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Submitter Role:	Applicant
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Docketed Date:	10/10/2025

CalCapture CCS Project

Water Supply Assessment

Stantec

Prepared for:
Carbon TerraVault Holdings, LLC, a carbon management subsidiary of California Resources Corporation

Prepared by:
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Santa Maria, CA 93455

October 2025

Project/File:
185806775

Stantec Consulting Services Inc.

Revision Schedule

Revision	Description	Author	Date	Quality Check	Date	Independent Review	Date

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The conclusions in the Report titled CalCapture CCS Project Water Supply Assessment are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

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Prepared by: 

Signature

Thomas Regan

Reviewed by: 

Signature

Eric Snelling

Approved by: 

Signature

Eric Snelling

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Acronyms / Abbreviations

Acronym / Abbreviation	Full Name
°F	degrees Fahrenheit
af	acre-feet
afy	acre-feet per year
BVWSD	Buena Vista Water Storage District
CalGEM	California Geologic Energy Management Division
CARB	California Air Resources Board
CASGEM	California Statewide Groundwater Elevation Monitoring
CCS	carbon capture and sequestration
CCU	Carbon Capture Unit
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulation
CO2	carbon dioxide
CRC	California Resources Corporation
CREH	California Resources Elk Hills, LLC
CTV	Carbon TerraVault Holdings, LLC
CTV I	Carbon TerraVault I
CUP	conditional use permit
the CUP	Collectively, CUP No. 13, Map 118; CUP No. 14, Map 118; CUP No. 5, Map 119; CUP No. 3, Map 120; CUP No. 2, Map 138; and CUP No. 6, Map 119
CWC	California Water Code
DDW	Division of Drinking Water
DOGGR	California Division of Oil, Gas and Geothermal Resources
DWR	California Department of Water Resources
EFG+	Econamine FG Plus^{SM}
EHPP	Elk Hills Power Plant
EHOF	Elk Hills Oilfield
EIR	Environmental Impact Report
gpm	gallons per minute
gpy	gallons per year
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GT	gas turbine
HDD	horizontal directional drilling
HRSG	heat recovery steam generator
JPA	Joint Exercise of Powers Agreement
KCWA	Kern County Water Agency

Acronym / Abbreviation	Full Name
Kern County	Kern County Planning and Natural Resources Department
KGA	Kern Groundwater Authority
KNDLA	Kern Non-Districted Land Authority
kV	kilovolts
M	magnitude
MCL	r Maximum Contaminant Level
MDB&M	Mount Diablo Base and Meridian
mg/l	milligram/liter
MMTPY	million metric tons per year
MTPD	metric tons per day
MWe	megawatt equivalent
NOD	Notice of Determination
O&M	operations and maintenance
pCi/l	picocuries per liter
Project	CalCapture Carbon Capture and Sequestration Project
RO	reverse osmosis
SB	Senate Bill
SGMA	Sustainable Groundwater Management Act of 2014
SMCL	Secondary Drinking Water Maximum Contaminant Level
SOKR	South of Kern River
ST	steam turbine
Stantec	Stantec Consulting Services Inc.
the Subbasin	Kern County Subbasin
SWP	State Water Project
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
ug/L	Micrograms per liter
UIC	Underground Injection Control
U.S. EPA	U.S. Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UWMP	Urban Water Management Plan
WKWD	West Kern Water District
WSA	Water Supply Assessment
WY	Water Year

1 Introduction

Stantec Consulting Services Inc. (Stantec) conducted a water supply assessment (WSA) on behalf of Carbon TerraVault Holdings, LLC (CTV), a carbon management subsidiary California Resources Corporation (CRC) for the CalCapture Project (Project) on approximately 3,208.25 gross acres of land located in an unincorporated area of Kern County, California. This WSA was conducted in accordance with Senate Bill (SB) 610 (California Department of Water Resources [DWR], 2002) in support of the proposed construction and operation of the Project. The Regional Location and Site Plan are shown in Figure 1 and Figure 2.

1.1 Project Description

The proposed Project would capture carbon dioxide (CO_2) generated as a by-product by CRC's 550-megawatt-equivalent (MWe) Elk Hills Power Plant (EHPP), located in the EHOF near Tupman, Kern County, California. The EHPP was commissioned in 2003 and is powered by two General Electric 7FA gas turbines (GTs), with two heat recovery steam generators (HRSGs) providing steam to a General Electric D11 steam turbine (ST). The Carbon Capture Unit (CCU), not including pipelines or temporary staging and parking areas, would be located immediately south of the EHPP in a 7.64-acre existing disturbed area.

Implementation of the Project will require approval of a Petition for Modification Application from the California Energy Commission (CEC), who has the exclusive authority for licensing thermal power plants of 50 MW or larger, as well as related transmission lines, fuel supply lines, and other facilities.

The CCU would utilize Fluor's Econamine FG Plus^{SM} (EFG+) process to capture and concentrate the CO_2. The EFG+ process is designed to capture 95 percent of the CO_2 from the total flue gas feed to the unit. The EFG+ CCU can be divided into seven primary subsystems or sections: Flue Gas Cooling, CO_2 Absorption, Solvent Regeneration, Solvent Maintenance, Chemical Storage and Supply, CO_2 Compression, and Utility Support Systems. The treated flue gas is vented to the atmosphere directly from the EFG+ CCU plant absorber. The concentrated CO_2 would then be compressed, dehydrated, and stripped of oxygen prior to conveyance to the permitted manifold pad, permitted as part of the approved Carbon TerraVault I (CTV I) project (State Clearinghouse No. 2022030180), which will direct the CO_2 to the U.S. Environmental Protection Agency (U.S. EPA) approved Class VI Underground Injection Control (UIC) wells to be injected into a depleted oil and gas reservoir located on the CRC property and approved as part of the CTV I project. The previously approved CTV I manifold pad, injection wells, depleted oil and gas reservoir and related facilities further discussed in Section 1.2 below are not part of the CalCapture CCS Project analyzed in this report.

A new, approximately 0.5-mile, 8- to 10-inch pipeline, installed primarily below ground utilizing either trenching or horizontal directional drilling (HDD) techniques, would transport the CO_2 from the CCU to the tie-in with the Carbon TerraVault I (CTV I) permitted 35R manifold facility (pad). It is anticipated that the

proposed Project would capture approximately 4,400 metric tons of CO_2 per day (MTPD) (1.6 million metric tons of CO_2 per year [MMTPY]). The proposed Project is estimated to be in operation for up to 26 years.[1]

Water use during operation of the CalCapture CCU would be minimized by the inclusion of a hybrid cooling system (Wet Surface Air Coolers [WSAC], air coolers, secondary glycol cooling, and water cooling). Additionally, the CCU would be equipped with a water treatment system, consisting of a reverse osmosis (RO) Unit that is designed to recover and reuse water from the Cooling Tower blowdown. The recovered water is utilized as make-up to the CO_2 absorption system and the Wash Water WSAC Basin. A wastewater stream (less than 10 gallons per minute) would be collected at the CalCapture CCU and transferred by a new surface pipeline to the EHPP for disposal via an existing UIC Class I injection well.

The proposed Project includes a single connection to the CRC Power System and would include a connection of a new 115-kilovolt (kV) transmission line to a new CRC electrical substation. The proposed Project would require a new transmission tie line to connect the Project switching station to the existing CRC substation. Electrical power would be supplied to the CalCapture Substation with a new dedicated electrical transformer. The new 115-kV transmission tie line is expected to be built using pre-engineered steel poles with anchor bolt foundation designs.

During construction, temporary offices and existing parking areas would be used by construction personnel. Temporary office and parking areas have been designated on previously disturbed areas to the south and northeast of the Project site. Two additional areas are located approximately 5.5 miles southeast of the Project site. There are no permanent new buildings proposed for the Project, and no grading would occur within the temporary office and parking areas. Total temporary staging and parking area would be approximately 30.74 acres.

[1]The life of the project is dependent on the sources permitted for injection into the CTV I approved storage reservoir, the ability of the project year by year to obtain CO_2 and inject at the maximum 2,210,000 million tons per year, and the total estimated storage capacity of up to 48 million tons of CO_2.

Project Area
Township and Range
Section

0 2 4 Miles
(At original document size of 8.5x11)
1:253,440

N

Stantec

Project Location	Prepared by MMD on 2025-06-26
	TR by CT 2025-06-26
Kern County, CA	IR by ES on 2025-06-26
Client/Project	185806775

California Resources Corporation
CalCapture Carbon Capture and Sequestration Project

Figure No.
1

Title
Regional Vicinity

Notes
1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Data Sources: Stantec, USGS, 2025.
3. Background: Esri. GEBCO, NOAA, National Geographic, Garin, HERE, Geonames.org Copyright:©2013 National Geographic Society, i-cubed

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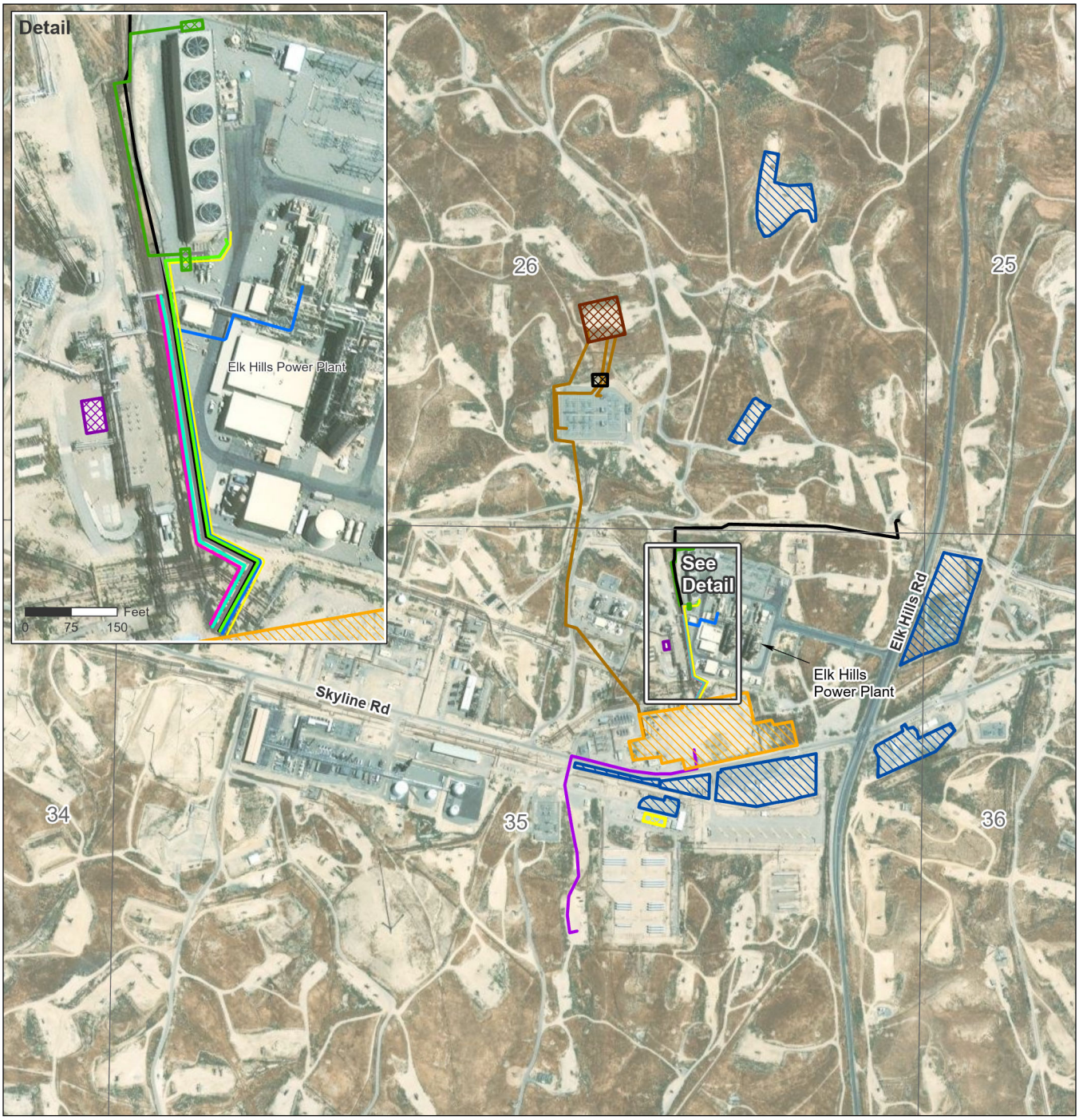

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1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Data Sources: Stantec, USGS, 2025.
3. Background: Esri. GEBCO, NOAA, National Geographic, Garin, HERE, Geonames.org Copyright:©2013 National Geographic Society, i-cubed

- Capture Facility
- Temporary Parking, Office, and Staging Areas
- Proposed Sub Location (250 x 250)
- Substation Extension Proposal
- New BPSTG & Transformer
- Warehouse
- Cooling Water Sump

Township, Range, Section*

- Section

*Entire map extent within Township 30S Range 23E.

- Electrical Lines
- CO2 Line
- CWR Line
- CWS Line
- Condensate Line
- HP Steam Line
- LP Steam Line
- Raw Water Line
- RO Permeate Stream Pipeline
- CWS Line Alternative

0 500 1,000 Feet
(At original document size of 8.5x11)
1:12,000

N

Stantec

Project Location	Prepared by MMD on 2025-07-31
	TR by CT 2025-07-31
Kern County, CA	IR by ES on 2025-07-31
Client/Project	185806775

California Resources Corporation
CalCapture Carbon Capture and Sequestration Project

Figure No.
2a

Title
Site Plan

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Temporary Parking, Office, and Staging Areas

Township, Range, Section*

Section

*Entire map extent within Township 31S Range 24E.

