply Agreements" with individual subcontractors. (*Id.*)

The Coastal Branch was constructed in two phases – "Phase I" and "Phase II." (*Id.*) Phase I was completed in 1968 and includes 15 miles of aqueduct and two pumping stations (Las Perillas and Badger Hill). Although Phase I was completed in 1968, SWP water was not delivered to SBFCWCD or the District until Phase II was completed, because the facilities did not reach the District or SBFCWCD end users. (Department of Water Resources Bulletin 132-98, at xxviii.)

Phase II consists of 101 miles of pipeline and extends from the terminus of Phase I to Tank 5, located in Northern Santa Barbara County. (Tech. Memo 3, at 3-9.) Included within Phase II are three pumping stations (Devils Den, Bluestone, and Polonio Pass) as well as the Polonio Pass Water Treatment Plant ("PPWTP"). (*Id.*) After Phase II was completed in August 1997, SWP water was finally delivered to the District and SBCFCWCD. (*Id.*)

The ownership and operation of the Phase II facilities is divided amongst/between DWR, CCWA, and the District. DWR was responsible for the design and construction of all Phase II facilities. (CCWA Urban Water Management Plan 2010, at 3.) Following construction, DWR has retained ownership of Phase II facilities. (*Id.*) In addition, DWR maintains and operates the "raw water portion" of Phase II, which is located "upstream" of the PPWTP. (San Luis Obispo Regional Integrated Water Management Proposal, Attachment 13, at 1-2.)

However, CCWA and the District financed the costs for Phase II's design and construction and continue to finance the operation of Phase II. (*Id.*) CCWA operates the "treated portion" of Phase II, which runs from the PPWTP and encompasses all conveyance facilities from the PPWTP to the end of Phase II in Santa Barbara. (Central Coast Water Authority, 2017-18 Fiscal Budget, at 298.)

The District's delivery of water through Phase II facilities is controlled by the Master Water Treatment Agreement between the District and CCWA. This Agreement provides that CCWA is responsible for treating the District's SWP water at the PPWTP and conveying the treated water through Phase II facilities to District subcontractors. (Tech. Memo 3, at 3-11.) The District only funded its portion of Phase II, which would support the delivery of 4,830 acre-feet per year. Because of the District's decision to fund the Phase II only up to its existing demand, the Water Treatment Agreement limits the delivery of District water to 4,830 acre feet of PPWTP treated water through the Phase II conveyance facilities per year. (*Id.*; Master Water Treatment Agreement 1992 and 1995.)

II. **<u>Quantifying the District's Excess Allocation</u>**

The District's Excess Allocation represents the difference between its SWP entitlement of 25,000 acre-feet per year and the amount of water reserved by its subcontractors. (Tech Memo 3, at 3-10.) As noted above, subcontractor demand is 4,830 acre-feet per year. (*Id.*, at 3-10 to 3-11.) This leaves 20,170 acre feet of excess allocation.

However, the SWP often is not able to deliver 100 percent of contract water to the SWP contractors. Because the SWP allocations are often reduced to below 100 percent delivery, the District also provides its subcontractors the opportunity acquire "drought buffer" deliveries. The purpose of the drought buffer is to maintain full water deliveries to District subcontractors even when SWP allocations are reduced.

The District provides up to 5,747 acre feet of drought buffer allocation per year, as shown in the chart below. The drought buffer works as follows: Envision a subcontractor with a contract for 100 acre-feet of water per year (Water Service Amount) and 100 acre-feet "drought buffer." In a year where SWP allocation are reduced to 50 percent of the contract amount, this subcontractor would still get 100 acre-feet of water because they would get 50 percent of their water service amount (50 acre-feet) and 50 percent of their drought buffer (50 acre-feet).

Subcontractor	Water Service Amount	Drought Buffer	Total Reserved
Chorro Valley Turnout		*~$1,100 per AF*	
City of Morro Bay	1,313	2,290	3,603
CA Men's Colony	400	400	800
County OP Center	425	425	850
Cuesta College	200	200	400
Lopez Turnout		*~$1,000 per AF*	
City of Pismo Beach	1,240	1,240	2,480
Oceano CSD	750	750	1500
San Miguelito MWC	275	275	550
Avila Beach CSD	100	100	200
Avila Valley MWC	20	60	80
San Luis Coastal USD	7	7	14
Shandon	100	0	100
TOTAL	**4,830**	**5,747**	**10,577**

As displayed above, the District's current subcontractors have purchased various quantities of drought buffer rights. In years where SWP allocations are reduced to greater than 50 percent, the District will need to demand almost the entire 10,577 acre feet to serve its subcontractors. This reduces the excess allocation of the District to 14,423 acre-feet per year. ((San Luis Obispo County Water Resources, Division of Public Works: State Water Project, available at: https://www.slocountywater.org/site/Major%20Projects/State%20Water%20Project/) (Accessed May 14, 2018).)

III. How Much of The District's Excess Allocation is Actually Available?

On paper, the District has 14,423 acre-feet in Excess Allocation. However, there are several factors that may make it difficult to access and put the Excess Allocation to beneficial use. Those factors are summarized below.

1. SWP Rarely Delivers 100 Percent of Contractor Allocation

Although the District is entitled to 25,000 acre-feet per year, the actual amount of water delivered to SWP contractors can vary substantially each year. For example, in 2006, the District received 100 percent of its annual allocation. (Tech. Memo 3, at 3-17.) Conversely, in 2014, the District received only 5 percent of its annual allocation. (*Id.*) Carollo Engineers developed a Technical Memorandum on behalf of the District addressing supplemental supply options in the Paso Robles basin.

The Technical Memorandum estimated that future long-term average annual allocation would likely be around 58 percent. (Tech. Memo 3, at 3-30.) In other words, for planning purposes, future SWP deliveries to the District will likely average around 58 percent of the District's 25,000 SWP contract entitlement. (*Id.*) Applying this figure to the District's current Excess Allocation, this means (all other constraints aside) the District could expect to have access to approximately 8,365 acre-feet of excess allocation per year in an average year – rather than 14,432 acre-feet. (14,432 acre-feet x .58 = 8,365.34).

2. Capacity Constraints

As discussed above, the District's Master Water Treatment Agreement limits the District's Phase II capacity to 4,830 acre-feet per year. Thus, even if the District could obtain excess allocation from the SWP, the current Agreement with CCWA limits capacity to 4,830 acre feet per year.

The Technical Memorandum concluded that there is "significant unused capacity" within the SWP Coastal Branch facilities that could be used to deliver additional District SWP water. (Tech. Memo 3, at 3-3.) If there is physical capacity available, it is possible the District and CCWA could negotiate an amendment to the Master Water Treatment Agreement to allow the District to access additional capacity in Phase II facilities. The Master Water Treatment agreement has been amended before (in 1995 to reflect the District's current 4,830 acre-feet limitation). However, that amendment occurred before Phase II was completed in 1997. While the Master Water Treatment has an amendment provision, it does not appear that the agreement has been amended since Phase II came online in August of 1997.

Other than amendment of the Master Water Treatment Agreement between the District and CCWA, there are capacity limitations for the Coastal Branch facilities reaches 1-6 included in the DWR contract for SWP water with SBCFCWCD. (Table B of the SWP/SBCFCWCD Contract.) To the extent these limitations control CCWA, they may restrict CCWA from allocating the District additional capacity in Phase II facilities.

The Master Water Treatment Agreement between CCWA and the District limits the District's capacity on the "treated" portion of Phase II. However, the Master Water Treatment Agreement does not limit the District's capacity to convey water through the "untreated portion" of Phase II (Reach 1) which consists of approximately 16.2 miles of pipeline and three pumping plants (Devils Den, Bluestone, and Polonio Pass). (Tech. Memo 3, at A-3 (Need to review Exhibit E of the Master Water Treatment Agreement to confirm this finding.).) Similarly, the Master Water Service Agreement does not limit District delivery of water through Phase I (completed in 1968). Therefore, if the conveyance capacity challenges above cannot be overcome, there may be an option to access the excess SWP allocation by building a new pipeline or other delivery conveyance structure that separately conveys the excess allocation prior to the "treated" portion of Phase II facilities.

3. Potential Rights of Existing Subcontractors

The District currently has 10 subcontractors. The subcontractors may have certain rights of first refusal on the District's Excess Allocation. Specifically, this right derives from the District's "Excess Entitlement Policy" and may be further included in each subcontractor's Local Water Supply Contract with the District.

In 2003, the District developed a series of Excess Entitlement policies. (Tech. Memo 3, at 3-10 to 3-11 (San Luis Obispo Board of Supervisors, *Policy on Excess State Water Supply*, January 2003).) In relevant part, these policies provide that prior to transferring the District's Excess Allocation for "any other use," subcontractors of the District's SWP water with capacity in Phase II must have the "first right" to utilize the Excess Allocation for "drought buffer" purposes. (San Luis Obispo Board of Supervisors, *Policy on Excess Water State Water Supply*, at 1.) The process by which subcontractors acquire excess allocation is unclear as are any potential limitations on acquisition of future drought buffer quantities from the District.

5. The District's Current Excess Allocation Activities

In recent years, the District has leveraged its Excess Allocation via DWR sanctioned water sales, stored the water for future use, and (potentially) engaged in an exchange program with CCWA. For example, in 2013 the District participated in a DWR sanctioned "Multiyear Water Pool" program whereby it sold 19,404 acre-feet of water to other SWP contractors. (DWR Bulletin 132-14, at 169.)

Additionally, the District has also stored portions of its Excess Allocation for use in the following year. An example of this is the SWP's "carryover water" program. This program permits SWP contractors to carryover a portion of its allocated water approved for delivery in the current year for delivery during the following year. (Tech. Memo 3, at 3-14.) In 2014, when the SWP delivered only 5 percent of contractors' entitlements, the District delivered 2,693 acre-feet of carryover water. (DWR Bulletin 132-15, at Table 9-8.)

In addition to water sales and carryover storage, in 2016, the District attempted to implement an "exchange program" with CCWA. In this program, the District proposed to exchange some of its "wet water" in storage for pipeline and treatment capacity above its current 4,830 acre-feet limitation. (SLO Department of Public Works, Report of J. Ogren, at 3 (December 13, 2016).) The proposed exchange was structured as a 2 for 1 program whereby for every two acre-feet of water the District provided to CCWA in excess of the District's annual

4,830 acre-feet limitation, CCWA would get to keep one acre-foot and CCWA would treat and then convey the other acre-foot to the District's subcontractors. (*Id*. (emphasis added).) It is unclear if this proposed program was implemented. However, the fact that the District proposed this program suggests the District is making efforts to utilize its Excess Allocation.