0 800 1,600 Feet

(At original document size of 8.5x11)
1:19,200

N

Stantec

Project Location	Prepared by MMD on 2025-07-31
	TR by CT 2025-07-31
Kern County, CA	IR by ES on 2025-07-31
Client/Project	185806775

California Resources Corporation
CalCapture Carbon Capture and Sequestration Project

Figure No.
2b

Title
Site Plan

Notes
1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Data Sources: Stantec, USGS, 2025.
3. Background: Esri. GEBCO, NOAA, National Geographic, Garin, HERE, Geonames.org Copyright:©2013 National Geographic Society, i-cubed

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1.2 CTV I Background Information

On December 31, 2024, the U.S. EPA issued four UIC Class VI well permits to CTV, a carbon management subsidiary of CRC.

The specific U.S. EPA permits issued for the four wells are as follows:

- R9UIC-CA6-FY22 1.1 for well 373-35R
- R9UIC-CA6-FY22 1.2 for well 345C-36R
- R9UIC-CA6-FY22 1.3 for well 353XC-35R
- R9UIC-CA6-FY22 1.4 for well 363C-27R

These four wells would be utilized to inject the CO_2 captured from the proposed Project into the Monterey Formation 26R storage reservoir located approximately 6,000 feet below the ground surface. The CTV I project area is located within the EHOF, which is a suitable area for long-term CO_2 storage and sequestration. The CTV I project was designed to implement sustainable CCS in support of California's initiative to combat climate change by reducing CO_2 levels in the atmosphere.

In addition to the Class VI Permit, CTV obtained a land use permit from the Kern County Planning and Natural Resources Department (Kern County) in 2024. Specifically, the CTV I project was approved by the Kern County Board of Supervisors on October 21, 2024, based on a final Environmental Impact Report (EIR, State Clearinghouse #2022030180) prepared by Kern County and certified by it on the same date. A Notice of Determination was filed with the Kern County Clerk on October 22, 2024. The CTV I project is subject to the terms, conditions and restrictions set forth in the Conditional Use Permits (CUP) issued by Kern County and identified as CUP No. 13, Map 118; CUP No. 14, Map 118; CUP No. 5, Map 119; CUP No. 3, Map 120; CUP No. 2, Map 138; and CUP No. 6, Map 119 (collectively, "the CUP"). Implementation of the CUP authorizes the construction and operation of underground CO_2 facility pipelines to support the CTV I CCS facility and related infrastructure (e.g., injection/monitoring wells, CO_2 manifold piping and metering facilities) within the 9,104-acre project site, located within the EHOF.

Four monitoring wells permitted by the California Geologic Energy Management Division (CalGEM), as part of the CUP issued by Kern County for the CTV I project would be used for CO_2 monitoring. In addition, six CTV I permitted wells would be used to monitor for seismic activity. The seismic monitoring wells will be used to detect seismic events at or above magnitude (M) 1.0 in real time as required by the California Air Resources Board (CARB) CCS Protocol under the Low Carbon Fuel Standard (LCFS) (C.4.3.2.3). Additionally, the California Integrated Seismic Network will be monitored continuously for indication of a 2.7 M or greater earthquake or greater occurring within a 1-mile radius of injection operations from commencement of injection activity to its completion.

Monitoring activities would extend beyond the injection phase of the Project pursuant to Code of Federal Regulations (CFR) Title 40 Section 146.93 until site closure is granted. Monitoring requirements during post-injection are similar to those during injection, with activities such as sampling occurring quarterly and monitoring well integrity testing at frequency per U.S. EPA requirement.

As noted above, the facilities approved as part of the CTV I project, including but not limited to the manifold, pad, injection wells, monitoring wells and related transmission lines, pipelines and other related facilities that have already been approved by applicable agencies with jurisdiction over those facilities, including the U.S. EPA, CalGEM and Kern County, are not included as part of the proposed Project. Accordingly, such facilities are not analyzed in this report.

1.3 Project Location

The Project is located within the EHOF in the southwestern edge of the San Joaquin Valley near Tupman in Kern County, California.

The Project comprises portions of six parcels owned by CRC. The Project is contained within the following sections of the EHOF: sections 26, 34, and 35 of Township 30 South Range 23 East and sections 10 and 11 of Township 31 South Range 24 East, Mount Diablo Base and Meridian (MDB&M), Kern County, State of California (Table 1). The proposed Project would be located on approximately 52 acres within the identified parcels.

Table 1 Project Parcel Data

Assessor's Parcel Number	Section/ Township/ Range	Acreage*
158-090-19	Section 35/ Township 30S/ Range 23E	590.61
158-090-16	Section 35/ Township 30S/ Range 23E	14.78
158-090-02	Section 26/ Township 30S/ Range 23E	640
158-090-04	Section 34/ Township 30S/ Range 23E	682.86
298-070-05	Section 11/Township 31S/Range 24E	640
298-070-06	Section 10/Township 31S/Range 24E	640

Notes:
Assessor's parcel acreages from Kern County Web Map (Kern County GIS, 2025).

1.4 Construction Activities

The construction period for the Project, from site preparation through construction, testing, and commercial operation, could commence as early as Q1 2027 and would extend for approximately 30 months (2.5 years). Construction of the facility would include (but is not limited to) the following activities:

- Site preparation
- Grading and earthwork
- Concrete foundations
- Pipeline construction
- Facility construction
- Electrical/instrumentation work
- Utility connections

- Road maintenance

Construction traffic and operations-related traffic would likely access the site from State Route 119 at existing facility entrances, and Seventh Standard Road. It is estimated that up to 500 workers per day (during peak construction periods) would be required during the construction of the Project.

1.5 Work Force

Once the Project is constructed, maintenance would generally be limited to the following:

1. CCU operations and monitoring
2. Site security
3. Facility maintenance

It is expected that the Project would require an operational staff of up to 16 full-time employees. The facility would operate 7 days a week, 24 hours a day. Maintenance activities may occur 7 days a week, 24 hours a day to ensure continuous operations.

1.6 Project Water Use

1.6.1 Water Demand

During construction, approximately 1.85 acre-feet per year (afy) (602,824 gallons per year [gpy]) of disinfected potable water would be used over the Project's 30-month (2.5 years) construction period (approximately 4.63 af [1,508,690 gallons] total) for dust control, site grading, soil compaction, and other similar activities.

During operation, up to approximately 364.5 afy (118,772,690 gallons) of disinfected potable water would be used for the CCU amine solvent absorption process. Approximately 0.07 afy (22,810 gpy) of disinfected potable water would be used by staff in the EHOF operations and maintenance (O&M) office. The maximum water use during operation is estimated to be 364.57 afy (118,795,500 gpy).

Decommissioning of the Project would require water use for dust control, site grading and soil compaction at amounts similar to those used during construction (1.85 afy [602,824 gpy]) over a 24-month period (approximately 3.7 af [1,205,649 gallons] total) of disinfected potable water. Total maximum water demand over the 30.5-year life of the Project (including construction, operation, and decommissioning) is estimated at 9,487.15 af. Table 2 summarizes the anticipated water demand by use.

Table 2 Anticipated Project Water Demand

Phase	Industrial (Potable) Water Demand	(Drinking) Potable Water Demand	Description
Construction (30 months [2.5 years])	1.85 afy (602,824 gpy) (4.63 [1,508,690 gallons] af [1,508,690 gallons] total)	-	Dust control, site grading, soil compaction, and other similar activities
Operation (26 years)	364.5 afy (118,772,690 gpy) (9,477 af [3,088,089,927 gallons] total)	0.07 afy (22,810 gpy)*	CCU amine solvent absorption process (364.5 afy [118,772,690 gpy]), and O&M building (0.07 afy [22,810 gpy])
Decommissioning (2 years)	1.85 afy (602,824 gpy) (3.7 af [1,205,649 gallons] total)	-	Dust control, site grading, soil compaction, and other similar activities
TOTAL (30.5 years)	**9,485.33 af (3,090,804,266 gallons)**	**1.82 af (593,049 gallons)***	**9,487.15 af Industrial and Potable Water Demand (3,091,397,315 gallons)**

Notes:
All water delivered to the Project would be provided by WKWD which is disinfected groundwater that meets California Code of Regulations Title 22 drinking water standards.1 acre foot = 325,851 gallons* Estimated construction water demand total for the 30-month construction period has been rounded upward from 4.625 afy to 4.63 afy and converted to gallons. Estimated annual industrial water demand during project operation is based on a continuous 226 gpm water demand. Estimated (drinking) potable water demand total for the 26-year operational period rounded upward from 0.065 afy to 0.07 afy and converted to gallons.af = acre-feet; afy = acre-feet per year
Sources: CRC

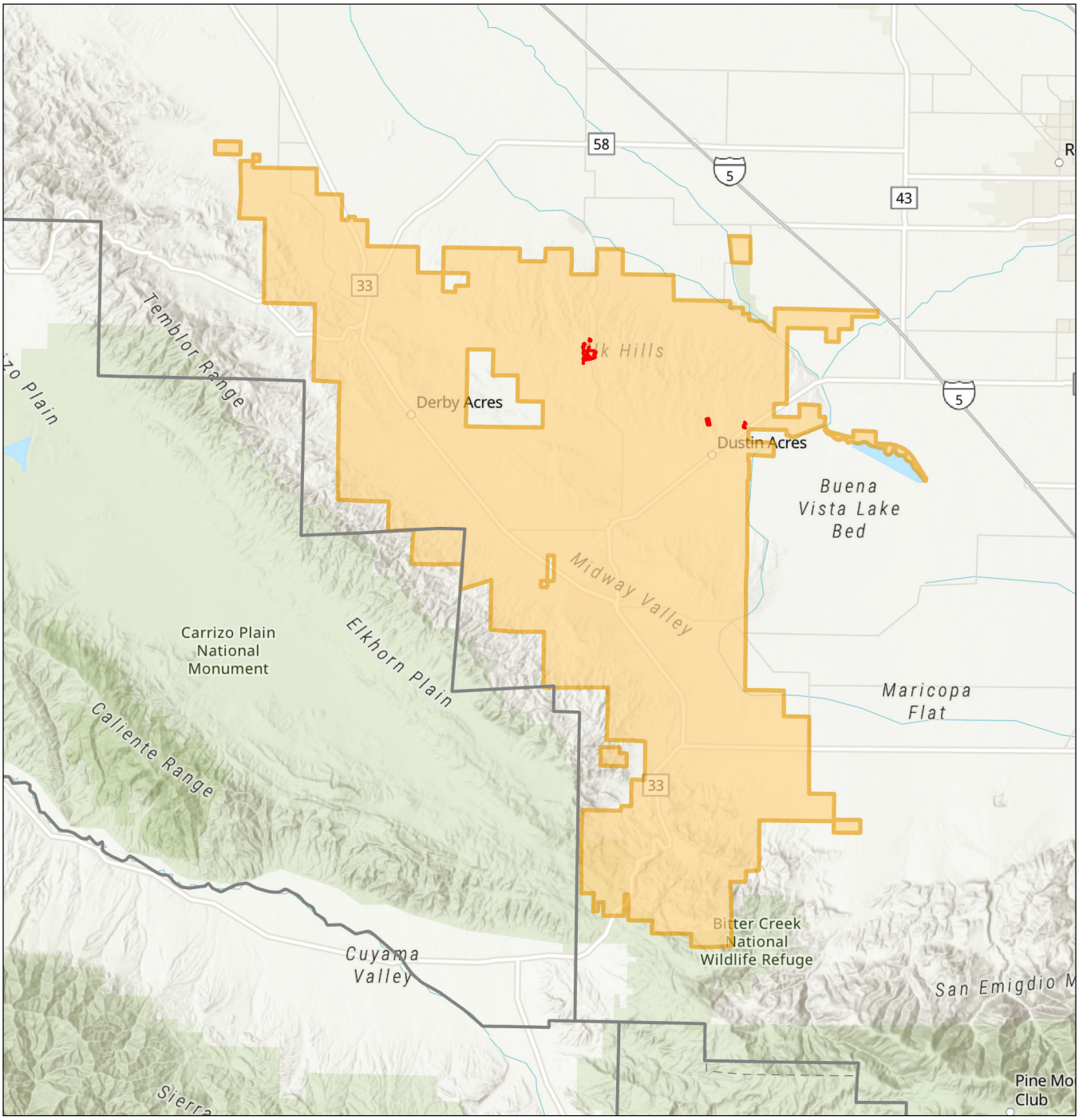
1.6.2 Water Source

Water for Project construction, operation, and decommissioning would be purchased from the West Kern Water District (WKWD) (Figure 3 – West Kern Water District Location Map). CRC has two water service agreements (i.e., District Agreements) with WKWD for 2,200 afy of groundwater from WKWD's North and South well fields. These include District Agreement No. 18 with Occidental of Elk Hills, Inc. (now California Resources Elk Hills, LLC (CREH) public water system) dated March 1, 2001, and District Agreement No. 19 with Elk Hills Power, LLC (EHPP) also dated March 1, 2001, for 3,000 afy, both of which expire on March 1, 2036. WKWD currently delivers and would continue to deliver disinfected groundwater to the CREH public water system for distribution to the Project and other CRC facilities in the EHOF as well as the EHPP in accordance with the WKWD-CRC District Agreements. Negotiations between CRC and WKWD to extend the two District Agreements to at least 2057 are ongoing and are anticipated to be resolved prior to construction. During the period 2021 through 2024, the CREH public water system water usage ranged from 315.34 af in 2024 to 886.24 af in 2021 and averaged 512.96 af. Therefore, based on the forthcoming extension of the existing District Agreements with WKWD, and the estimated operational Project water demand of 364.57 afy, there is sufficient water supply available to the Project.

Municipal and industrial water distributed by the CREH public water system for construction (4.63 af [1,508,690 gallons] total) and decommissioning (3.7 af [1,205,649 gallons] total) would be transported to the

Project using 6,000-gallon water trucks from existing water hydrants within the EHOF. The water for the CCU (up to 364.5 afy [118,772,690 gpy]) would be treated through RO by CRC prior to use. The reject wastewater stream (less than 10 gallons per minute (gpm)) from the RO process would be conveyed to the existing EHOF wastewater tank. Wastewater is then piped to existing EHPP UIC wells for injection disposal.

Drinking (potable) water, approximately 0.07 afy (22,810 gpy), would also be purchased from WKWD and delivered to the CREH public water system for distribution.



Project Area
West Kern Water District
California Counties

0 3 6 Miles
(At original document size of 8.5x11)
1:380,160

N

Stantec

Notes
1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Data Sources: Stantec 2025. CA DWR, 2025.
3. Background: Esri. GEBCO, NOAA, National Geographic, Garin, HERE, Geonames.org Copyright:©2013 National Geographic Society, i-cubed

Project Location
Kern County, CA

Prepared by MMD on 2025-07-06
TR by EH on 2025-07-06
IR by TS on 2025-07-06

Client/Project 185806775
California Resources Corporation
CalCapture Carbon Capture and Sequestration Project
Water Supply Assessment

Figure No.
3

Title
West Kern Water District Location Map

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1.7 Climate

The southern San Joaquin Valley region has a semi-arid climate that is characterized by hot, dry summers and cool dry winters. Most of the annual precipitation occurs during the period from November through April. The average minimum and maximum annual temperatures are 49.4 and 78.0 degrees Fahrenheit (°F), respectively, although it is not unusual for the maximum daily temperature to exceed 100 °F in summer (Table 3).

Table 3 Average Monthly Precipitation, Evaporation, and Temperature

Month	Average Monthly Precipitation (inches)	Average Monthly Evapotranspiration (inches)	Average Minimum and Maximum Monthly Temperature (°F)	
January	1.07	1.50	37.0	58.6
February	1.00	2.40	40.0	64.5
March	0.77	4.12	43.3	69.6
April	0.67	5.65	47.1	75.5
May	0.24	7.51	52.9	83.6
June	0.08	8.22	59.2	91.6
July	0.13	8.43	63.8	97.7
August	0.06	7.59	62.4	96.4
September	0.08	5.76	58.6	91.0
October	0.17	3.93	50.3	80.3
November	1.03	2.12	41.2	67.5
December	0.89	1.44	36.6	59.3
Annual	**6.20**	**58.68**	**49.4**	**78.0**

Notes:
°F = degrees Fahrenheit
Source: California Irrigation Management Information System (CIMIS) data for Station 146, Belridge; Calendar Years 1999–2024.

California has experienced four declared droughts in the last 50 years. In 1976, the state received an average of only 7.4 inches of rain. Until recently, the drought between 1987 and 1992 was considered the most severe drought in California's history. However, the severity of that drought period has been eclipsed by the historic drought experienced between 2011 and 2016 and the most recent drought that occurred between 2020 and 2022. Conversely, these drought periods are often offset by periods of intense rainfall that can lead to flooding (e.g., Winter 2022-2023). This extreme climatic variability is common throughout California.

1.8 Kern County Subbasin

1.8.1 Kern County Subbasin Description

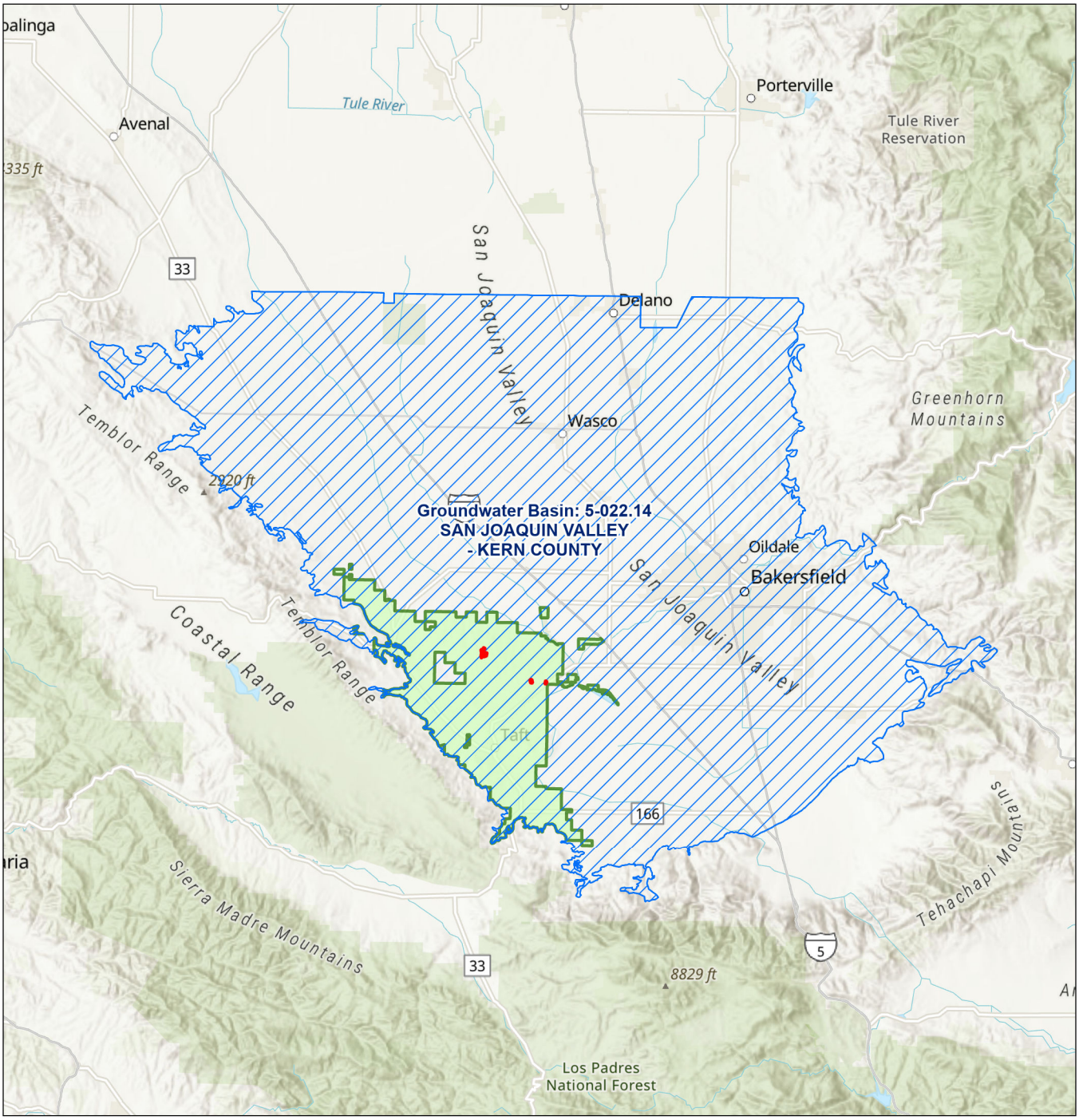
The Project is located in the Kern County Subbasin (DWR Subbasin No. 5-022.14; hereafter, the Subbasin) within the southernmost portion of the Tulare Lake Hydrologic Region and the larger San Joaquin Valley Groundwater Basin (refer to Figure 4). The Subbasin occupies an area of approximately 2,800 square miles (GEI, 2022) and is bounded by the Sierra Nevada Mountains on the east, Tehachapi Mountains on the southeast, San Emigdio Mountains on the southwest, the Temblor Range on the west, and Kings and Tulare counties on the northwest and northeast, respectively. The Subbasin is also adjacent to the White Wolf Subbasin on the southeast, the Kettleman Plain Subbasin on the northwest, and the Tulare Lake and Tule subbasins on the north (GEI, 2022; Aquilogic et al., 2025)).

The Subbasin is underlain by Tertiary and Quaternary-aged unconsolidated non-marine/continental deposits and older Tertiary marine deposits. These deposits thicken toward the axis of the San Joaquin Valley, which in the Subbasin, extends northward beneath and along the western portion of the valley floor and forms an asymmetric trough (Bartow, 1991). Principal freshwater groundwater bearing units in the Subbasin include the following, listed from youngest to oldest (Page, 1986; GEI, 2022; Rincon Consultants, 2024a,b; Aquilogic et al., 2025):

- Younger Alluvium and flood plain deposits (shallow unconfined aquifer)
- Older Alluvium (unconfined aquifer)
- Tulare Formation (semiconfined/confined aquifer)
- Kern River Formation (unconfined/semiconfined)

Other locally important groundwater bearing units include the Santa Margarita Sandstone and Olcese Sand in the northeastern and eastern portions of the Subbasin, respectively (GEI, 2022; Rincon Consultants, 2024a,b; Aquilogic et al., 2025).

The Plio-Pleistocene non-marine Tulare Formation occurs in the central and western portions of the Subbasin and attains a maximum thickness of 2,200 feet (GEI, 2022). The formation is separated into an upper and lower portion by a confining clay layer called the Corcoran Clay (Croft, 1972) or modified E-clay (Page, 1986). The upper aquifer is unconfined to semiconfined. The lower aquifer is confined. The Corcoran Clay extends from the western to the central portion of the Subbasin. The thickness of the Corcoran Clay ranges between 20 and 100 feet but is typically 10 to 30 feet thick (GEI, 2022). Primary sources of sediment comprising the Tulare Formation in Kern County are marine rocks in the Temblor Range and to a lesser extent from the erosion of crystalline rocks of the Sierra Nevada Mountains to the east.



Project Area
West Kern Water District GSA
Bulletin 118 Groundwater Basins

0 7.5 15 Miles
(At original document size of 8.5x11)
1:950,400

N

Stantec

Notes
1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Data Sources: Stantec 2025. CA DWR SGMA Portal, 2025.
3. Background: Esri. GEBCO, NOAA, National Geographic, Garin, HERE, Geonames.org Copyright:©2013 National Geographic Society, i-cubed

Project Location
Kern County, CA

Prepared by MMD on 2025-07-06
TR by EH on 2025-07-06
IR by TS on 2025-07-06

Client/Project
185806775
California Resources Corporation
CalCapture Carbon Capture and Sequestration Project
Water Supply Assessment

Figure No.
4

Title
West Kern Water District Groundwater Sustainability Agency (GSA)

V:\1858\Active\185806775_CRC_CalCapture\03_data\gis_cad\gis\proWater_Supply\Water_Supply_Figures.aprx Revised: 2025-07-06 By: mdeseo

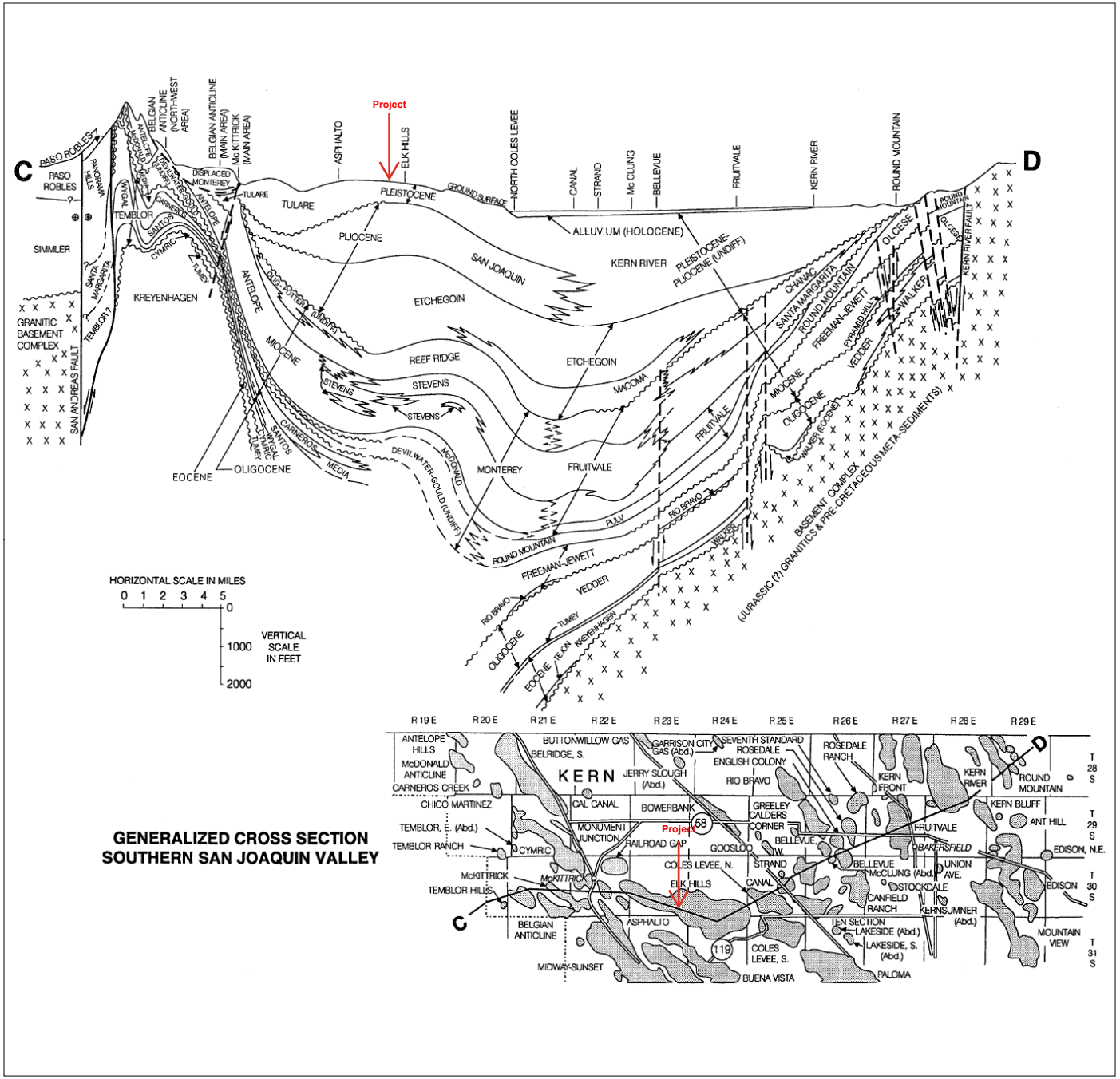
The Mio-Pliocene to early Pleistocene Kern River Formation occurs along the eastern to central portion of the Subbasin and was derived from erosion of the Sierra Nevada Mountains (GEI, 2022). The Kern River Formation attains a maximum thickness of 2,600 feet (Bartow and Pittman, 1983). The aquifer is largely unconfined although thin aquitards in the central portion of the Subbasin locally creates semiconfined and confined conditions. Perched groundwater occurs locally where shallow fine-grained deposits are present in the Subbasin.