4. Acquisition of the District's Excess Allocation.

All other limitations aside, the GSA should consider if there were Excess Allocation available, how it would acquire this water from the District. This consideration should include (1) the relationship between the District and the County and whether the District would allow the County to use the Excess Allocation; (2) whether the GSA could become a District subcontractor; (3) whether any other entity could become a District subcontractor; (4) negotiations of which entities would pay for the Excess Allocation and/or increased capacity

IV. **Outstanding Questions**.

The following are outstanding questions at this time:

1. What is the extent of the the subcontractor right of first refusal to Excess Allocation? Is it limited to drought buffer rights? Or do subcontractors have right to refuse all excess allocation?

2. Is it possible to negotiate increased capacity in Phase II facilities with CCWA?

3. What are the estimated costs for conveyance facilities to divert water above the PPWTP and deliver to the GSA service area?

V. **Conclusion and Next Steps**.

The major limiting factors in accessing Excess Allocation include: (1) SWP delivery shortages; (2) limited capacity in Phase II facilities; and (3) the (potentially) superior rights of existing subcontractors.

***

APPENDIX I – TECHNICAL PROJECT INFORMATION

This document provides an overview of the assumptions used to develop projects and costs in Chapter 9 of the Paso Robles GSP. Assumptions need to be checked and tested during the pre-design phase of each project. Project designs, and therefore costs, could change considerably as more information is gathered.

1.1 Year-to-Year Variability in Water Supply Amount

All water supplies being considered to supplement the Paso Subbasin are rainfall dependent and therefore vary year to year in the amount available for supply. To make use of the available long-term average annual average water supply, projects and infrastructure such as pipes and pump stations must be sized for the highest flows that could occur. The highest available flows, as well as the long-term expected averages for SWP and NWP are presented in Table 1.

Table 1: Long-term Average and High Flow Available

Supply	Long-term Average (AFY)	Highest Flow (AFY)
SWP	8,860	14,770
NWP	5,800	7,270

1.2 Seasonal Variability in Demand

Injection and recharge basin projects were sized to deliver flow steadily throughout the year with no seasonal variation. Direct delivery projects were sized to deliver water according to seasonal fluctuations in demand.

1.3 Daily Variability in Demand

No daily variation in demand was assumed for any projects. For irrigation projects, water for each day would be delivered over a 24-hour period, even though irrigation might typically occur over a 12-hour or less window. This would require farmers to have onsite storage and pumps. All onsite improvements for direct users are assumed to be developed by individual land owners.

1.3.1 Recycled Water Projects

The two recycled water Projects described in the GSP are planned projects being implemented by the City of Paso Robles and San Miguel CSD. The Paso Robles project is currently underway, with design expected to be complete by 2019 and construction to be complete by 2021. Pipeline alignments, costs, and delivery amounts were obtained from the project design 60% design information.

The San Miguel project is not as far along as that of Paso Robles. Some conceptual information is known; however, exact pipelines, customers, flows, and costs have not been determined yet. To obtain a cost for the purposes of the GSP, the project team came up with a potential design for a San Miguel RW project – one that sends half the flow to the eastern customers, and another half of the flow to western customers. The actual design is to be determined.

1.3.1 SWP Direct Injection Projects

The well production capacity in this region is assumed to be 400 gpm, based on County information (SLOCFCWCD 2008). The injection to production capacity ratio was assumed to be 0.75. Therefore, the design injection flow rate per well was determined as 300 gpm.

Infrastructure was sized to handle the flow available in wet years, such as years with 100% SWP delivery, to take advantage of the full SWP allocation. The southern Creston injection site was sized for 5,000 AFY to provide a long-term annual average of 3,000 AFY. The northern Creston site was sized for 9,670 AFY to provide a long term annual average injection of 5,800. No seasonal variability was assumed for these projects. It was assumed that water could be delivered year-round and 24 hours per day.

Using the assumptions listed above, the southern Creston project required infrastructure sized for 3,090 gpm to supply a total of 11 wells. A 14” diameter supply line was sufficient for this supply. The northern Creston project required infrastructure sized for 6,000 gpm to supply a total of 20 wells. A 20” diameter supply line was sufficient for this supply.

Wells were assumed to require at least 50 psi at the wellhead to sufficiently inject the water into the aquifer.

The southern Creston injection project is located adjacent to and downhill from the SWP Coastal Branch pipeline, at a distance of approximately 4,500 ft with a 35’ elevation difference. Previous studies have shown that the SWP Coastal Branch likely has sufficient capacity and pressure to use the pressure off of the SWP Coastal Branch to deliver water to the southern Creston project. Therefore, no pump station was assumed necessary for the southern Creston project.

The northern Creston injection project is located 7.7 miles away from the SWP Coastal Branch, and is approximately 187’ lower in elevation. Only minor intermediate elevation gains appear along the pipeline path. Therefore, no pump station was assumed necessary for this project.

Wells in both well fields were spaced 500’ apart to account for a radius of influence of approximately 250’. Approximately 38 acres are required for the southern Creston well field, and 72 acres are required for the northern Creston well field. This land would need to be purchased from existing land owners. Land owners could also lease sections of land for the injection project, while maintaining use of most of the land for other purposes.

Typically, some chlorine residual in the injected water is desired to suppress bacterial growth on the well screens. It was assumed that SWP water already contains sufficient chlorine residual such that chlorine does not need to be added or removed.

A pilot study at the location of each project site would need to be conducted to check the assumptions stated herein, specifically related to injection rates. A pilot study is included in each project cost.

1.3.2 Recharge Basin Projects

All recharge basin projects were sized assuming an infiltration rate of 0.5’ per day. Recharge basins were assumed to receive water consistently throughout the year, with no seasonal variation in water delivery.

The locations of all three recharge basin projects were selected to be close enough to the supply pipelines such that a pump station would not be required to deliver water to the recharge site. If land close to supply lines cannot be procured, these projects might require a pump station, which would increase project cost.

1.3.3 Direct Delivery Projects

The three NWP direct delivery projects were selected and sized to offset pumping throughout the eastern central region of the Subbasin and even out projected water levels.

Seasonal variation of demand (by month) was assumed in each region to follow patterns based on 2015 agricultural pumping demand curves modeled in the GSP model. Assumed peaking factors by month are shown in Table 2.

Table 2: Agricultural Demand Peaking Factors, by Month

Month	Peaking Factor
January	0.00
February	0.00
March	0.7
April	2
May	1.6
June	2.5

July	2
August	1.1
September	1.2
October	0.7

Pipelines were sized to deliver supply commensurate with the amount of NWP water that would be available during a wet year (Table 1). Table 3 shows the amount of peak and average demand met by each project in the project region.

Table 3: Peak and Average Demand and Deliveries for Direct Delivery Projects

	North	Central[1]	Eastern
Peak Monthly Demand (gpm)	15,920	2,640	5,500
Max Pipeline Delivery (gpm)	2,960	1,260	2,480
Average annual demand (AFY)	10,415	1,725	3,600
Annual water delivered, wet year (AFY)	3,510	1,250	2,510
Notes: **1. Demands for this area are those remaining demand after accounting for recycled water deliveries (from the modified baseline model run).**			

Pipelines were sized to deliver demand at all hours of the day regardless of the time period required for irrigation. This assumption was made to reduce the pipeline diameter and pump station requirements; however, this assumption requires that farmers have daily on-site storage to collect water from the pipeline during times when they're not irrigating. The cost of on-site storage and other on-site improvements was not included in the cost estimates.

Water from the NWP might have water quality that is problematic for irrigation systems; the NWP pipeline carries untreated reservoir water that can be high in metals and contain algae that that could clog or foul drip irrigation or sprinkler heads. No treatment was assumed in the project costs; however, water quality would need to be analyzed and a small pilot study conducted to determine if any water quality adjustment would be required. Alternatively, different irrigation techniques or operational changes may need to be utilized with NWP water deliveries. This could be determined in a pilot study.

1.3.4 Local Recharge Projects

The perennial rivers that flow through the Paso Robles Basin can be engorged with flood water for several weeks at a time while remaining dry for most of the year. Historical water levels on the Estrella River, Huer Huero Creek, and the Salinas River were analyzed to determine the frequency, length, and volume of flow imparted by these flood events.

Legal issues were also considered to determine how much water could feasibly be extracted for a local recharge project. A standard surface water diversion permit would theoretically allow for more water to be extracted from a river; however, the process for obtaining a standard surface water permit is extremely lengthy and complicated. The Salinas River between Salinas Dam and the Nacimiento confluence is fully allocated except between Jan 1 – May 15; and, permit applications would be subject to protest from all existing upstream and downstream permit-holders.

DWR may introduce a streamlined surface water permit for GSAs to extract water during flood flows. The draft concept of the temporary permit is to allow the diversion of flood flows between December 1 and March 31. The diversions can only legally occur on days when the volume of flow in the river is greater than the 90th percentile flow for that particular day of the year. This concept is described in detail in Appendix H.

Though the volume of water available during floods is considerable, the infrastructure required to divert a large volume would also need to be sizeable. The volume of stormwater that could be captured from the Salinas River under the draft streamlined permit was computed for three different sized systems. Flood flows for the last 30 years (1989-2018) were used to simulate the diversions, which were set to occur only on days between January 1 and March 31 with flood flows higher than the 90th percentile flood flow. The results are shown in Table 4.

Table 4: Simulated Volume Diverted from the Salinas River under the Draft Streamlined Permit over a Thirty-Year Period for Different System Sizes

System Size (cfs)	Recharge basin size (acres)	Volume captured over the 30 year period (AF)	Average annual captured (AFY)
10	40	4,900	165
40	160	20,400	645
80	315	38,000	1,260

It is worth noting that, over the 30-year simulated period, the stormwater diversion infrastructure would have been activated for a total of 250 days (an average of 8 days per year). Costs are provided for the 10 cfs system. Water would be extracted via radial Ranney wells, which are built to draw water from the alluvium and do not require in-river infrastructure.

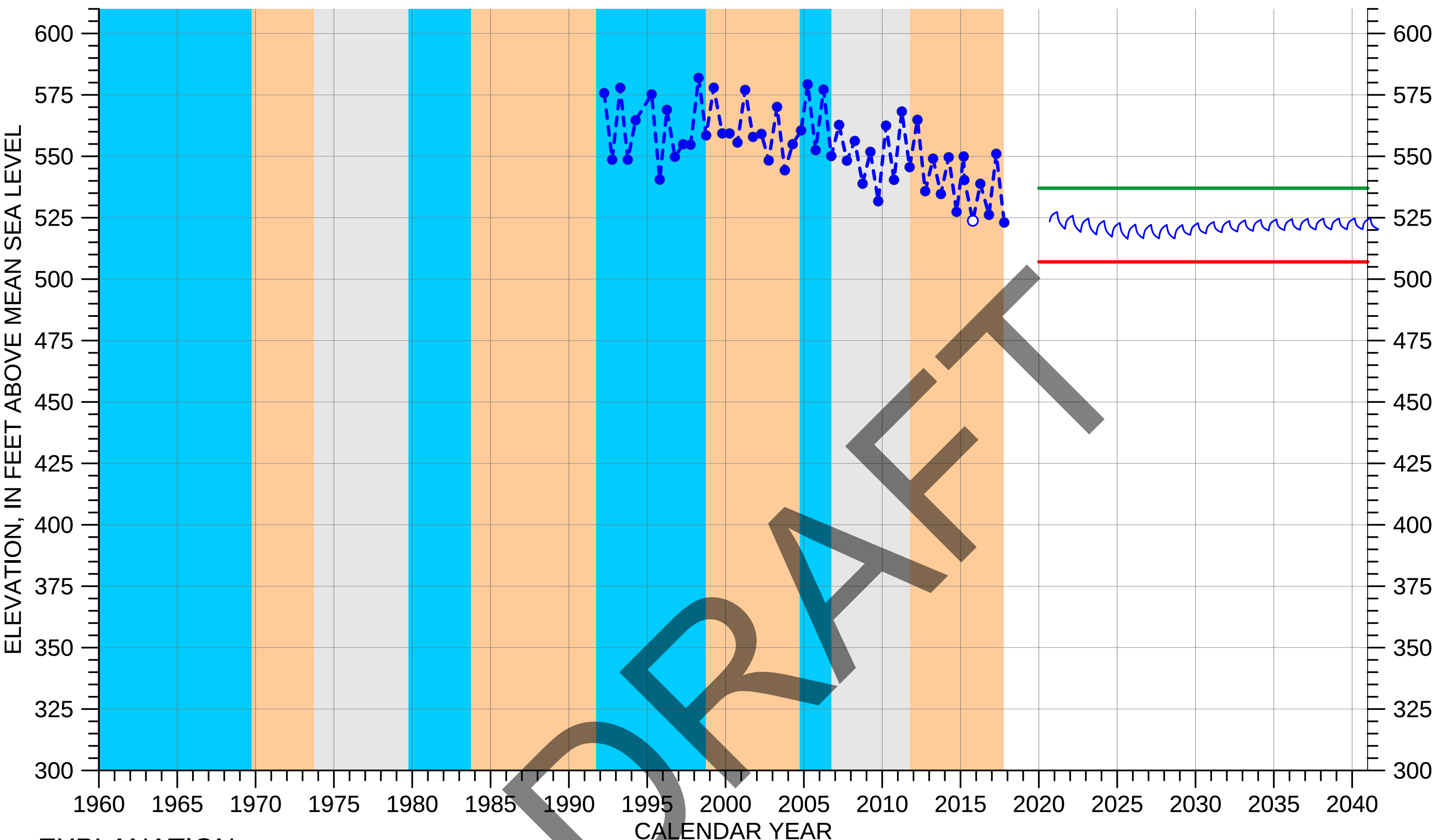
1.3.5 Salinas Dam Expansion

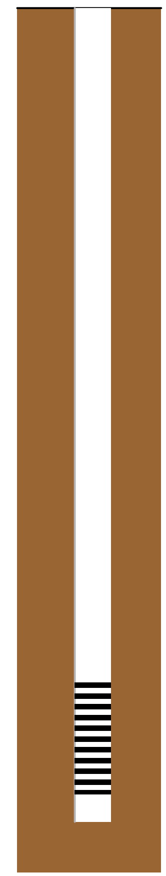
Information regarding the Salinas Dam expansion was obtained from SLOCFCWCD.

REFERENCES

SLOCFCWCD 2008. Paso Robles Groundwater Subbasin Water Banking Feasibility Study. Final Report. San Luis Obispo County Flood Control and Water Conservation District. April 2008.

APPENDIX J





EXPLANATION

GROUNDWATER ELEVATION

MEASUREMENT NOT VERIFIED*

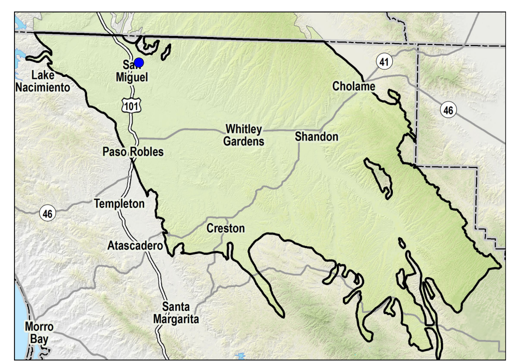
MEASURABLE OBJECTIVE

MINIMUM THRESHOLD

PROJECTED GROUNDWATER ELEVATION

CLIMATE PERIOD CLASSIFICATION

DRY AVERAGE/ALTERNATING WET



Well Depth: 350 feet
Screened Interval: 300-310, 330-340 feet below ground surface
Reference Point Elevation: 669.8 feet above mean sea level

* Measurement reported as not static

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 25S/12E-16K05

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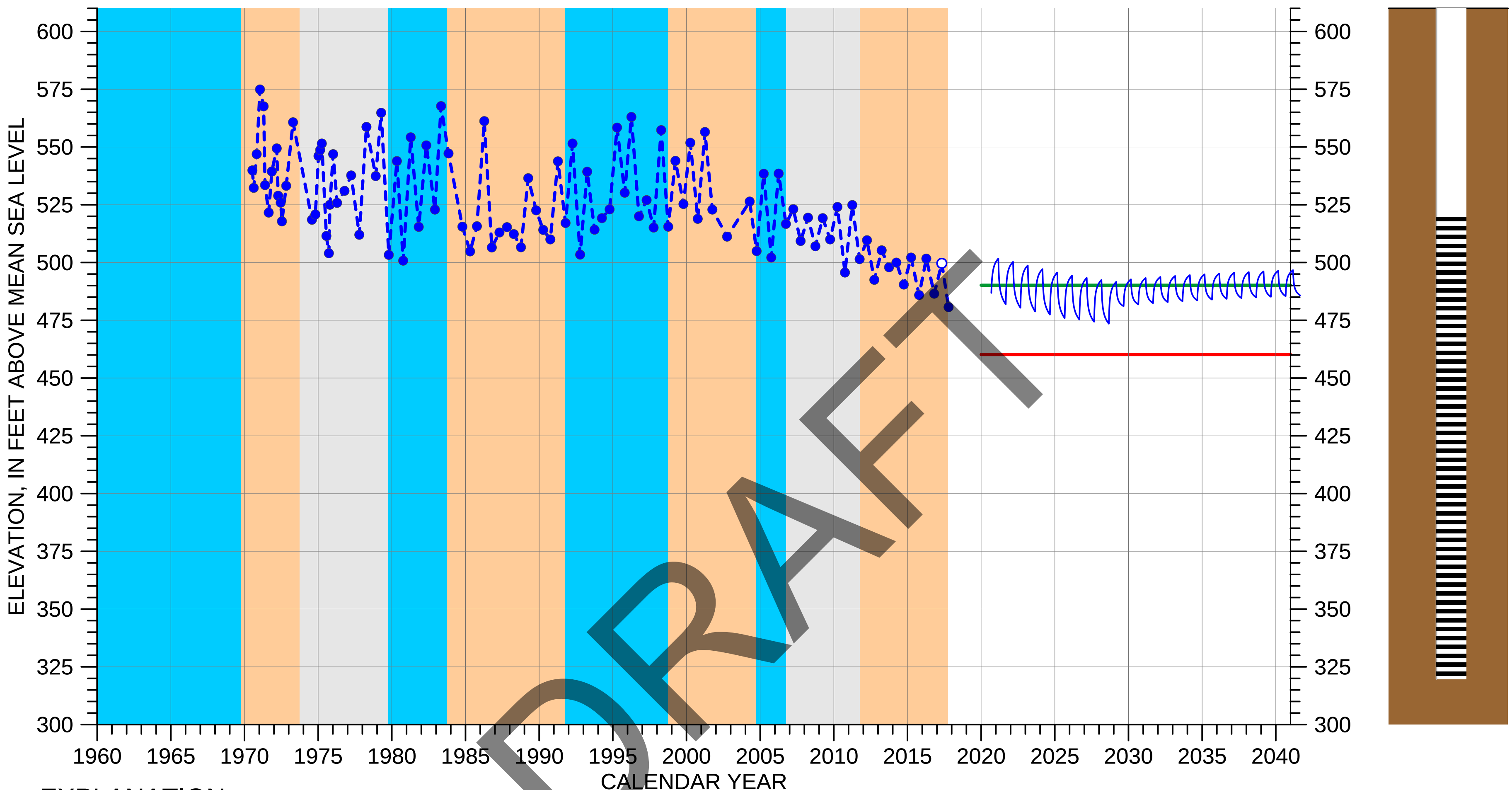

EXPLANATION

GROUNDWATER ELEVATION

MEASUREMENT NOT VERIFIED*

MEASURABLE OBJECTIVE

MINIMUM THRESHOLD

PROJECTED GROUNDWATER ELEVATION

CLIMATE PERIOD CLASSIFICATION

DRY AVERAGE/ALTERNATING WET

Well Depth: 400 feet
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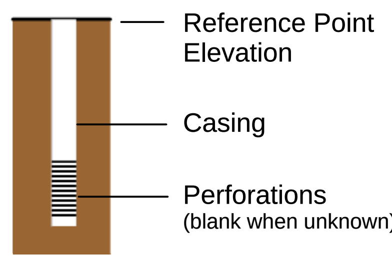
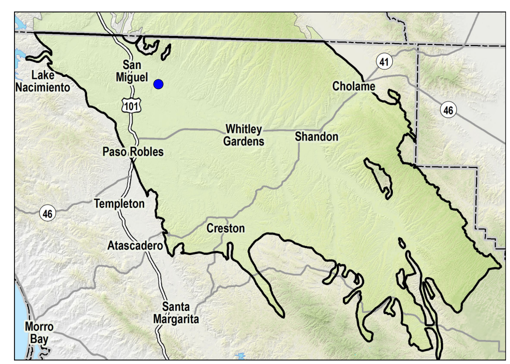
Reference Point Elevation: 719.7 feet above mean sea level