Pleistocene-age alluvial deposits overlie the Tulare and Kern River formations and attain a maximum thickness of 250 feet. These deposits are often indistinguishable from the underlying Tulare and Kern River formations (DWR, 2006). Groundwater occurring in these deposits is generally unconfined. The Holocene-age younger alluvium and floodplain deposits are up to 150-feet thick and vary in lithology across the Subbasin. Groundwater in these deposits are generally unconfined. In the EHOF and Project Area, the Tulare Formation crops out and attains thicknesses of 600 to 2,150 feet, with outcrops attaining exposed thicknesses of 700 to 850 feet (Maher et al., 1975). Younger alluvial deposits overlie the Tulare Formation on the flanks of the Elk Hills.

As noted above, the younger and older alluvial deposits and the Tulare and Kern River formations are the principal water-bearing deposits on the valley floor, with the Tulare Formation the principal water-bearing deposit in the western portion of the Subbasin. However, groundwater quality is poor, which limits groundwater production in this area and requires the use of imported water or groundwater from elsewhere in the Subbasin (Rincon Consultants, 2024a,b; Aquilog et al., 2025). The Tulare Formation is unsaturated along the crest of the Elk Hills anticline but is saturated along the flanks within and outside the administrative boundaries of the EHOF (Gillespie et al., 2022). In the EHOF the Tulare Formation is divided into an upper and lower Tulare by the Amnicola Clay in contrast to the Corcoran Clay or E-Clay on the valley floor.

In March 2018, the U.S. EPA approved a request by California Division of Oil, Gas and Geothermal Resources (DOGGR, now CalGEM) to approve an aquifer exemption for the Phase 1 and Phase 2 areas of the lower Tulare Formation (U.S. EPA, 2018a,b). The Project is located within the Phase 2 Aquifer Exemption area for the lower Tulare Formation and adjacent to the Phase 1 Aquifer Exemption area for the lower Tulare Formation (DOGGR, 2016a, 2016b).

Figure 5 presents a generalized geologic cross-section extending across the southern San Joaquin Valley from the Temblor Range on the west to the Sierra Nevada Mountains foothills on the east and shows the general stratigraphy and approximate locations of oilfields including the EHOF (DOGGR, 1998).



GENERALIZED CROSS SECTION SOUTHERN SAN JOAQUIN VALLEY

Stantec

Notes

1. Data Sources: California Oil & Gas Fields Volume 1 - Central California (CD-1). Contour Maps, Cross section, and data sheets for Californias oil and gas fields. Page 15. 1998

2. Background: California Oil & Gas Fields Volume 1 - Central California (CD-1). Contour Maps, Cross section, and data sheets for Californias oil and gas fields. Page 15. 1998

Project Location
Kern County, CA

Prepared by QS on 2025-03-12
TR by DL on 2025-03-12
IR by TR on 2025-03-12

Client/Project
185806775
California Resources Corporation
CalCapture Carbon Capture and Sequestration Project
Water Supply Assessment

Figure No.
5

Title
Generalized Cross Section Southern San Joaquin Valley

1.8.2 Historic Production, Groundwater Management, and Sustainable Yield

Historic groundwater production, sustainable yield and groundwater management in the Subbasin are summarized in the following paragraphs and are primarily based on the *Kern County Subbasin Groundwater Sustainability Agencies Groundwater Sustainability Plan* (Rincon Consultants, 2024a,b) and other sources as cited therein. Groundwater management in the EHOF is administered by the WKWD Groundwater Sustainability Agency (GSA) (Rincon Consultants, 2024a,b; Aquilogic et al., 2025; Woodard & Curran, 2022).

Groundwater production in the Subbasin for Water Year (WY)1995-WY2014 (historical water budget) is averaged 1,586,418 afy based on the CV2SimFG-Kern groundwater model simulation (Rincon Consultants, 2024b; Aquilogic et al., 2025). Average groundwater production (i.e., recovery pumping of banked surface water) in the WKWD plan area for WY1995 to WY2014 (historical water budget) is 19,043 afy (Rincon Consultants, 2024b, Appendix M, Table 6; Aquilogic et al., 2025, Appendix H, Table 6). However, Provost & Pritchard (2023) noted flowmeter accuracy problems in the latter part of the record which recorded anomalously high readings. Groundwater production from the WKWD wells between 2016 and 2020 averaged 15,542 afy (Provost & Pritchard, 2023). State Water Project (SWP) diversions from the California Aqueduct by WKWD for groundwater banking from WY1995-WY2014 (historical water budget) ranged between 0 and 37,351 af and averaged 16,513 afy (Rincon Consultants, 2024b, Appendix M, Table 5; Aquilogic et al., 2025, Appendix H, Table 5).

Groundwater production in the Subbasin during WY2015-WY2023 (current water budget) is estimated to average 1,817,881 afy based on the CV2SimFG-Kern groundwater model simulation (Rincon Consultants, 2024b; Aquilogic et al., 2025). Groundwater production in the WKWD during WY2015-WY2023 (current water budget) is estimated to average 19,778 afy based on the CV2SimFG-Kern groundwater model simulation (Rincon Consultants, 2024b, Appendix M, Table 6; Aquilogic et al., 2025, Appendix H, Table 6).

Projected annual groundwater production in the Subbasin estimated using the CV2SimFG-Kern groundwater model for the WY2021-WY2040 implementation period under the baseline and 2030 and 2070 climate change scenarios without projects and management actions is 1,580,920 afy, 1,688,648 afy and 1,819,268 afy, respectively (Rincon Consultants, 2024b, Appendix M, Tables 19, 21 and 23; Aquilogic et al., 2025, Appendix H, Tables 19, 21 and 23). The projected average annual groundwater production in the Subbasin estimated using the CV2SimFG-Kern groundwater model for the WY2021-WY2040 implementation period under the baseline and 2030 and 2070 climate change scenarios with implementation of projects and management actions is 1,426,753 afy, 1,527,259 afy and 1,648,770 afy, respectively (Rincon Consultants, 2024b, Appendix M, Tables 20, 22 and 24; Aquilogic et al., 2025, Appendix H, Tables 20, 22 and 24).

Projected average annual groundwater production in the Subbasin estimated using the CV2SimFG-Kern groundwater model for the WY2041-WY2070 sustainability period under baseline, and 2030 and 2070 climate change scenarios without projects and management actions are 1,624,694 afy, 1,734,001, and 1,866,239 afy, respectively (Rincon Consultants, 2024b, Appendix M, Tables 19, 21 and 23; Aquilogic et al.,

2025, Appendix H, Tables 19, 21 and 23). Conversely, the projected average annual groundwater production in the Subbasin estimated using the CV2SimFG-Kern groundwater model for the WY2041-WY2070 sustainability period under baseline, and 2030 and 2070 climate change scenarios with implementation of projects and management actions yield significant decreases of 1,354,088 afy, 1,444,144 afy, and a 1,559,343 afy, respectively (Rincon Consultants, 2024b, Appendix M, Table 20, 22 and 24; Aquilogic et al., 2025, Appendix H, Tables 20, 22 and 24). Groundwater production in the WKWD is projected to increase to 14,735 af in 2045, which includes potable water demands of 14,185 af and water system losses of 550 af (Provost & Pritchard, 2023).

Estimations of the total storage capacity of the Subbasin were reported in *California's Groundwater Bulletin 118 San Joaquin Valley Groundwater Basin Kern County Subbasin* (DWR, 2006) based on data in 2002 to be 40,000,000 af (KCWA, 2002). The dewatered storage at this time was also reported to be 10,000,000 af (KCWA, 2002). In *Kern County Subbasin Groundwater Sustainability Agencies Groundwater Sustainability Plan* (Aquilogic et al, 2025), the estimated water storage volume of the Subbasin was estimated using the CV2SimFG-Kern groundwater model sensitivity analysis to range between 80,000,000 and 180,000,000 af. The area along the western edge of the Subbasin, which includes most of the WKWD service area, was excluded from the analysis due to naturally occurring poor groundwater quality conditions in the underlying aquifers.

Change in groundwater storage in the Subbasin between WY1995 and WY2014 (historical water budget) is estimated to have declined by 5,483,995 af based on an annual decline of 274,200 afy (Rincon Consultants, 2024b, Appendix M, Table 11; Aquilogic et al., 2025, Appendix H, Table 11). Change in groundwater storage in the Subbasin between WY2015-2023 (current water budget) is estimated to yield a decline of 3,096,173 af based on an annual decline of 344,019 afy (Rincon Consultants, 2024b, Appendix M, Table 11; Aquilogic et al., 2025, Appendix H, Table 11).

The projected average annual change in groundwater storage in the Subbasin estimated using the CV2SimFG-Kern groundwater model for the WY2021-WY2040 implementation period under baseline, and 2030 and 2070 climate change scenarios without projects and management actions yield declines of 333,358 afy, 389,685 afy, and 491,092 afy, respectively (Rincon Consultants, 2024b, Appendix M, Tables 19, 21 and 23; Aquilogic et al., 2025, Appendix H, Tables 19, 21 and 23). The projected average annual change in groundwater storage in the Subbasin estimated using the CV2SimFG-Kern groundwater model for the WY2021-WY2040 implementation period under baseline, and 2030 and 2070 climate change scenarios with implementation of projects and management actions yield considerably lower declines of 67,687 afy, 123,719 afy, and 224,286 afy, respectively (Rincon Consultants, 2024b, Appendix M, Tables 20, 22 and 24; Aquilogic et al., 2025, Appendix H, Tables 20, 22 and 24).

The projected average annual change in groundwater storage in the Subbasin estimated using the CV2SimFG-Kern groundwater model for the WY2041-WY2070 sustainability period under baseline, and 2030 and 2070 climate change scenarios without projects and management actions yield declines of 324,326 afy, 372,120 afy, and 472,336 afy, respectively (Rincon Consultants, 2024b, Appendix M Table 25; Aquilogic et al., 2025, Appendix H, Table 25). The projected average annual change in groundwater storage in the Subbasin estimated using the CV2SimFG-Kern groundwater model for the WY2041-WY2070 sustainability period under baseline, and 2030 and 2070 climate change scenarios with implementation of

projects and management actions yield increases of 85,578 afy and 46,829 afy, and a decline of 45,969 afy, respectively (Rincon Consultants, 2024b, Appendix M, Table 25; Aquilogic et al., 2025, Appendix H, Table 25).

The estimated sustainable yield of the Subbasin is estimated using the CV2SimFG-Kern groundwater model for the WY1995-WY2014 historical water budget is 1,312,218 afy based on annual average groundwater pumping of 1,586,417 afy and an associated annual average change in groundwater storage of -274,200 afy (Rincon Consultants, 2024b, Appendix M, Table 26; Aquilogic et al., 2025, Appendix H, Table 26). The projected sustainable yield of the Subbasin estimated using the CV2SimFG-Kern groundwater model for the WY2041-WY2070 sustainability period under baseline, and 2030 and 2070 climate change scenarios without projects and management actions is 1,300,369 afy, 1,369,881 afy and 1,3936,902 afy, respectively (Rincon Consultants, 2024b, Appendix M, Table 26; Aquilogic et al., 2025, Appendix H, Table 26). The projected sustainable yield of the Subbasin estimated using the CV2SimFG-Kern groundwater model for the WY2041-WY2070 sustainability period under baseline, and 2030 and 2070 climate change scenarios with implementation of projects and management actions is 1,439,666 afy, 1,490,974 afy and 1,513,373 afy, respectively (Rincon Consultants, 2024b, Appendix M, Table 26; Aquilogic et al., 2025, Appendix H, Table 26).

1.8.3 Groundwater Quality

Groundwater quality within the Subbasin is generally good for most beneficial uses and is supplemented with imported SWP water, Central Valley Project water, and Kern River diversions. However, in the WKWD, groundwater quality is relatively poor characterized by mostly elevated Total Dissolved Solids (TDS), sulfate, and chloride concentrations occurring above California Secondary Drinking Water Maximum Contaminant Levels (MCLs of 500 milligrams per liter (mg/l), 250 mg/l, and 250 mg/l, respectively, making the water unusable for domestic uses and marginal to unusable for agricultural uses. Median TDS concentrations throughout the WKWD GSA between 2015 and 2023 ranged between 1,300 and 16,400 mg/l and commonly exceeded 3,000 mg/l with a few localized areas of lower TDS concentrations exceeding 1,000 mg/l. These elevated concentrations are considered brackish or saline at higher concentrations.

Owing to the naturally high TDS of groundwater, WKWD operates and maintains two well fields, North and South, in the easternmost part of their service area near the Kern Fan recharge area as part of the Buena Vista Water Storage District (BVWSD)-WKWD exchange program. Groundwater pumped from these well fields (in lieu of surface water exchanged with BVWSD) is disinfected prior to distribution for municipal and industrial use. Groundwater delivered is of excellent quality and meets California Primary and Secondary Drinking Water MCLs. TDS, sulfate and chloride concentrations were reported as 280 mg/l, 38 mg/l and 21 mg/l, respectively. Arsenic was detected at a concentration of 4.9 micrograms per liter (ug/l), below the Primary MCL of 10 ug/l. Nitrite and selenium were not detected. Dibromochloropropane was also not detected in groundwater samples. Gross alpha was detected at a concentration of 19 picocuries per liter (pCi/l) in 2008, in excess of the Primary MCL of 15 pCi/l. However, no additional testing has been reported in the SWRCB Drinking Water Watch website (SWRCB, 2025).

2 Regulatory Framework

The water supply for the proposed Project would be sourced from groundwater pumped by WKWD from their North and South wellfields as part of the BVWSD-WKWD SWP water exchange program. Groundwater pumped from these well fields is disinfected prior to distribution for municipal and industrial use. WKWD operates a public water system (Water System No. CA1510022) and delivers water to CRC in accordance with two existing contracts. The potable water from WKWD would be delivered to CRC through their CREH public water system (Water System No. CA1503440) for distribution within the water system's service area.

2.1 State

In November 2009, the Governor signed into law SBx7-6, which established the California Statewide Groundwater Elevation Monitoring (CASGEM) Program. Groundwater level data were entered into the California Department of Water Resources (DWR) CASGEM online reporting system by monitoring entities beginning in January 2012 and were used to establish groundwater basin prioritization as part of the enactment of the Sustainable Groundwater Management Act (SGMA) of 2014. Enactment of the SGMA amended California Water Code (CWC) Section 10720 et seq. to provide a statewide system for the sustainable management of groundwater. For medium- and high-priority groundwater basins, SGMA requires the designation of a GSA. GSAs have broad groundwater management powers. For example, GSAs may require groundwater well registration, measurement of groundwater extractions, and filing of annual extraction reports.

SGMA authorizes GSAs to regulate groundwater extraction by imposing well spacing requirements, limiting extraction, and establishing extraction allocations. The legislation does not apply to adjudicated groundwater basins that are managed by the courts or to basins deemed by DWR to be low priority. SGMA requires GSAs to adopt Groundwater Sustainability Plans (GSPs) for medium- and high-priority basins. These plans must set the groundwater basin on a course toward sustainable management to eliminate adverse groundwater conditions specified as undesirable results. The law allows a local agency that has, "water supply, water management, or land use responsibilities within a groundwater basin, to elect to be a GSA." The Subbasin has been designated by DWR as a critically overdrafted high-priority basin (DWR, 2025).

Five GSPs representing 11 GSAs were initially submitted to DWR as required under the SGMA in January 2020 including the Kern Groundwater Authority (KGA) GSP (GEI, 2020). The KGA GSP served as an 'umbrella' GSP for its 16 member agencies including the WKWD GSA and incorporated the management area plans for each of its member agencies. Following receipt of an "incomplete determination" letter from DWR dated January 28, 2022, regarding the January 2020 KGA GSP, three of the KGA member agencies (Arvin GSA including Arvin Community Services District, Tejon-Castac Water District GSA, and Wheeler Ridge-Maricopa GSA) announced their withdrawal from the KGA on April 21, 2022, and formed the South of Kern River (SOKR) GSA (AEWSD, 2022). In July 2022, an amended KGA GSP (GEI, 2022) was submitted to DWR to address the DWR comments made to the January 2020 KGA GSP. The amended

KGA GSP once again incorporated the management area plans for each of the remaining 12 member agencies, including the WKWD GSA, which represents the Project area. The SOKR GSA GSP, which addressed certain comments to the January 2020 KGA GSP as well as those specific to the three SOKR GSAs, was also submitted to DWR in July 2022.

The WKWD GSA management area plan (Woodard & Curran, 2022) was included in the KGA GSP (GEI, 2022). A GSP chapter in the amended KGA GSP was prepared for the WKWD GSA by GEI (2022). The WKWD GSA includes the WKWD service area and minimal non-district lands. The WKWD GSA is located in the southwestern part of the Subbasin (see Figures 3 and 4).

By letter dated March 2, 2023, the DWR deemed the amended KGA GSP (GEI, 2022) as well as the other five GSPs submitted in the Subbasin as “inadequate” and jurisdiction of the GSP was transferred to the State Water Resources Control Board (SWRCB) to assist the GSAs in the correction of previously identified deficiencies and possible placement on probationary status.

On May 16, 2023, Cawelo Water District, Shafter Wasco Irrigation District, North Kern Water Storage District, and San Joaquin Municipal Utility District submitted a 30-days’ notice to withdraw from the KGA and form the new North Central Kern GSA Group, with each member forming their own GSA (KGA, 2023; Cawelo GSA, 2023). However, it appears a North Central Kern GSA Group GSP was not prepared or submitted separately to DWR for review.

In May 2024, a second amended Kern County Subbasin GSP (draft) (Rincon Consultants, 2024a), which included the umbrella KGA GSP and six separate GSPs from BVWSD GSA, Henry Miller Water District GSA, Kern-Tulare Water District GSA, Olcese Water District GSA, Semitropic Water Storage District GSA, and Westside Water District Authority GSA, with associated “blue page” revisions to the KGA umbrella GSP, were submitted to the SWRCB for review.

In June 2024, the Kern Non-Districted Land Authority (KNDLA) was formed by a Joint Exercise of Powers Agreement (JPA) by 20 public agencies (members) to replace the KGA and to manage preparation of a revised Kern County Subbasin GSP.

In July 2024, the SWRCB issued a Kern County Subbasin Probationary Hearing Draft Staff Report (SWRCB, 2024) following review of the May 2024 draft GSPs. Based on comments provided in the Kern County Subbasin Probationary Hearing Draft Staff Report and meetings with SWRCB staff, a final amended Kern County Subbasin GSP (Rincon Consultants, 2024b) was submitted to the SWRCB for review. In January 2025, the SWRCB issued a Kern County Subbasin Probationary Hearing Final Staff Report (SWRCB, 2025b) with recommendations to place the Subbasin on probation.

On February 20, 2025, the SWRCB held a public hearing to consider a probationary designation for the Subbasin. Based on comments received during the hearing, the SWRCB provided an extension of time to address the identified deficiencies with a new GSP submittal date of June 20, 2025. The SWRCB also established a continued probationary hearing date of September 17, 2025. In response, a revised draft GSP (i.e., “2025 Plan”), was submitted to the SWRCB for review on June 20, 2025 (Aquilogic et al., 2025) prior to the probationary hearing. On September 17, 2025, the SWRCB deemed the 2025 Plan to have

substantially addressed the previously identified deficiencies with recommendations to address three remaining deficiencies. The SWRCB also recommended that Subbasin oversight be returned to the DWR (SWRCB, 2025d).

GSPs must include minimum thresholds and measurable objectives to achieve every 5 years for the goal of sustainable groundwater management over a 50-year planning horizon. SGMA requires GSPs to achieve sustainable groundwater management within 20 years and ensures that the applicable basin is operated within the sustainable yield. Sustainable yield is defined in CWC 10721 and repeated in DWR (2017) as, "the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result". An undesirable result means one or more of the following effects caused by groundwater conditions occurring throughout the basin (CWC 10721; DWR, 2017):

- Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon. Overdraft during a drought is not sufficient to establish a chronic lowering of groundwater levels if extractions and groundwater recharge are managed as necessary to ensure that reductions in groundwater levels or storage during a period of drought are offset by increases in groundwater levels or storage during other periods,
- Significant and unreasonable reduction of groundwater storage,
- Significant and unreasonable seawater intrusion,
- Significant and unreasonably degraded water quality,
- Significant and unreasonable land subsidence that substantially interferes with surface land uses, and
- Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.

There are no potential significant and unreasonable undesirable results that were identified in the 2025 Plan (Aquilogic et al., 2025) that would directly impact the Project as the water supply for the Project would be derived from WKWDs North and South wellfields in the Kern River alluvial fan area (i.e., Kern Fan), a significant area of groundwater recharge in the Subbasin. During dry hydrologic periods there would be a localized temporary decline in groundwater levels and groundwater storage in the vicinity of WKWDs wellfields; however, groundwater levels and groundwater storage would recover during wet and above normal hydrologic periods as is indicated in the groundwater level hydrograph of WKWD Well 7 and other wells in the Kern Fan area (Aquilogic et al., 2025).

2.2 Local

2.2.1 Kern County General Plan

The Kern County General Plan (Kern County, 2009) presents a vision for Kern County's future, looking ahead to 2040. State law requires counties and cities to adopt and periodically update a General Plan to guide land use development. The purpose of the General Plan is to encourage economic development; work with local, state, and federal agencies to plan the long-term future of Kern County; ensure the protection of environmental resources; and maintain compliance with the provisions of State Planning and Zoning Laws.

The Kern County General Plan includes the following policies related water supply that are applicable to the Project (Kern County, 2009):

Chapter 1. Land Use, Conservation, and Open Space

Policies

- **Policy 10:** To encourage effective groundwater resource management for the long-term economic benefit of the County the following shall be considered:

(d) Promote groundwater recharge activities in various zone districts.

(d) Support for the development of Urban Water Management Plans and promote Department of Water Resources grant funding for all water providers.

(d) Support the development of groundwater management plans.

(d) Support the development of future sources of additional surface water and groundwater, including conjunctive use, recycled water, conservation, additional storage of surface water and groundwater and desalination.

- **Policy 34:** Ensure that water quality standards are met for existing users and future development.
- **Policy 35:** Ensure that adequate water storage, treatment, and transmission facilities are constructed concurrently with planned growth.
- **Policy 38:** Encourage utilization of wastewater treatment facilities which provide for the reuse of wastewater.
- **Policy 39:** Encourage the development of the County's groundwater supply to sustain and ensure water quality and quantity for existing users, planned growth, and maintenance of the natural environment.
    - **Implementation Measure X.** Encourage effective groundwater resource management for the long-term benefit of the County through the following:

i. Promote groundwater recharge activities in various zone districts.

ii. Support for the development of Urban Water Management Plans and promote Department of Water Resources grant funding for all water providers.

iii. Support the development of Groundwater Management Plans.

iv. Support the development of future sources of additional surface water and groundwater, including conjunctive use, recycled water, conservation, additional storage of surface water, and groundwater and desalination.

2.2.2 City of Taft General Plan

The City of Taft General Plan (Michael Baker International, 2017) presents a vision for the unincorporated and metropolitan Taft planning area, including its sphere of influence, the latter of which includes a portion of the Project area. State law requires counties and cities to adopt and periodically update a General Plan to guide land use development. The purpose of the General Plan is to encourage economic development; work with local, state, and federal agencies to plan the long-term future of the metropolitan Taft area; ensure the protection of environmental resources; and maintain compliance with the provisions of State Planning and Zoning Laws. The southern edge of the EHOF lies within the City of Taft's sphere of influence.

The City of Taft General Plan (Michael Baker International, 2017) includes the following policies related to water supply that may be applicable to the Project but are indeed applicable to WKWD, the public water system that serves the City of Taft:

Chapter 5.0 Open Space and Conservation Element

Goals

Goal C-4: A healthy water quality and supply for the community and natural environment.

Conservation Policies: Water and Supply and Quality

Policies

Policy C-20 Manage water use through planning, conservation, reclamation and recycling.

> **Action C-20a:** Collaborate with local, regional, and state water suppliers and water resource managers to comprehensively plan for ensuring a sustainable water supply.
>
> **Action C-20b:** Participate in the development of the Kern County Integrated Regional Water Management Program and other planning efforts.
>
> **Action C-20c:** Coordinate water resource management planning with other conservation planning efforts, such as open space planning and agricultural land preservation programs.

Policy C-21: Encourage water conservation and the use of reclaimed water through the application of best management practices.

Action C-21a: Work with the West Kern Water District and other water providers to create a master plan for a "purple-pipe" system and other mechanisms to promote water conservation.

Action C-21b: Seek funding to develop a water conservation program to collect baseline data and provide education and outreach and strategic direction for water conservation efforts.

Action C-21c: Establish a program to achieve a 20 percent reduction in per capita water use by 2020 or such other reduction goal as may be set by the State.

Action C-21d: Identify and implement programs for the reuse of treated wastewater, particularly in landscaping, irrigation, and public facilities. Coordinate with wastewater system operators, as appropriate.

Action C-21e: Require xeriscape landscaping in municipal facilities, public roadway landscape, and new development projects.

Action C-21f: Require development to install infrastructure to transport existing or future supplies of reclaimed water ("purple pipe") or pay an in-lieu fee equal to the cost of installation, to be used toward the implementation of a purple pipe master plan.

Action C-21g: Develop a plan to utilize a "purple pipe" system that allows reclaimed water to be used to irrigate City-owned properties.

Action C-21h: Develop a plan to utilize a "purple pipe" system that allows reclaimed water to be used to irrigate landscaping on private properties.

Policy C-23: Require natural groundwater recharge and new groundwater recharge opportunities, where appropriate.

Action C-23a: Research opportunities to combine groundwater recharge with habitat protection and recreational land uses.

Policy C-24: Collaborate with local and regional water resource managers to identify and monitor areas where hazardous waste may negatively impact groundwater quality.

Chapter 10.0 – Public Facilities and Services Element – Water Distribution

Goals

Goal PF-1: High quality water and wastewater systems in the City.

Policy PF-10: Require water supply and delivery systems to be available in time to meet the demand created by new development.

Action PF-10a: Amend the Taft Municipal Code to require the following for all development projects, excluding subdivisions:

- That an assured water supply and delivery system be available at the time of project approval. The water agency providing service to the project may provide several alternative methods of supply and/or delivery, provided that each is capable individually of providing water to the project**.**

- That all required water infrastructure for the project be assured through the use of financial guarantees to the City's satisfaction prior to the issuance of any building permit. • That all required water infrastructure for a property be in place prior to the issuance for a Certificate of Occupancy for any structure or building on a site.
- That water infrastructure be phased to coincide with the phased development of large-scale projects**.**

Action PF-10b: Amend the Taft Municipal Code to require the following for all subdivisions to the extent allowed by state law:

- That proposed water supply and delivery systems be identified prior to tentative map approval to the satisfaction of the City. The water agency providing service to the project may provide several alternative methods of supply and/or delivery, provided that each is capable individually of providing water to the project.
- That the agency providing water service to the subdivision demonstrate prior to the approval of the Final Map by the City that sufficient capacity would be available to accommodate the subdivision plus existing development, other approved projects in the same service area, and other projects that have received commitments for water service.
- That off-site and on-site water infrastructure sufficient to provide adequate water to the subdivision be in place prior to the approval of the Final Map, or their financing be assured to the satisfaction of the City, consistent with the requirements of the Subdivision Map Act.

Policy PF-11: Protect the quality and quantity of groundwater resources, including those that serve households and businesses which rely on private wells.

Policy PF-12: Require that water flow and pressure be provided at sufficient levels to meet domestic, commercial, industrial, and firefighting needs.