* Measurement reported as not static





HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 25S/12E-26L01

MONTGOMERY & ASSOCIATES

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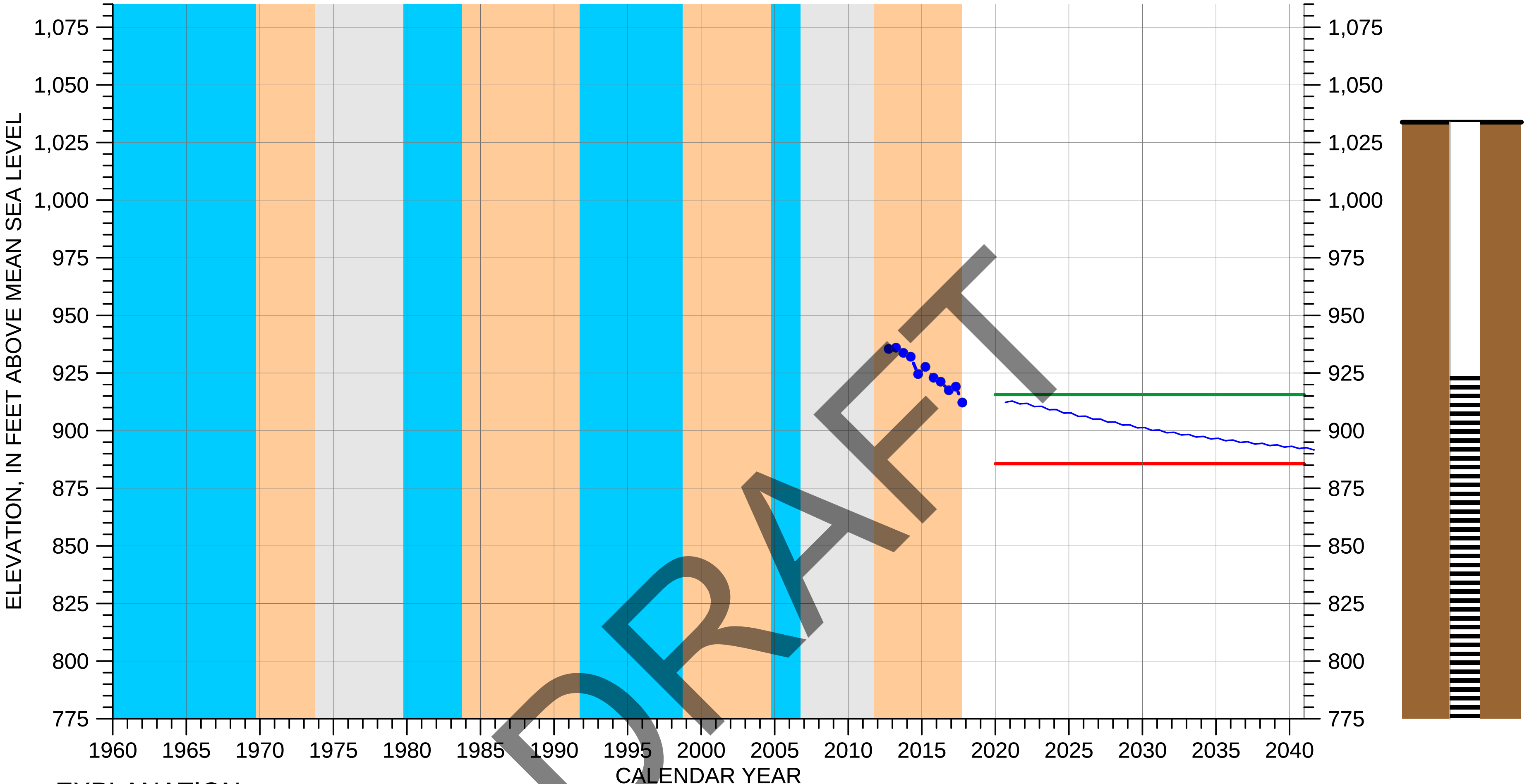


EXPLANATION

GROUNDWATER ELEVATION

MEASUREMENT NOT VERIFIED*

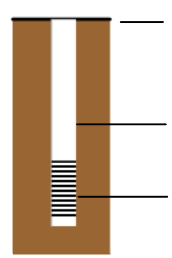
MEASURABLE OBJECTIVE

MINIMUM THRESHOLD

PROJECTED GROUNDWATER ELEVATION

CLIMATE PERIOD CLASSIFICATION

DRY AVERAGE/ALTERNATING WET



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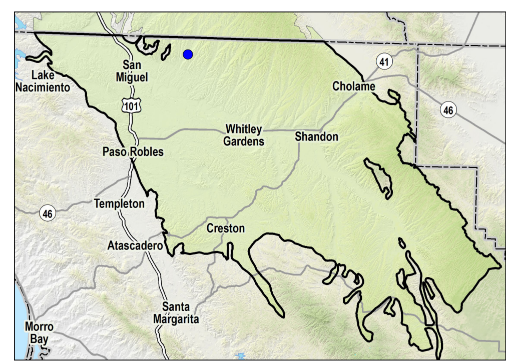
Reference Point Elevation: 1033.8 feet above mean sea level

* Measurement reported as not static



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HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 25S/13E-08L02

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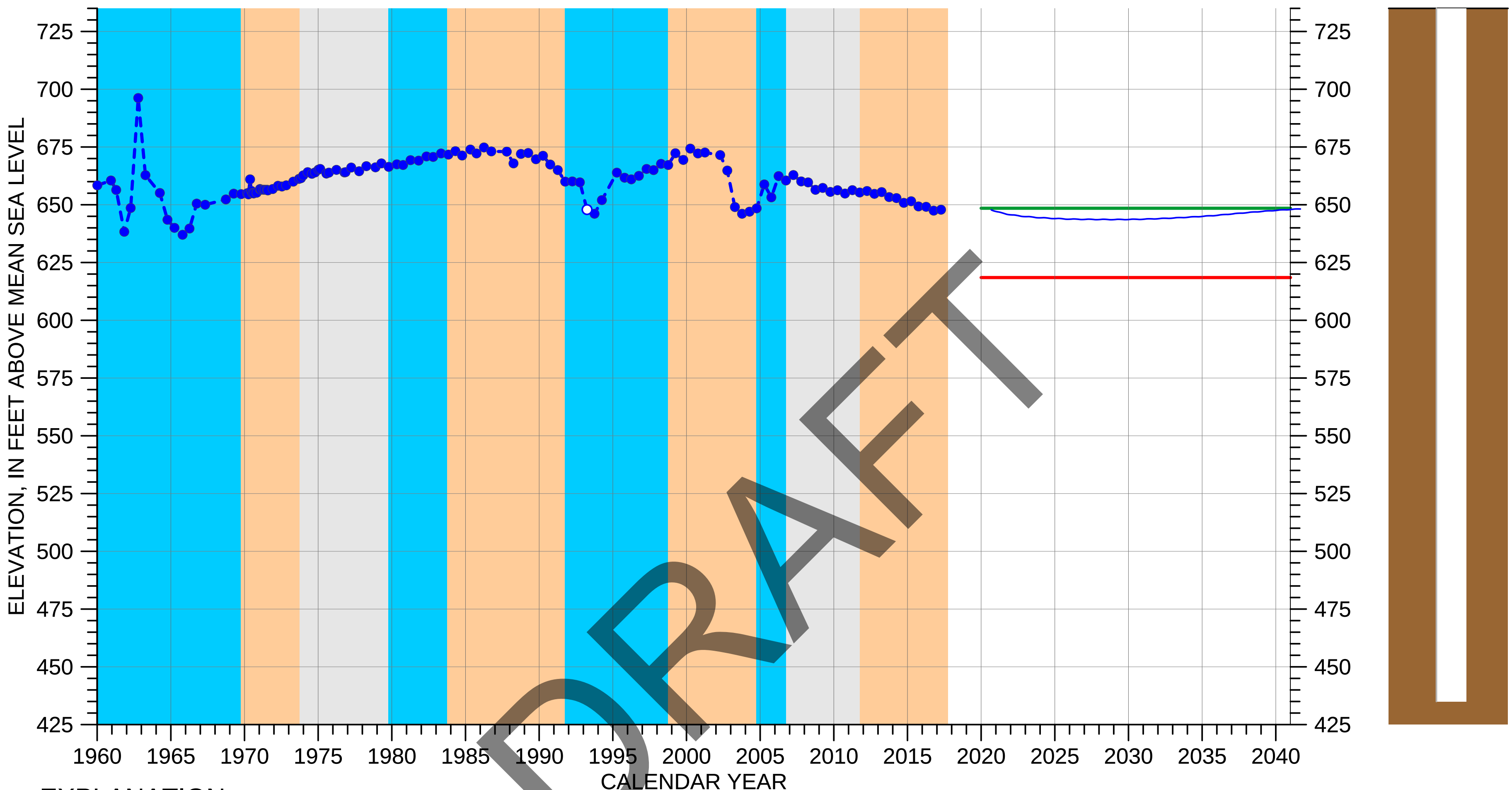


EXPLANATION

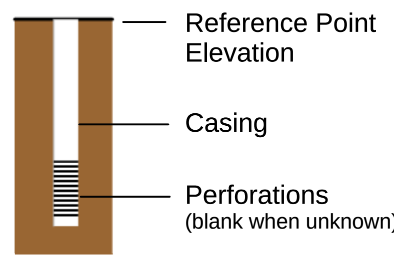
GROUNDWATER ELEVATION

MEASUREMENT NOT VERIFIED*

MEASURABLE OBJECTIVE

MINIMUM THRESHOLD

PROJECTED GROUNDWATER ELEVATION



CLIMATE PERIOD CLASSIFICATION

DRY AVERAGE/ALTERNATING WET

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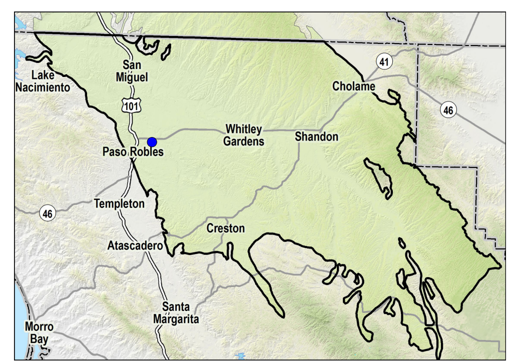
Reference Point Elevation: 835 feet above mean sea level

* Measurement reported as not static



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HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 26S/12E-26E07

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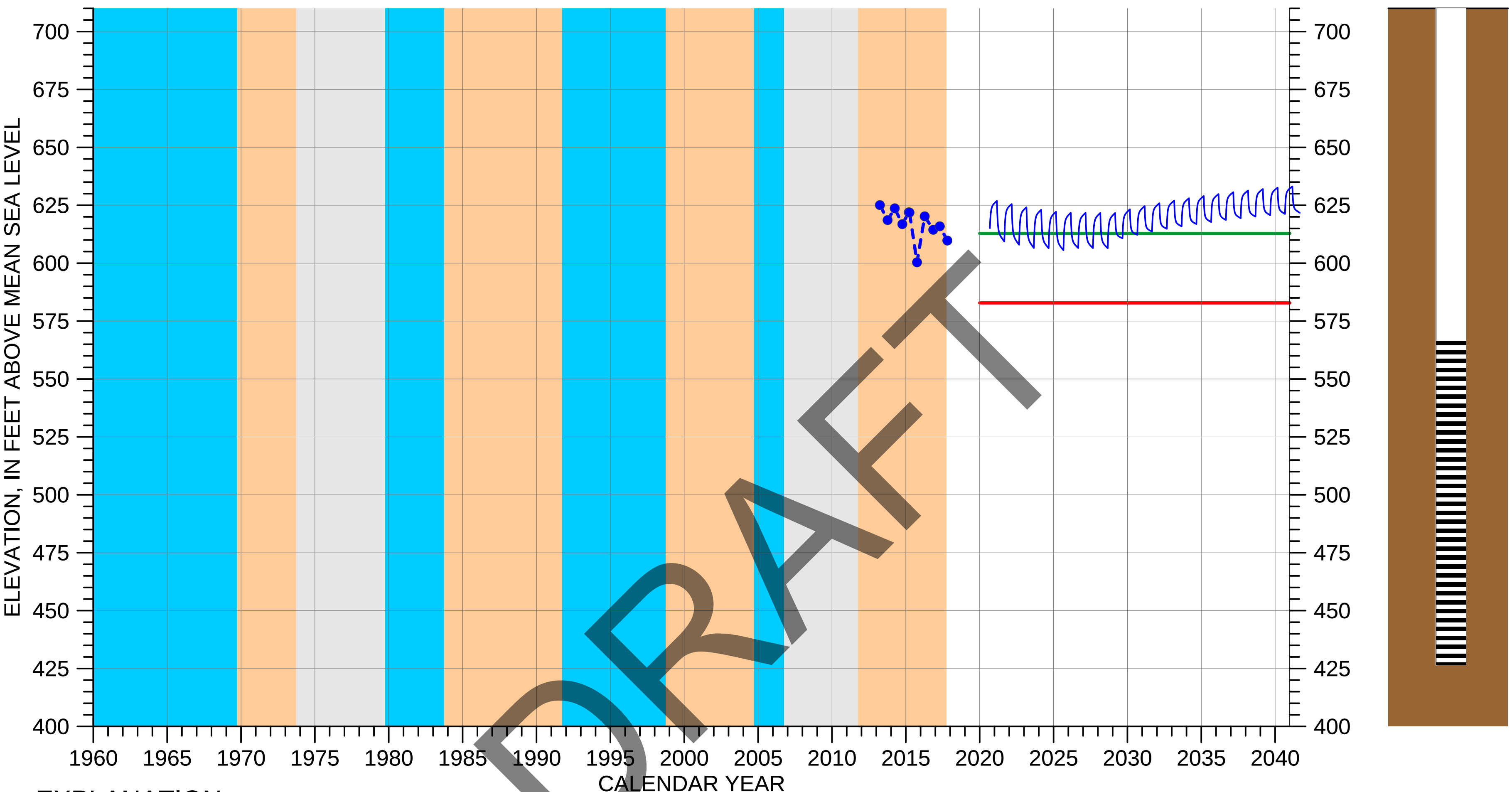


EXPLANATION

GROUNDWATER ELEVATION

MEASUREMENT NOT VERIFIED*

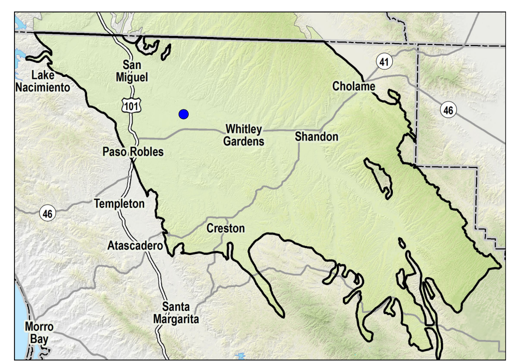
MEASURABLE OBJECTIVE

MINIMUM THRESHOLD

PROJECTED GROUNDWATER ELEVATION

CLIMATE PERIOD CLASSIFICATION

DRY   AVERAGE/ALTERNATING   WET



Well Depth: 400 feet
Screened Interval: 260-400 feet below ground surface
Reference Point Elevation: 827.9 feet above mean sea level

* Measurement reported as not static

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HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 26S/13E-08M01

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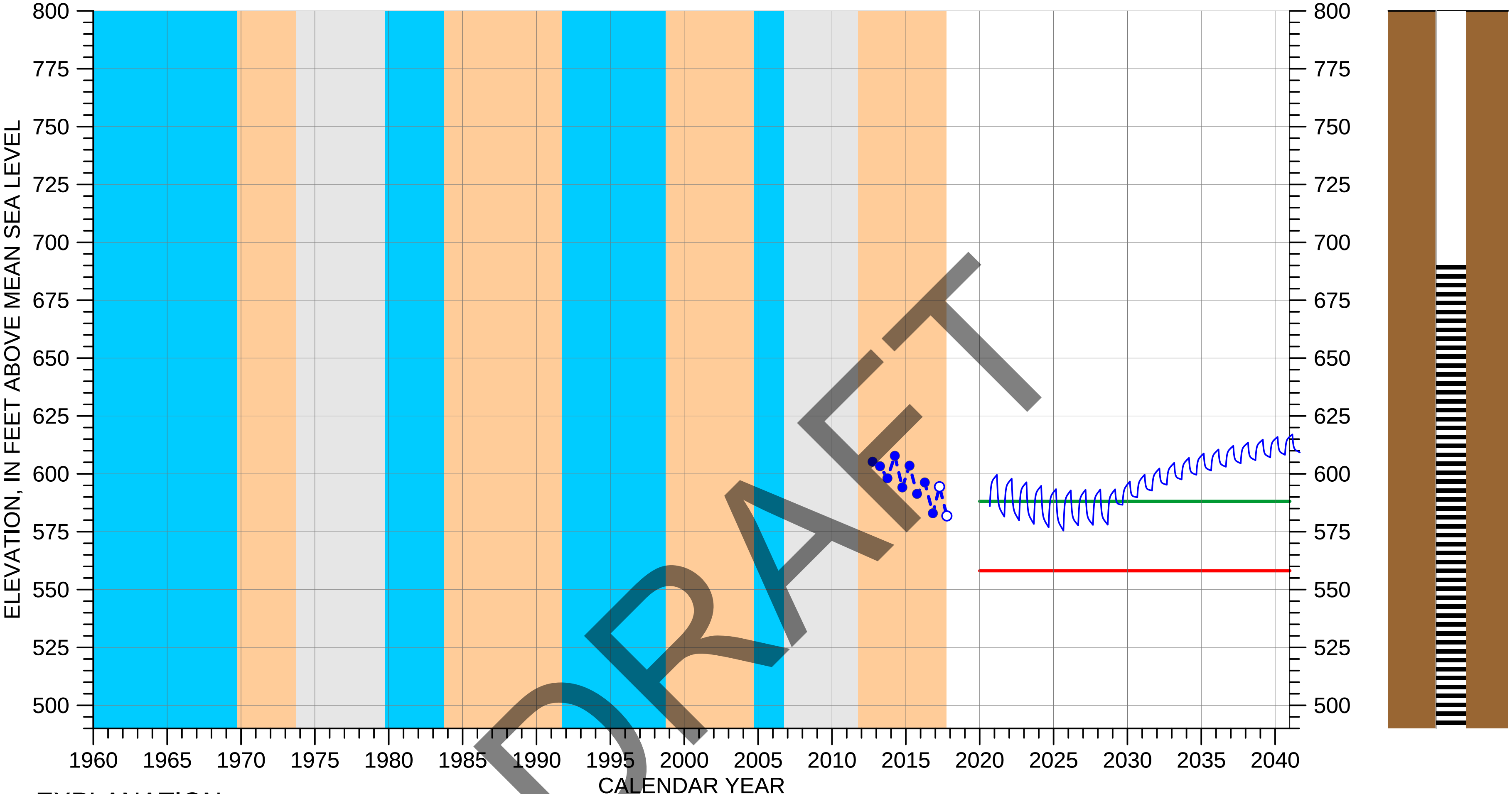


EXPLANATION

GROUNDWATER ELEVATION

MEASUREMENT NOT VERIFIED*

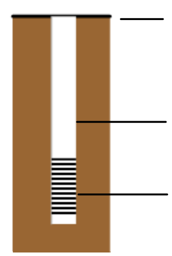
MEASURABLE OBJECTIVE

MINIMUM THRESHOLD

PROJECTED GROUNDWATER ELEVATION

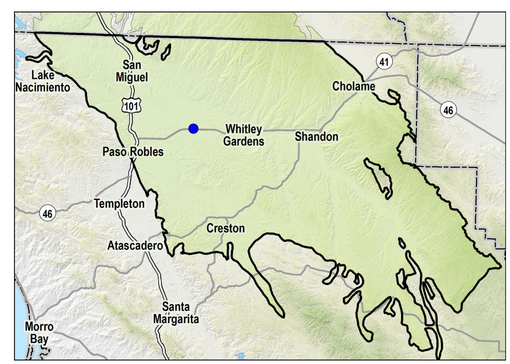
CLIMATE PERIOD CLASSIFICATION

DRY AVERAGE/ALTERNATING WET



Well Depth: 400 feet
Screened Interval: 200-400 feet below ground surface
Reference Point Elevation: 890.2 feet above mean sea level