3 Water Supply Availability Analysis

SB 610 was passed into law on January 1, 2002. This legislation identified the need to incorporate water supply and demand analysis at the earliest possible stage in the planning process. SB 610 amended portions of the Water Code, including Section 10631, which contains the Urban Water Management Planning Act, as well as adding Sections 10910, 10911, 10912, 10913, and 10915, which describe the required elements of a WSA. In accordance with SB 610, and based upon the information contained in this WSA, the following sections assess the availability of water supply to meet the proposed Project's water demands, including with consideration to normal-year (no drought), single-dry-year (limited drought), and multiple-dry-year (extended drought) conditions, over a 20-year planning horizon.

A WSA is designed to build on the information that is typically contained in an Urban Water Management Plan (UWMP). The amendments to Water Code Section 10631 were designed to make WSAs and UWMPs consistent. A key difference between WSAs and UWMPs is that UWMPs are required to be revised every 5 years, in years ending with either zero or five, while WSAs are required as part of the environmental review process for each individually qualifying Project. Not all providers who prepare a WSA are required to prepare a UWMP.

The CWC, as amended by SB 610, requires a WSA to address the following questions:

- Is the Project subject to CEQA?
- Is it a Project under SB 610?
- Is there a public water system?
- Is there current UWMP that accounts for the Project demand?
- Is groundwater a component of the supplies for the Project?
- Are there sufficient supplies available to serve the Project over the next 20 years?

3.1 Is the Project Subject to CEQA?

The first step in the WSA process is determining whether the Project is subject to California Environmental Quality Act (CEQA). SB 610 amended Public Resources Code Section 21151.9 to read, “Whenever a city or county determines that a Project, as defined in Section 10912 of the Water Code [CWC], is subject to this division [i.e., CEQA], it shall comply with part 2.10 (commencing with Section 10910) of Division 6 of the Water Code.”

Projects requiring the issuance of a discretionary permit by a public agency, projects undertaken by a public agency, and projects that are funded by a public agency are subject to CEQA. As identified in the Project Description (Section 1.1) the proposed Project will require approval of a Petition for Post-Certification Amendment from the CEC, which is subject to a certified regulatory program under CEQA. The CEC is the lead agency for CEQA review.

Conclusion: The Project is subject to CEQA through the CEC certified regulatory program. Although there is no city or county approval, this WSA has been prepared consistent with SB 610 to analyze water supply for the proposed Project.

3.2 Is the Project Under Senate Bill 610?

The second step in the SB 610 process is to determine if a Project meets the definition of a “Project” under Water Code Section 10912 (a). Under this section, a “Project” is defined as meeting any of the following criteria:

- A proposed residential development of more than 500 dwelling units;
- A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space;];
- A commercial building employing more than 1,000 persons or having more than 250,000 square feet of floor space;
- A hotel or motel with more than 500 rooms; and
- A proposed industrial, manufacturing, or processing plant, or industrial park, planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area

The Project involves a proposed Carbon Capture Facility that would occupy 7.64 acres of land; The temporary and permanent impact area of the proposed Project would be approximately 52 acres. Therefore, the proposed Project is considered a Project under Section 19012(a) of the Water Code.

Conclusion: The Project meets the definition of a “Project” under Water Code Section 10912(a). The Project is subject to CEQA through the CEC certified regulatory program. Although there is no city or county

approval, this WSA has been prepared consistent with SB 610 to analyze water supply for the proposed Project.

3.3 Is There a Public Water System?

The third step in the WSA process is determining if there is a "public water system" to serve the Project. Section 10912 (c) of the Water Code states, "[A] public water system means a system for the provision of piped water to the public for human consumption that has 3,000 or more service connections."

The Project is located within the service area boundary of the WKWD, a public water system (Water System No. CA1510022), which serves a population of 20,500 via 6,212 residential, 596 commercial, and 357 industrial service connections (SWRCB, 2025a, accessed February 23, 2025). CRC would purchase potable water from WKWD to meet the municipal and industrial demands of the Project through their CREH non-transient non-community public water system (Water System No. CA1503440). The CREH public water system currently distributes potable water purchased from WKWD via 51 service connections to a population of 700 at the EHOF (SWRCB, 2025b, accessed February 23, 2025). The locations of the WKWD and WKWD GSA are shown on Figure 3 and Figure 4, respectively.

Conclusion: The CREH non-transient non-community public water system (Water System No. CA1503440) distributes water to a population of 700 at the EHOF via 51 service connections. The CREH public water system purchases potable water from WKWD, a public water system (Water System No. CA1510022) that serves a population of 20,500 via 7,165 service connections. Therefore, there is a Public Water System to serve the Project.

3.4 Is there a Current UWMP that Accounts for the Project Demand?

Step four in the WSA process involves determining if there is a current UWMP that considers the projected water demand for the Project. The Water Code requires that all public water systems providing water for municipal purposes to more than 3,000 customers, or supplying more than 3,000 afy, must prepare an UWMP, and this plan must be updated at least every 5 years on or before December 31, in the years ending in five and zero. Water Code Section 10910 (c) (2) states, "If the projected water demand associated with the proposed Project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the UWMP in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g) [i.e., the WSA]."

Municipal and industrial water supply demands for the construction, operation, and decommissioning of the Project estimated to be 4.63 af, 364.57 afy and 3.7 af, respectively, would be provided by WKWD. The total Project water demand over the estimated 30.5-year life span of the project which includes 30 months of construction, 26 years of operation and 2 years of decommissioning is 9,487.15 af. According to the *West Kern Water District Urban Water Management Plan 2020 Update* (Provost & Pritchard, 2023), WKWD

delivered 14,300 af of treated groundwater and 1,571 af of raw imported SWP water to its customers in 2020. Water losses were 467 af, for a total water demand of 16,338 af.

WKWD has an allotment of 31,500 afy of the Kern County Water Agency (KCWA) SWP Table A entitlement of 998,730 afy. However, annual allocations and deliveries vary significantly from year to year based on water supply conditions in the state, SWP water conveyance facilities maintenance, and Endangered Species Act requirements. The latter is described in *Biological Assessment on the Continued Long-Term Operations of the Central Valley Project and State Water Project* (U.S. Bureau of Reclamation, 2008) and subsequent Biological Opinions with Reasonable and Prudent Alternative actions prepared by the U.S. Fish and Wildlife Service (USFWS) (USFWS, 2008) and the National Marine Fisheries Service (NMFS, 2009, 2019). Owing to these combined factors SWP water entitlements were reduced to 59 percent in 2020 (Provost & Pritchard, 2023) and 50% in 2025 (DWR, 2025).

During wet hydrologic periods when surplus surface water supplies are available, up to 10,000 af of Article 21 SWP water is available for purchase by WKWD. WKWD's SWP surface water supplies, other than those delivered to La Paloma Generating Plant (1,571 af in 2020) via a WKWD turnout on the California Aqueduct, are exchanged with BVWSD as in-lieu deliveries and WKWD is credited with a nearly equal amount of water (less 5 percent recovery deduction), typically recharged Kern River water, as banked groundwater storage (Provost & Pritchard, 2023). Between 1976 and 2020, WKWD banked approximately 23,100 afy. As of 2020, WKWD had approximately 247,545 af of in-lieu water stored in its groundwater bank in the Kern Fan (Provost & Pritchard, 2023), equivalent to approximately 15 years of 2020 water demands (16,338 af), and 14 years of projected 2045 water demands (17,735 af).

WKWD operates up to 13 wells at the North and South well fields in the Kern Fan on the east side of the WKWD service area. These wells pump exchanged SWP water supplies from the WKWD groundwater bank for municipal and industrial use in WKWD's service area. Groundwater pumped from the WKWD wells is disinfected prior to distribution. Groundwater production from the WKWD wells decreased from 19,413 af in 2012 to 14,767 af in 2020 (Provost & Pritchard, 2016, 2023) due to the transition from a multiyear drought that occurred from 2011 through 2016 and wetter hydrologic conditions in 2017 and 2019.

As noted previously, WKWD currently provides municipal and industrial water supplies to CRC for distribution through their CREH public water system (Water System No. CA1503440), which serves municipal and industrial water supplies to a population of 700 via 51 service connections at the EHOF (SWRCB, 2025b). WKWD delivered approximately 3,525 af of municipal and industrial water to the CREH public water system from 2016 to 2020 with an average of 705 afy (CRC, 2025). More recently, between 2021 and 2024, WKWD delivered approximately 2,052 af of municipal and industrial water to CREH (CRC, 2025). Although the current UWMP does not take into account the Project's municipal and industrial water demands, the water demands of the Project fall within the estimated growth of WKWD projected water demands. Moreover, because WKWD has been providing municipal and industrial water supplies to CRC and the prior property owner Occidental through two Water Service Agreements, that is, District Agreement No. 18 for CREH (2,200 afy) and District Agreement No. 19 for EHPP (3,000 afy), the most recent dated March 1, 2001, it is likely that WKWD would continue to provide municipal and industrial water supplies to the Project beyond the water agreement expiration date of March 1, 2036. This is based on current and projected imported SWP water supplies and banked groundwater supplies available to WKWD and

available groundwater pumping capacity of the WKWD wells (Provost & Pritchard, 2023). Further, negotiations between CRC and WKWD to extend District Agreements No. 18 and 19 to at least 2057 are ongoing and are anticipated to be resolved prior to construction.

Owing to the small number of service connections and population served by the CREH public water system, it is not required to prepare and submit an UWMP to DWR.

Conclusion: The *West Kern Water District Urban Water Management Plan 2020 Update* (Provost & Pritchard, 2023) does not specifically account for municipal and industrial water deliveries to the Project; however, WKWD currently provides municipal and industrial water to CRC through their CREH public water system (Water System No. CA1503440) that provides water via 51 water connections to a population of approximately 700 persons. Moreover, because WKWD has been providing municipal and industrial water supplies to CRC and the prior property owner Occidental Elk Hills, LLC through two Water Service Agreements, the most recent dated March 1, 2001, it is likely that WKWD would continue to provide municipal and industrial water supplies to the Project beyond the water agreement expiration date of March 1, 2036, based on current and projected imported SWP water supplies and banked groundwater supplies available to WKWD (the latter of which has a current stored banked groundwater capacity of 15 years at 2020 water demands and 14 years at projected 2045 water demands) and available groundwater pumping capacity of the WKWD wells. Moreover, negotiations between CRC and WKWD to extend District Agreements No. 18 and 19 to at least 2057 are ongoing and are anticipated to be resolved prior to Project construction.

3.5 Is Groundwater a Component of the Supplies of the Project?

This section addresses the requirements of the Water Code Section 110910 (f), paragraphs 1 through 5, which apply if groundwater is a water source for a proposed Project. Pursuant to Water Code Section 10910 (f), the groundwater analysis presented in this analysis focuses on the Subbasin (DWR Basin No. 5-22.14) of the San Joaquin Valley Groundwater Basin (Figure 3).

Banked groundwater stored in the Kern Fan is the principal source of supply in the WKWD service area. The banked groundwater is stored as part of a BVWSD-WKWD exchange agreement, which provides for the in-lieu delivery of a majority of WKWD's SWP water allotment in exchange for an equivalent reduction in BVWSD groundwater production and credit to WKWD as banked groundwater. As of 2020, WKWD has stored approximately 247,545 af of in-lieu water stored in its groundwater bank in the Kern Fan (Provost & Pritchard, 2023). Banked groundwater would be used to provide potable water supplies to the Project. The estimated annual municipal and industrial water demand of the Project is 9,487.15 af over the 26-year life of the Project, which would be pumped from groundwater wells in WKWD's North and South well fields.

As noted previously, the Subbasin was designated as a critically overdrafted high-priority basin by DWR due to historical over-pumping, which led to a significant and unreasonable decline in groundwater levels, groundwater storage, and land subsidence. Owing to these issues and the passage of the SGMA in 2014, GSPs were submitted to DWR that provided a roadmap for sustainable management of groundwater

resources. To date, four draft and three final versions of the Kern County Subbasin GSP have been submitted to DWR for review to address identified deficiencies. The most recent revised draft version of the GSP (Aquilogic et al., 2025) (“2025 Plan”) was submitted to the SWRCB on June 20, 2025, for review prior to a scheduled probationary hearing on September 17, 2025. It is noted that the historical (WY1995-WY2014), current (WY2015-WY2023), and projected groundwater water budgets in the “2025 Plan” are identical to those submitted to the SWRCB in the December 2024 GSP (Rincon Consultants, 2024b). The historic, current and projected water budgets presented in Section 1.8.2, Historic Production, Groundwater Management, and Sustainable Yield, summarize key aspects related to groundwater production and groundwater storage in the Subbasin. For example, the projected average annual change in groundwater storage in the Subbasin estimated for the WY2041-WY2070 sustainability period under baseline, and 2030 and 2070 climate change scenarios with implementation of projects and management actions yield increases of 85,578 afy and 46,829 afy, and a decline of 45,969 afy, respectively (Rincon Consultants, 2024b, Appendix M, Table 25; Aquilogic et al., 2025, Appendix H, Table 25). The above projections suggest that the Subbasin GSAs have developed a GSP that would sustainably manage the Subbasin.

Conclusion: Water from groundwater wells in WKWD’s North and South well fields would be used to provide municipal and industrial water supplies to the Project estimated at 9,487.15 af over the 30.5-year life of the Project. The most recent GSPs submitted for the Subbasin (Rincon Consultants, 2024b; Aquilogic et al., 2025) suggest that the GSAs have developed a GSP that would manage the Subbasin sustainably over the WY2041-WY2070 sustainability period through the implementation of a variety of projects and management actions including among many others, expanded groundwater recharge and demand management (i.e., groundwater reduction). Moreover, as of 2020, WKWD has stored approximately 247,545 af of in-lieu water stored in its groundwater bank in the Kern Fan (Provost & Pritchard, 2023), equivalent to approximately 15 years of 2020 water demands (16,338 af), and 14 years of projected 2045 water demands (17,735 af).

3.6 Are There Sufficient Supplies to Serve the Project Over the Next Twenty Years?

3.6.1 Area Water Supplies

The next step in the WSA process is to prepare the assessment of the available water supplies, including the availability of these supplies in all water-year conditions over a 20-year planning horizon and an assessment of how these supplies relate to Project-specific and cumulative demands over that same 20-year period. Water Code Section 10910 (c)(4) states, "If the city or county is required to comply with this part pursuant to subdivision (b), the water assessment for the Project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the Project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed Project, in addition to existing and planned future uses including agricultural and manufacturing uses."

For the purposes of this WSA, to estimate water supply and demand conditions for the required 20-year projection, projected groundwater budgets for WY2026-WY2045 in the Subbasin are presented in Rincon

Consultants (2024b) Appendix M, Tables 19–24, and Aquilogic et al., (2025) Appendix H, Tables 19–24. For the baseline, 2030 climate change and 2070 climate change scenarios without implementation of projects and management actions water demands exceed water supplies by 6,635,339 af, 7,813,663 af, and 9,928,285 af. For the baseline, 2030 climate change and 2070 climate change scenarios with implementation of projects and management actions water demands are considerably smaller but continue to exceed water supplies by 394,555 af, 1,507,335 af, and 3,551,167 af.

In the WKWD, projected water supplies and demands are presented in the *West Kern Water District Urban Water Management Plan 2020 Update* (Provost & Pritchard (2023), Table 6-8 and Table 4-2, respectively, in 5-year increments between 2020 and 2045. For 2045, total water demand is estimated at 17,735 af, of which 14,185 af is potable water derived from groundwater, 3,000 af is raw SWP water diverted from the California Aqueduct for industrial use by the La Paloma Generating Plant, and 550 af is water losses of potable water.

As reported earlier, WKWD is a member agency of the KCWA and has an allotment of SWP water of 31,500 afy. WKWD also has the ability to purchase an additional 10,000 af of Article 21 SWP water during wet hydrologic periods. With the exception of the raw SWP water diverted from the California Aqueduct for industrial purposes by the La Paloma Generating Plant, the bulk of the SWP water delivered to WKWD is provided to BVWSD as in-lieu water and exchanged for recharged Kern River water (less 5 percent recovery deduction) in the Kern Fan recharge area in accordance with the WKWD-BVWSD exchange program.

As of 2020, WKWD has banked approximately 247,545 af of exchange water (Provost & Pritchard, 2023), equivalent to about 14 years of 2045 projected water demands. According to Provost & Pritchard (2023), the reliability of SWP water varies annually based on hydrologic conditions, SWP water conveyance facilities maintenance and Endangered Species Act requirements and is estimated to be 59 percent of normal in a normal year, 8 percent of normal for a single dry year and 19, 78, and 24 percent of normal for years 1, 2, and 3, respectively, for the multiple dry year water supply and demand scenarios. Projected water supplies available to WKWD in 2045 in a normal year are estimated to total 25,100 af (Provost & Pritchard, 2023, Table 7-2), with an estimated 7,365 af available for exchange with BVWSD as banked groundwater in the Subbasin.

Table 4 provides future water supply availability in the WKWD in calendar year 2045 for a normal year, single dry year, and multiple dry years. For the purposes of this analysis, the projected estimates for 2045 for a normal year and the single and multiple dry years used herein are presented in Provost & Pritchard (2023), Tables 7-2, 7-3 and 7-4, respectively. It is noted that the estimated quantity of groundwater recovered/pumped from the groundwater bank is highly variable and is calculated as the difference between water demand and available SWP water supplies, water transfers and exchanges.

Table 4 Future (2045) WKWD Water Supply Availability

Current Source [a]	Future (2045) Water Supply and Demand Normal Year [a]	Single Dry Year [b]	Multiple Dry Years [c]		
			Year 1	Year 2	Year 3
Imported Surface Water (SWP)	18,600	1,600	3,500	14,500	4,400
Surface Water Transfers/Exchanges (i.e., BVWSD)	6,500	6,500	6,500	6,500	6,500
Total Water Supply	25,100	8,100	10,000	21,000	10,900
Total WKWD Water Demand	17,735	17,735	17,735	17,735	15,962
Difference (Recovered/pumped from groundwater bank)*	0	9,635	7,735	0	5,062

Notes:

All units are in acre-feet

* The estimated quantity of groundwater recovered/pumped from the groundwater bank is calculated as the difference between water demand and available SWP water supplies, water transfers and exchanges. As of 2020, WKWD has stored 247,545 af their groundwater bank (Provost & Pritchard, 2023).

Sources:

(a) Provost & Pritchard (2023), Table 7-2. SWP water supplies available to WKWD are estimated at 59% of normal.

(b) Provost & Pritchard (2023), Table 7-3. SWP water supplies available to WKWD are estimated at 8% of normal.

(c) Provost & Pritchard (2023), Table 7-4. SWP water supplies available to WKWD are estimated at 19% of normal for Year 1, 78% of normal for Year 2 and 24% of normal for Year 3.

3.6.2 Project Water Demands

The Project estimates a construction water demand of 4.63 af over an approximate 30-month (2.5-year) construction period at 1.85 afy, which would consist of disinfected groundwater from WKWD delivered to the Project via the CREH public water system and trucked to the Project area. For Project operations, up to 364.5 afy of disinfected groundwater (or 9,477 af over the 26-year operational period) from WKWD would be piped via the CREH public water system and treated by RO by CRC prior to distribution and use at the CCU.

The Project's operational potable water demand is estimated at 0.07 afy (22,810 gpy) or 1.82 af over the 26-year operational period would also be purchased from WKWD by CRC and delivered to the Project via the CREH public water system. It is anticipated that the annual operational water demand of the Project will remain constant over the 20-year projection as shown in Table 5. Water for Project decommissioning is estimated at 3.7 af over an approximate 2-year period (1.85 afy), which would consist of disinfected groundwater purchased from WKWD by CRC and delivered to the Project via the CREH public water system and piped to the Project area. Total Project water demand is estimated at 9,487.15 af over 30.5 years.

Table 5 Anticipated Future (2045) Operational Project Water Demand

Land Use Category	Total Project Acres	Estimated Operational Project Water Demand (afy)*	Average Operational Project Water Demand (afy/acre)
Unincorporated Kern County	48.46	364.57	7.52
TOTAL	**48.46**	**364.57**	**7.52**

Notes: Estimated operational water demand in WY2045 includes 364.5 afy industrial demand and 0.07 afy potable demand.

3.6.3 Comparison of Available Water Supplies Versus Demand

Section 10910 (c)(3) of the Water Code states, “The water supply assessment for the Project shall include a discussion with regard to whether the public water system’s total projected water supplies available for normal, dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed Project, in addition to the public water system’s existing and planned future uses, including agricultural and manufacturing uses.”

As described in *West Kern Water District Urban Water Management Plan 2020 Update* (Provost & Pritchard, 2023), WKWD has a Table A entitlement of SWP water of 31,500 afy, which is delivered via the California Aqueduct and a portion diverted by BVWSD in an exchange agreement for a near equivalent portion of BVWSD Kern River recharge water as banked groundwater. The SWP water diverted by BVWSD is used for agricultural irrigation in-lieu of pumping an equivalent amount of groundwater in accordance with the WKWD-BVWSD exchange program. The exchanged unpumped groundwater is then credited to WKWD as banked groundwater (less 5 percent recovery deduction) in the Kern Fan area east of and within the eastern margin of the WKWD service area. As of 2020, WKWD has banked approximately 247,545 af of exchanged in-lieu SWP water (Provost & Pritchard, 2023). WKWD maintains and operates up to 13 wells in their North and South well fields located in the Kern Fan area. The groundwater pumped is disinfected prior to distribution in the WKWD public water system. WKWD also has an entitlement of up to 10,000 afy of Article 21 SWP water, which is available for purchase during wet hydrologic periods.

Groundwater production from the WKWD wells decreased from 19,413 af in 2012 to 14,767 af in 2020 (Provost & Pritchard, 2016, 2023) due to the transition from a multiyear drought that occurred from 2011 through 2016 to wetter hydrologic conditions with the concomitant increased availability of SWP water supplies. Between 2016 and 2020, groundwater production totaled 77,711 af and averaged 15,542 afy (Provost & Pritchard, 2023, Table 6-2).

La Paloma Generating Plant has an existing water supply contract with WKWD for up to 6,500 afy of SWP water. In 2020, 1,571 af of SWP water was diverted from an existing WKWD turnout on the California Aqueduct and delivered to the La Paloma Generating Plant (Provost & Pritchard, 2023). CRC has two water service agreements with WKWD that provides for the purchase of up to 2,200 afy of disinfected groundwater from WKWD. These include District Agreement No. 18 with Occidental of Elk Hills, LLC. (now CREH public water system) dated March 1, 2001, and District Agreement No. 19 with EHPP for the purchase of up to 3,000 afy, also dated March 1, 2001, both of which expire on March 1, 2036. WKWD

currently delivers and would continue to deliver pumped groundwater to the CREH public water system for distribution to the EHPP and other CRC facilities in the EHOF including the Project in accordance with the WKWD-CRC water service agreements. WKWD delivered a total of approximately 3,525 af of industrial water supplies to the CREH public water system from 2016 to 2020 with an average of 705 afy (CRC, 2025). More recently, between 2021 and 2024, WKWD delivered approximately 2,052 af of municipal and industrial water to CREH (CRC, 2025). Negotiations between CRC and WKWD to extend District Agreements No. 18 and 19 to at least 2057 are ongoing and are anticipated to be resolved prior to construction.

Table 6 presents future water supply and demand versus Project water demand in 2045 based on the *West Kern Water District Urban Water Management Plan 2020 Update* (Provost & Pritchard, 2023). The projected water supplies and demands in 2045 do not represent build-out conditions in the WKWD as that will likely occur beyond the 2045 projection of the UWMP. The Project water demands shown in Table 6 constitute operational water demands as 2045 would correspond to the sixteenth year of Project operation with the anticipated operational period beginning in 2029. As a result, only projected industrial and potable water demands are presented. The estimated quantity of groundwater recovered/pumped from WKWD's groundwater bank is calculated as the difference between total water demand and total water supply. Negative values indicate there is a water supply surplus stored in the groundwater bank.

Table 6 Future (2045) Water Supply Demand Versus Project Water Demand at Build-Out in the WKWD Water System

Current Source [a]	Future (2045) Water Supply Normal Year [a]	Single Dry Year [b]	Multiple Dry Years [c]		
			Year 1	Year 2	Year 3
Imported Surface Water (SWP)	18,600	1,600	3,500	14,500	4,400
Surface Water Transfers/Exchanges (i.e., BVWSD)	6,500	6,500	6,500	6,500	6,500
Total Water Supply	**25,100**	**8,100**	**10,000**	**21,000**	**10,900**
Project Industrial Water Demand	364.5	364.5	364.5	364.5	364.5
Project Potable Water Demand	0.07	0.07	0.07	0.07	0.07
Total Project Water Demand*	365	365	365	365	365
Total WKWD Water Demand Without Project	**17,735**	**17,735**	**17,735**	**17,735**	**15,962**
Total WKWD Water Demand With Project	**18,100**	**18,100**	**18,100**	**18,100**	**16,327**
Difference (Recovered/pumped from groundwater bank)**	-7,000	10,000	8,100	-2,900	5,427

Notes:
All units are in af

* 2045 would constitute the sixteenth year of Project operation (anticipated operational period beginning in 2029). Therefore, only projected industrial and potable water demands are presented. Total operational Project water demand is rounded to the next higher whole number for calculation purposes.
** The estimated quantity of groundwater recovered/pumped from the groundwater bank is calculated as the difference between total water demand and total water supply. As of 2020, there is 247,545 af stored in WKWD's groundwater bank (Provost & Pritchard, 2023). Negative values indicate there is a water supply surplus which is stored in the groundwater bank.
Sources:
(a) Provost & Pritchard (2023), Table 6-8. SWP water supplies available to WKWD are estimated at 56.3% of normal.
(b) Provost & Pritchard (2023), Table 7-3. SWP water supplies available to WKWD are estimated at 8% of normal.
(c) Provost & Pritchard (2023), Table 7-4. SWP water supplies available to WKWD are estimated at 19% of normal for Year 1, 78% of normal for Year 2 and 24% of normal for Year 3.

As shown in Table 6, Project water demands would be available from the incremental increase in groundwater recovery/pumping from WKWD wells from the groundwater bank. In addition, in normal and the second year of a multiple-dry-year cycle, there would be surplus water available that would be stored in the groundwater bank. Municipal and industrial water would continue to be provided by CREH public water system, which currently purchases disinfected groundwater from WKWD for distribution to 51 service connections in its service area in the EHOF. Owing to the small size of the CREH public water system a UWMP is not required to be submitted to DWR. As a result, there are no estimates of projected water supplies and demands available for this water system. However, the additional Project municipal and industrial water demand is estimated at 364.57 afy or 9,478.82 af over the 26-year year operational life of the Project and 9,487.15 af over the 30.5-year construction through decommissioning life of the Project.

Further, as of 2020, WKWD has banked approximately 247,545 af of exchanged in-lieu SWP water (Provost & Pritchard, 2023), equivalent to approximately 15 years of 2020 water demands (16,338 af), and 14 years of projected 2045 water demands (17,735 af). Negotiations between CRC and WKWD to extend District Agreements No. 18 and 19 to at least 2057 are ongoing and are anticipated to be resolved prior to construction.

Based on the foregoing, there are sufficient imported SWP water supplies and banked groundwater supplies available to meet the current and future water demands of the WKWD and the Project water demands over the life of the Project.

Owing to the fact that WKWD is the sole provider of municipal and industrial water to customers (including the CREH public water system) in its service area and occupies a larger area than the WKWD GSA (see Figures 3 and 4 for comparison), an analysis of water supplies and demands in the WKWD GSA is not required.