* Measurement reported as not static



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HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 26S/13E-16N01

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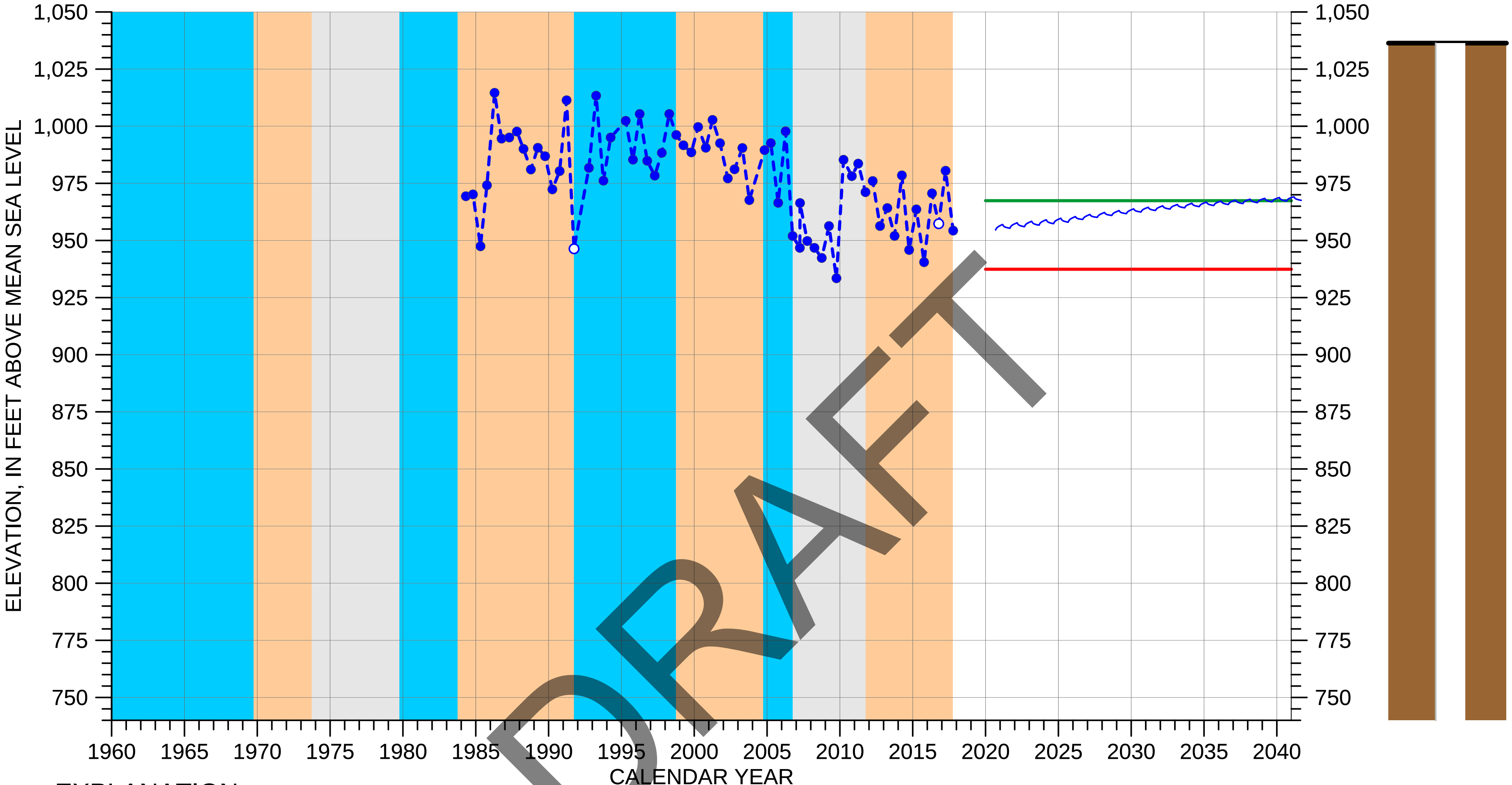


EXPLANATION

GROUNDWATER ELEVATION

MEASUREMENT NOT VERIFIED*

MEASURABLE OBJECTIVE

MINIMUM THRESHOLD

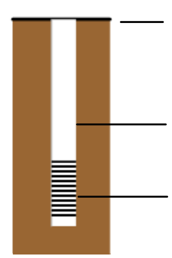
PROJECTED GROUNDWATER ELEVATION

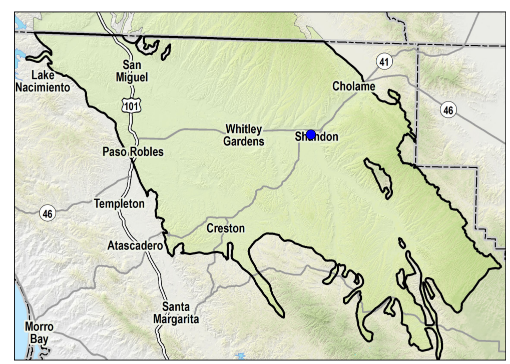
CLIMATE PERIOD CLASSIFICATION

DRY AVERAGE/ALTERNATING WET

Well Depth: 461 feet
Screened Interval: 297-461 feet below ground surface
Reference Point Elevation: 1036.36 feet above mean sea level

* Measurement reported as not static





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HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 26S/15E-20B04

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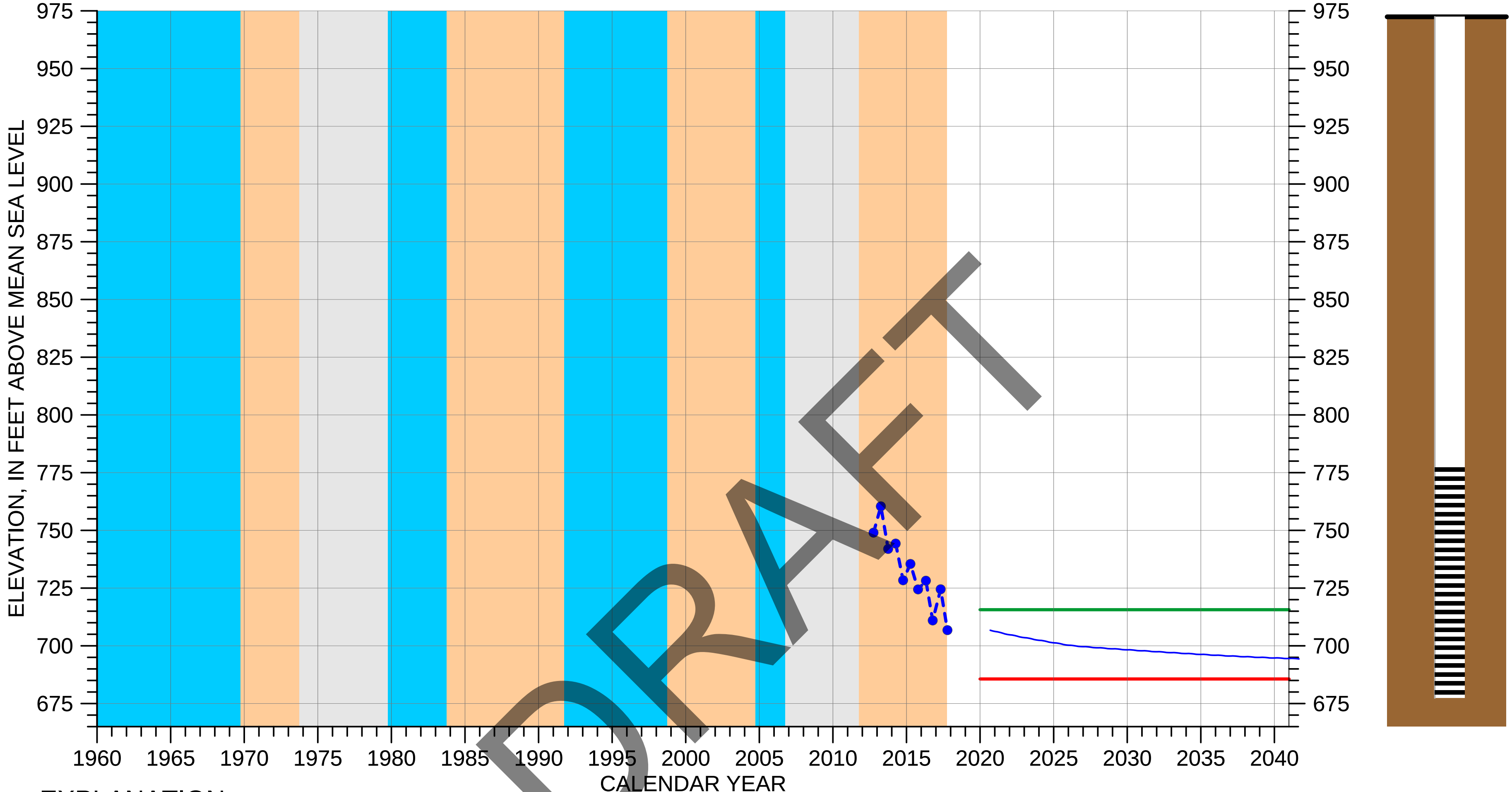


EXPLANATION

GROUNDWATER ELEVATION

MEASUREMENT NOT VERIFIED*

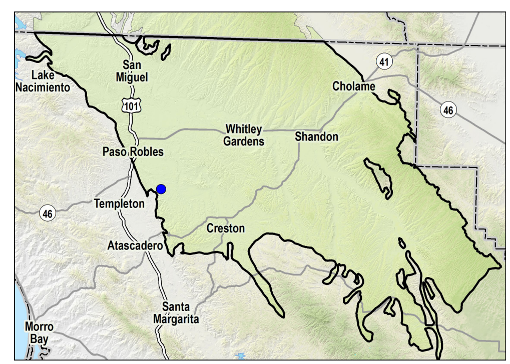
MEASURABLE OBJECTIVE

MINIMUM THRESHOLD

PROJECTED GROUNDWATER ELEVATION

CLIMATE PERIOD CLASSIFICATION

DRY AVERAGE/ALTERNATING WET



Well Depth: 295 feet
Screened Interval: 195-295 feet below ground surface
Reference Point Elevation: 972.4 feet above mean sea level

* Measurement reported as not static

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 27S/12E-13N01

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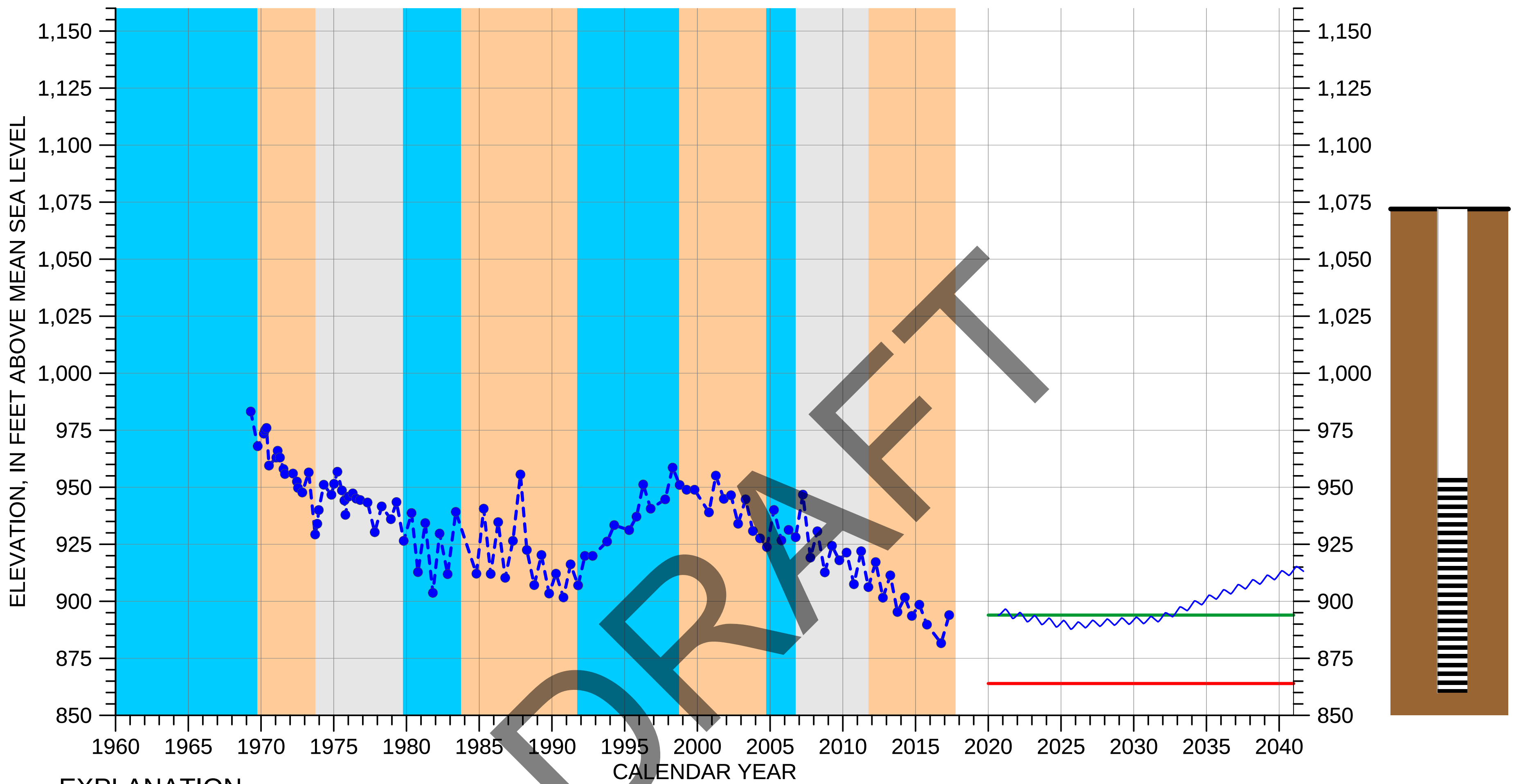


EXPLANATION

GROUNDWATER ELEVATION

MEASUREMENT NOT VERIFIED*

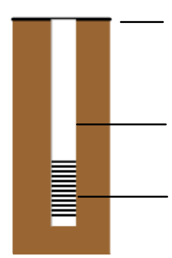
MEASURABLE OBJECTIVE

MINIMUM THRESHOLD

PROJECTED GROUNDWATER ELEVATION

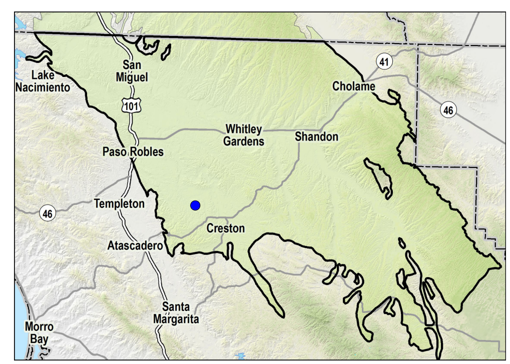
CLIMATE PERIOD CLASSIFICATION

DRY　AVERAGE/ALTERNATING　WET



Well Depth: 212 feet
Screened Interval: 118-212 feet below ground surface
Reference Point Elevation: 1072 feet above mean sea level

* Measurement reported as not static



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HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 27S/13E-28F01

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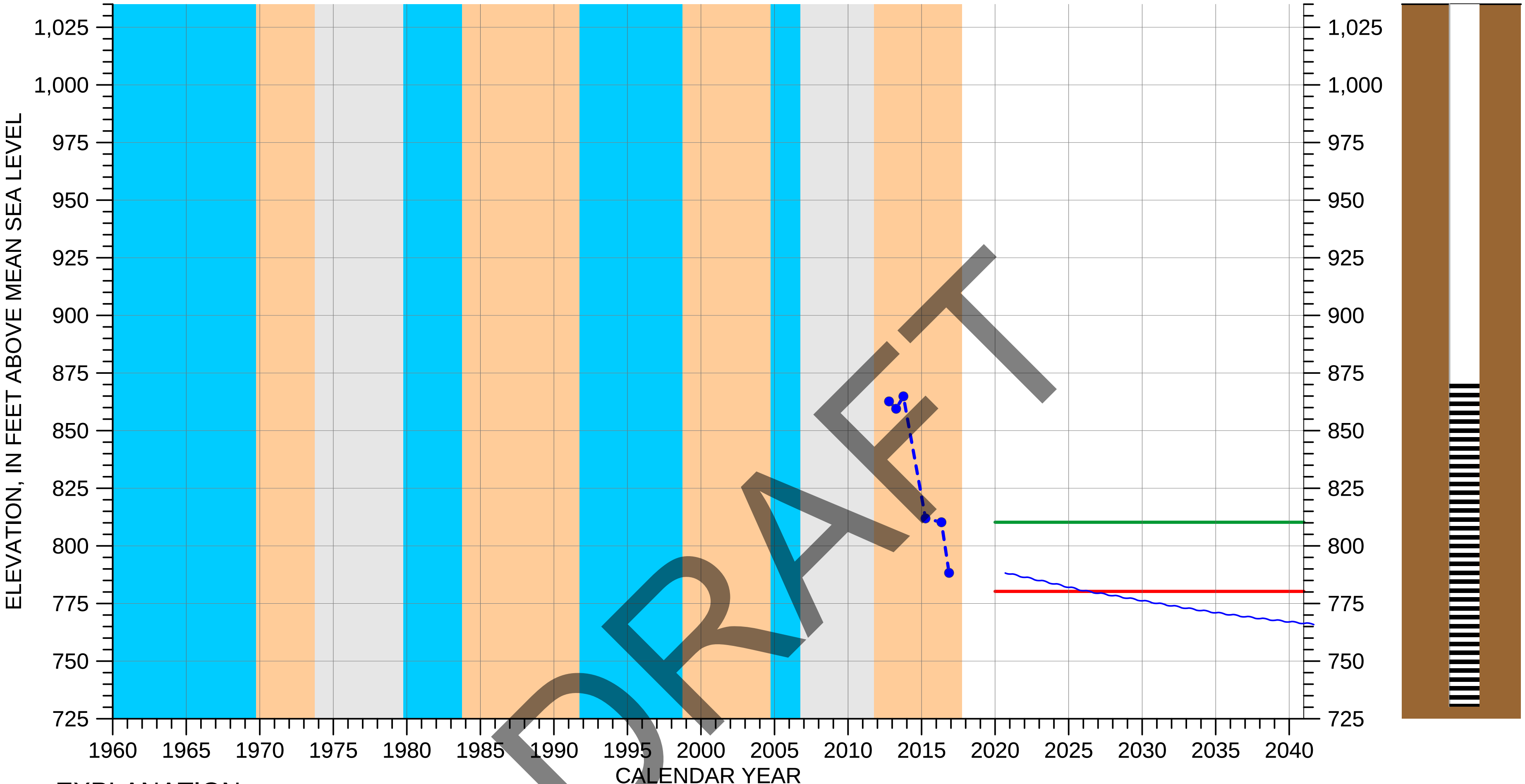


EXPLANATION

- GROUNDWATER ELEVATION
- MEASUREMENT NOT VERIFIED*
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD
- PROJECTED GROUNDWATER ELEVATION

CLIMATE PERIOD CLASSIFICATION

DRY AVERAGE/ALTERNATING WET

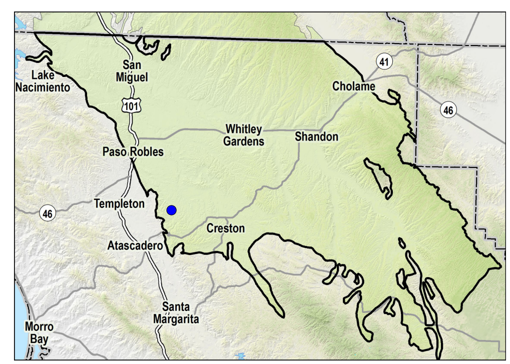
Reference Point Elevation

Casing

Perforations
(blank when unknown)

Well Depth: 355 feet
Screened Interval: 215-235, 275-355 feet below ground surface
Reference Point Elevation: 1086.7 feet above mean sea level