Conclusion: Project operational water demands are estimated at up to 364.57 afy, which would consist of disinfected groundwater purchased from WKWD and delivered to the Project area through the CREH public water system for distribution to Project facilities. Water to be used for project industrial uses estimated at 364.5 afy would be treated with RO by CRC prior to use at the CCU and other Project facilities. Potable water demands for the Project estimated at 0.07 afy (22,810 gpy) would also be purchased from WKWD by CREH public water system for distribution to Project facilities. Total Project water demand is estimated at 9,487.15 af over the 30.5-year construction through decommissioning life of the Project. Negotiations

between CRC and WKWD to extend District Agreements No. 18 and 19 to at least 2057 are ongoing and are anticipated to be resolved prior to construction.

WKWD has banked approximately 247,545 af of exchanged in-lieu SWP water (Provost & Pritchard, 2023), equivalent to approximately 15 years of 2020 water demands (16,338 af), and 14 years of projected 2045 water demands (17,735 af). Based on the foregoing, there are adequate surface water and banked groundwater supplies available in the WKWD and, by extension, the WKWD GSA plan area and the EHOF specifically, to meet Project water demands under all water year conditions.

4 Conclusions

According to the requirements of Water Code Section 10910(c)(3), the water supply assessment "shall include a discussion with regard to whether the public water system's total projected water supplies available will meet the projected water demand associated with proposed Project, in addition to the public water system's existing and planned future uses."

The following is a summary of the WSA for this Project:

- The Project will be under environmental review pursuant to the requirements of CEQA; therefore, the information contained in this assessment will support the analysis contained in the CEQA document. The Project meets the definition of a "Project" under Water Code Section 10912(a).
- The Project is located within the unincorporated portion of Kern County. Construction water demand, estimated to be 4.63 af over a 30 month (2.5-year) period, would be disinfected groundwater purchased from WKWD by the CREH public water system in accordance with two existing Water Service Agreements (District Agreement No. 18 and 19) that allows CRC to purchase of up to 2,200 afy for use in the EHOF and 3,000 afy at the EHPP, respectively. Operational industrial water demand is estimated at 364.5 afy and would also consist of disinfected groundwater purchased from WKWD and delivered to the Project area by the CREH public water system and treated by RO by CRC prior to use at the CCU and other Project facilities. Potable water demands during Project operation are estimated to be 0.07 afy (22,810 gal/yr) and would also be purchased from WKWD through CREH public water system for distribution to Project facilities.
- The construction water demand has not been accounted for in the *West Kern Water District Urban Water Management Plan 2020 Update* (Provost & Pritchard, 2023); however, CRC has two water service agreements with WKWD. District Agreement No. 18 with Occidental of Elk Hills, LLC (now CREH public water system) dated March 1, 2001, provides for the purchase of up to 2,200 afy of disinfected groundwater from WKWDs North and South wellfields. District Agreement No. 19 with EHPP, also dated March 1, 2001, provides for the purchase of up to 3,000 afy of disinfected groundwater from WKWDs North and South wellfields. Both District Agreements expire on March 1, 2036. WKWD currently delivers and would continue to deliver pumped groundwater to the CREH public water system for distribution to the EHPP and other CRC facilities in the EHOF, including the Project, in accordance with District Agreements No. 18 and 19. Negotiations between CRC and WKWD to extend District Agreements No. 18 and 19 to at least 2057 are ongoing and are anticipated to be resolved prior to Project construction.
- WKWD delivered a total of approximately 3,525 af of industrial water supplies to the CREH water system from 2016 to 2020 with an average of 705 afy (CRC, 2025). More recently, between 2021 and 2024, WKWD delivered approximately 2,052 af of municipal and industrial water to CREH (CRC, 2025).

- Groundwater production, that is, recovery of stored water, from WKWD's North and South well fields ranged from 15,392 af to 16,300 af between 2016 and 2020 and averaged 15,542 afy (Provost & Pritchard, 2023). In 2012, groundwater production was as much as 19,413 af during a multiyear drought (Provost & Pritchard, 2016).

- WKWD is entitled to 31,500 afy of SWP water as a member agency of the KCWA. In addition, WKWD is entitled to 10,000 afy of Article 21 water during wet hydrologic periods. However, the reliability of SWP water varies annually based on hydrologic conditions and Endangered Species Act requirements. As a result, WKWD has entered into a water exchange agreement with BVWSD to divert a portion of WKWDs SWP water entitlement as in-lieu deliveries in exchange for a portion of BVWSD Kern River recharge water as banked groundwater. As of 2020, WKWD has approximately 247,545 af of banked groundwater stored in the Kern Fan equivalent to 15 years of the 2020 water demand (16,338 af), and 14 years of projected 2045 water demands (17,735 af).

- The Subbasin has been designated as a critically over-drafted high-priority basin by the DWR and is managed by 11 GSAs that submitted five original and six revised GSPs to DWR in January 2020 and July 2022. Owing to incomplete and inadequate determinations of the GSPs by the DWR, oversight of the GSP was shifted to the SWRCB. In May 2024, a second amended Kern County Subbasin GSP (draft) (Rincon Consultants, 2024a), which included the umbrella KGA GSP and six separate GSPs from BVWSD GSA, Henry Miller Water District GSA, Kern-Tulare Water District GSA, Olcese Water District GSA, Semitropic Water Storage District GSA, and Westside Water District Authority GSA, with associated "blue page" revisions to the KGA umbrella GSP, were submitted to the SWRCB for review. In July 2024, the SWRCB issued a Kern County Subbasin Probationary Hearing Draft Staff Report (SWRCB, 2024) following review of the May 2024 draft GSPs. Based on comments provided in the Kern County Subbasin Probationary Hearing Draft Staff Report and meetings with SWRCB staff, a final amended Kern County Subbasin GSP (Rincon Consultants, 2024b) was submitted to the SWRCB for review. In January 2025, the SWRCB issued a Kern County Subbasin Probationary Hearing Final Staff Report (SWRCB, 2025) with recommendations to place the Subbasin on probation. On February 20, 2025, the SWRCB held a public hearing to consider a probationary designation for the Subbasin. Based on comments received during the hearing, the SWRCB provided an extension of time to address the identified deficiencies with a new GSP submittal date of June 20, 2025. The SWRCB also established a continued probationary hearing date of September 17, 2025. A revised GSP was submitted to the SWRCB on June 20, 2025 (Aquilogic et al., 2025), in advance of the probationary hearing. On September 17, 2025, the SWRCB deemed the 2025 Plan to have substantially addressed the previously identified deficiencies with recommendations to address three remaining deficiencies. The SWRCB also recommended that Subbasin oversight be returned to the DWR (SWRCB, 2025d).

- Groundwater production in the Subbasin for WY1995-WY2014 (historical water budget) is estimated to average 1,586,418 afy based on the CV2SimFG-Kern groundwater model simulation (Rincon Consultants, 2024b; Aquilogic et al., 2025). Groundwater production in the Subbasin during

WY2015-WY2023 (current water budget) is estimated to average 1,817,881 afy (Rincon Consultants, 2024b; Aquilogic et al., 2025).

- Groundwater production in the WKWD during WY2015-WY2023 (current water budget) is estimated to average 19,778 afy based on the CV2SimFG-Kern groundwater model simulation (Rincon Consultants, 2024b, Appendix M, Table 6; Aquilogic et al., 2025, Appendix H, Table 6).

- Projected annual groundwater production in the Subbasin estimated using the CV2SimFG-Kern groundwater model for the WY2021-WY2040 implementation period under baseline, and 2030 and 2070 climate change scenarios without projects and management actions are 1,580,920 afy, 1,688,648 afy, and 1,819,268 afy, respectively (Rincon Consultants, 2024b, Appendix M, Tables 19, 21 and 23; Aquilogic et al., 2025, Appendix H, Tables 19, 21 and 23).

- The projected average annual groundwater production in the Subbasin estimated using the CV2SimFG-Kern groundwater model for the WY2021-WY2040 implementation period under baseline, and 2030 and 2070 climate change scenarios with implementation of projects and management actions yield comparatively significant decreases of 1,426,753 afy, 1,527,259 afy, and a 1,648,770 afy, respectively (Rincon Consultants, 2024b, Appendix M, Tables 20, 22 and 24; Aquilogic et a.l, 2025, Appendix H, Tables 20, 22 and 24).

- Projected annual groundwater production in the Subbasin estimated using the CV2SimFG-Kern groundwater model for the WY2041-WY2070 sustainability period under baseline, and 2030 and 2070 climate change scenarios without projects and management actions are 1,624,694 afy, 1,734,001, and 1,866,239 afy, respectively (Rincon Consultants, 2024b, Appendix M, Tables 19, 21 and 23; Aquilogic et al., 2025, Appendix H, Tables 19, 21 and 23).

- The projected average annual groundwater production in the Subbasin estimated using the CV2SimFG-Kern groundwater model for the WY2041-WY2070 sustainability period under baseline, and 2030 and 2070 climate change scenarios with implementation of projects and management actions yield comparatively significant decreases of 1,354,088 afy, 1,444,144 afy, and a 1,559,343 afy, respectively (Rincon Consultants, 2024b, Appendix M, Table 20, 22 and 24; Aquilogic et al., 2025, Appendix H, Tables 20, 22 and 24).

- Groundwater production in the WKWD is projected to increase to 14,735 af in 2045, which includes potable water demands of 14,185 af and water system losses of 550 af (Provost & Pritchard, 2023).

- Estimations of the total storage capacity of the Subbasin were reported in *California's Groundwater Bulletin 118 San Joaquin Valley Groundwater Basin Kern County Subbasin* (DWR, 2006) based on data in 2002 to be 40,000,000 af (KCWA, 2002). The dewatered storage at this time was also reported to be 10,000,000 (KCWA, 2002). In *Kern County Subbasin Groundwater Sustainability Agencies Groundwater Sustainability Plan* (Aquilogic et al, 2025), the estimated water storage volume of the Subbasin was estimated using the CV2SimFG-Kern groundwater model sensitivity analysis to range between 80,000,000 and 180,000,000 af. Change of groundwater in storage in the Subbasin between WY1995 and WY2014 (historical water budget) is estimated to have

declined by 5,484,000 af based on an annual decline of 274,200 afy (Rincon Consultants, 2024b; Aquilogic et al., 2025). Change in groundwater in storage in the Subbasin between WY2015-2023 (current water budget) is estimated to yield a decline of 6,880,380 af based on an annual decline of 344,019 afy (Rincon Consultants, 2024b; Aquilogic et al., 2025).

- The projected average annual change in groundwater storage in the Subbasin estimated using the CV2SimFG-Kern groundwater model for the WY2021-WY2040 implementation period under baseline, and 2030 and 2070 climate change scenarios without projects and management actions are declines of 333,358 afy, 389,685 afy, and 491,092 afy, respectively (Rincon Consultants, 2024b, Appendix M, Tables 19, 21 and 23; Aquilogic et al., 2025, Appendix H, Tables 19, 21 and 23). The projected average annual changes in groundwater in storage in the Subbasin estimated for the WY2021-WY2040 implementation period under baseline, and 2030 and 2070 climate change scenarios with implementation of projects and management actions yield comparatively lower declines of 67,687 afy, 123,719 afy, and 224,286 afy, respectively (Rincon Consultants, 2024b, Appendix M, Tables 20, 22 and 24; Aquilogic et al., 2025, Appendix H, Tables 20, 22 and 24).

- The projected average annual change in groundwater in storage in the Subbasin estimated using the CV2SimFG-Kern groundwater model for the WY2041-WY2070 sustainability period under baseline, and 2030 and 2070 climate change scenarios without projects and management actions yield declines of 324,326 afy, 372,120 afy, and 472,336 afy, respectively (Rincon Consultants, 2024b, Appendix M Table 25; Aquilogic et al., 2025, Appendix H, Table 25). The projected average annual changes in groundwater in storage in the Subbasin estimated using the CV2SimFG-Kern groundwater model for the WY2041-WY2070 sustainability period under baseline, and 2030 and 2070 climate change scenarios with implementation of projects and management actions yield increases of 85,578 afy, 46,829 afy, and a decline of 45,969 afy, respectively (Rincon Consultants, 2024b, Appendix M, Table 25; Aquilogic et al., 2025, Appendix H, Table 25).

- The estimated sustainable yield of the Subbasin estimated using the CV2SimFG-Kern groundwater model for the WY1995-WY2014 historical water budget is 1,312,218 afy based on annual average groundwater pumping of 1,586,417 afy and an associated annual average change in groundwater in storage of -274,200 afy. (Rincon Consultants, 2024b, Appendix M, Table 26; Aquilogic et al., 2025, Appendix H, Table 26).

- The projected sustainable yield of the Subbasin estimated using the CV2SimFG-Kern groundwater model for the WY2041-WY2070 sustainability period under baseline, and 2030 and 2070 climate change scenarios without projects and management actions is 1,300,369 afy, 1,369,881 afy and 1,393,902 afy, respectively (Rincon Consultants, 2024b, Appendix M, Table 26; Aquilogic et al., 2025, Appendix H, Table 26). The projected sustainable yield of the Subbasin estimated using the CV2SimFG-Kern groundwater model for the WY2041-WY2070 sustainability period under baseline, and 2030 and 2070 climate change scenarios with projects and management actions 1,439,666 afy, 1,490,974 afy and 1,513,373 afy, respectively (Rincon Consultants, 2024b, Appendix M, Table 26; Aquilogic et al., 2025, Appendix H, Table 26).

Through the implementation of a variety of projects and management actions including among many others, expanded groundwater recharge and demand management (i.e., groundwater reduction) the Subbasin GSAs will meet their GSP-specific groundwater sustainability goals by 2070. In addition, owing to the existing SWP water entitlement including Article 21 water when available, and the SWP water exchange agreement with BVWSD, there is sufficient imported SWP water and banked Kern River recharge water available to WKWD to meet the construction and operation water demands of the Project over the next 20 years. Further,negotiations between CRC and WKWD to extend District Agreements No. 18 and 19 to at least 2057 are ongoing and are anticipated to be resolved prior to construction. These negotiations are anticipated to extend the water service agreements for the CREH public water system to purchase up to 2,200 afy through the entire life of the Project.

Based on the results of this assessment, sufficient water supply is available to serve the Project as proposed, and no further analysis should be required.

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