* Measurement reported as not static



HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 27S/13E-30N01

MONTGOMERY & ASSOCIATES

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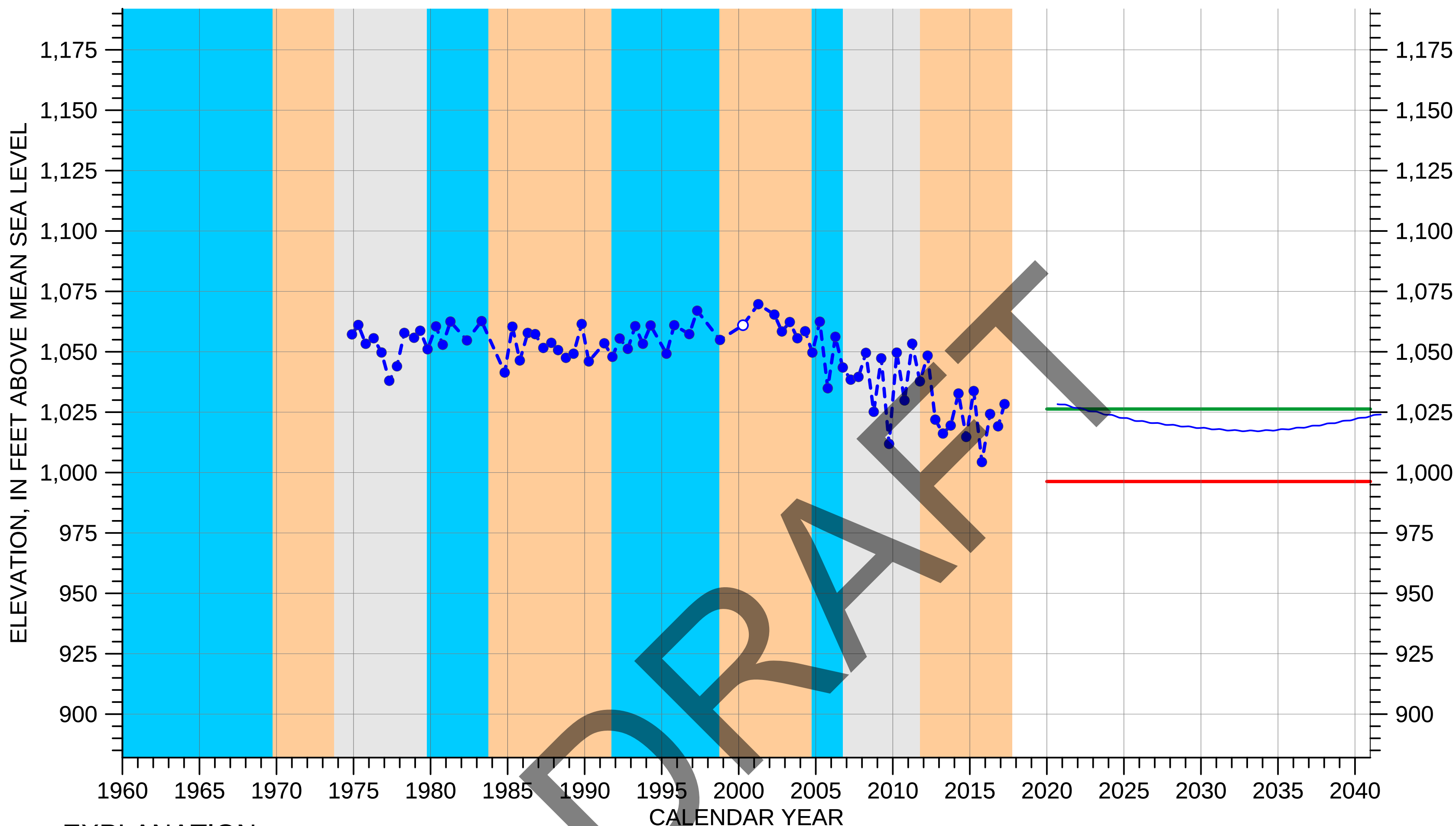


EXPLANATION

GROUNDWATER ELEVATION

MEASUREMENT NOT VERIFIED*

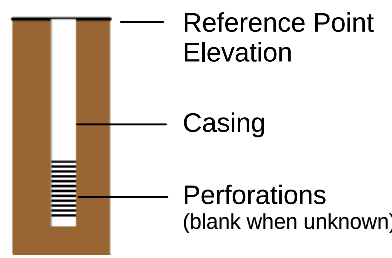
MEASURABLE OBJECTIVE

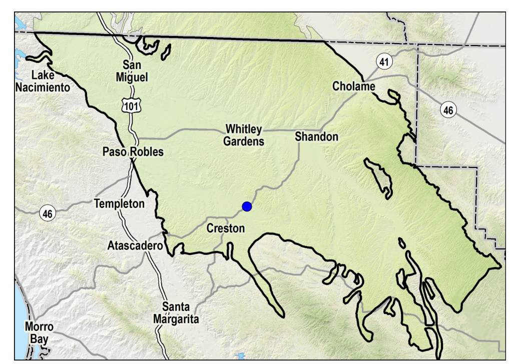
MINIMUM THRESHOLD

PROJECTED GROUNDWATER ELEVATION

CLIMATE PERIOD CLASSIFICATION

DRY AVERAGE/ALTERNATING WET





Well Depth: Lower Paso Robles Formation (GSSI, 2016)
Screened Interval: unknown
Reference Point Elevation: 1201.5 feet above mean sea level

* Measurement reported as not static

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 27S/14E-29G01

MONTGOMERY & ASSOCIATES

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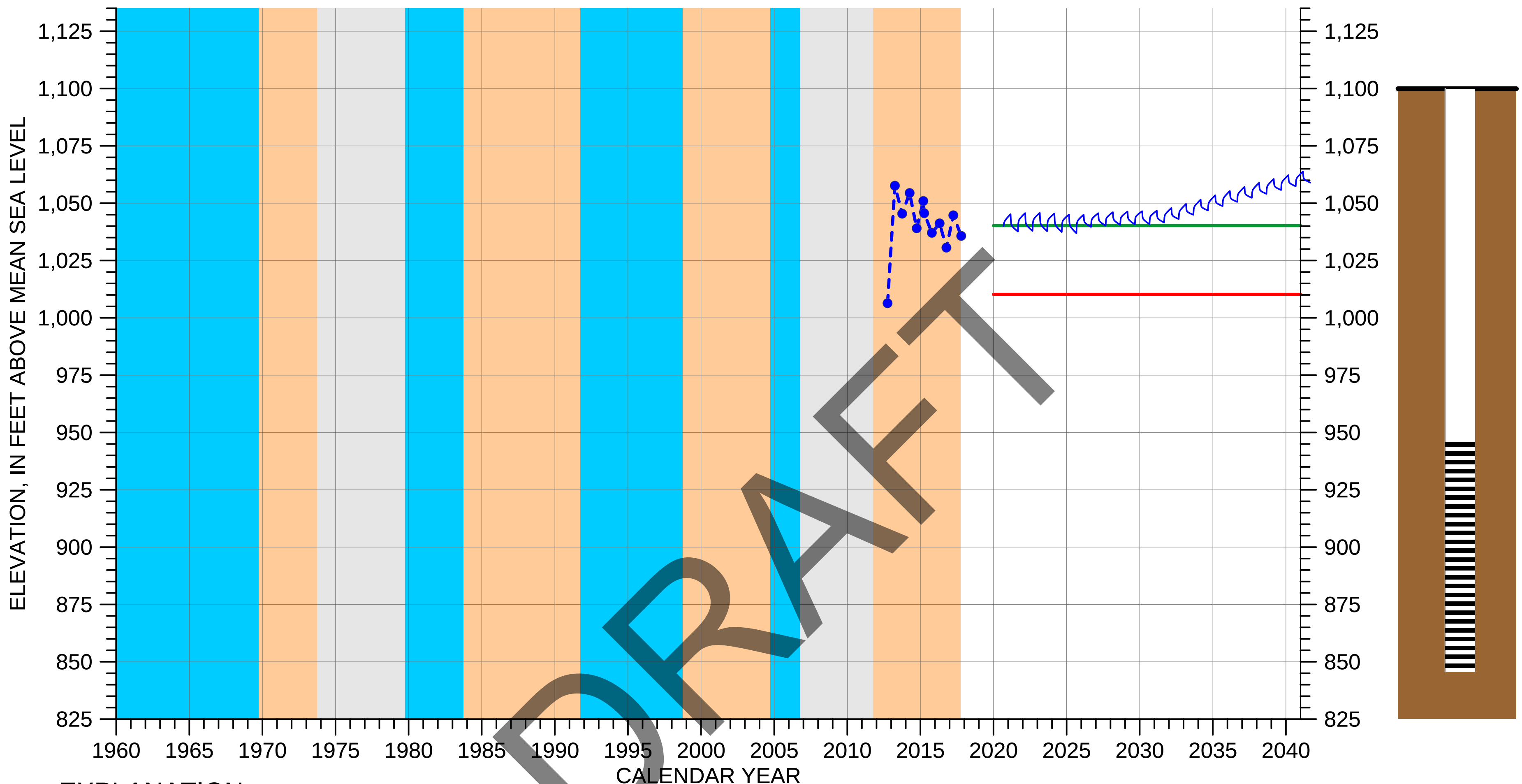


EXPLANATION

GROUNDWATER ELEVATION

MEASUREMENT NOT VERIFIED*

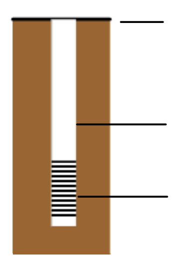
MEASURABLE OBJECTIVE

MINIMUM THRESHOLD

PROJECTED GROUNDWATER ELEVATION

CLIMATE PERIOD CLASSIFICATION

DRY AVERAGE/ALTERNATING WET



Well Depth: 254 feet
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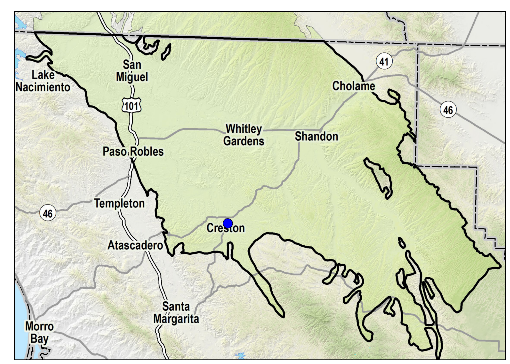
Reference Point Elevation: 1099.9 feet above mean sea level

* Measurement reported as not static



MONTGOMERY & ASSOCIATES

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 28S/13E-01B01

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