From:	Lindsay Cokeley
To:	sbcob
Subject:	Cadwell Cannabis Cultivation Land Use Permit Project - Departmental Item No. 2
Date:	Thursday, February 10, 2022 4:51:18 PM
Attachments:	CentralCoastAgLLC_5645SantaRosa_RiparianImpactMemorandum_Figures_Jan2022Update.pdf

Hello,

Please confirm receipt of the following document to be distributed as a part of the record.

Thank you,

Lindsay Cokeley
Director, Compliance | CCA
(818) 317-8414
ccagriculture.com

KG18-0422

TO: Matt Allen

FROM: Kear Groundwater
P.O. Box 2601
Santa Barbara, CA 93120-2601

DATE: January 31, 2022 Update

SUBJECT: *Hydrologic Overview and Potential Impact Assessment*
5645 Santa Rosa Road, Vicinity Lompoc/Buellton, Santa Barbara County, CA

Dear Mr. Allen,

This memorandum provides a summary of Kear Groundwater's (KG) hydrogeologic evaluation and review of potential riparian impacts due to groundwater usage for cannabis cultivation by Central Coast Agriculture, LLC (Central Coast) at the 5645 Santa Rosa Road property (APN 083-150-013) along the Santa Ynez River between Buellton and Lompoc, Santa Barbara County. Figure 1 presents the location of the parcel and the two wells (northeastern shallow alluvial well and southwestern deep bedrock well) used for cultivation.

Our objective was to perform a review of available hydrogeologic information and existing on-parcel groundwater resources, as well as to evaluate the potential hydrologic impacts on nearby water quality, aquatic habitat, riparian habitat, wetlands, and springs, as related to the diversion of water associated with cannabis cultivation, in compliance with the State Water Resources Control Board's (SWRCB) Cannabis Cultivation Policy per the California Water Code (Section 13149). SWRCB and the Department of Fish and Wildlife (DFW) may apply these requirements to groundwater extractions (as is the case herein) where determined to be reasonably necessary. For this assessment, we reviewed publicly-available data and gathered site-specific information relating to the surface/subsurface flow regimes along the Santa Ynez River system (including Lake Cachuma releases) and its local fluvial geomorphology, in addition to details on well characteristics and cultivation operations.

SWRCB defines groundwater as any water found beneath Earth's surface; however, there is a

distinction between "percolating groundwater" in a groundwater basin versus groundwater that acts as a "subterranean stream" flowing within a known and defined channel.

Based on our review, we conclude that while the northeastern well extracts from a shallow alluvial aquifer that may be classified as part of the "subterranean stream" of the Santa Ynez River flow system, water usage for cannabis cultivation at 5645 Santa Rosa Road is negligible within the larger flow system and will not "substantially affect instream flows" from the baseline condition; however, the cumulative extraction of local wells along the river area may be considered significant over a long pumping season. Alternatively, the southwestern well extracts exclusively "percolating groundwater" within a fractured bedrock aquifer system and therefore should not be subject to the current regulatory limitations for cultivation operations during forbearance periods; the deep well is also outside of the delineated Santa Ynez River Valley Groundwater Basin.

A summary of our efforts, findings, conclusions, and more detailed recommendations follows.

Existing On-Property Wells for Cannabis Cultivation

There are two operational groundwater wells used for cannabis cultivation at the 5645 Santa Rosa Road property. The northeastern shallow well (Photo 1) produces groundwater from unconsolidated sand and gravel alluvial aquifers that are, at least in part, in hydraulic connection with the Santa Ynez River flow system; the southwestern deep well (Photo 2) produces groundwater from fractured bedrock aquifers of the Monterey Shale and the underlying Tranquillon Volcanics and is equipped with a deep cement sanitary seal.

Per the available well record (below), Floyd Wells drilled the shallow alluvial well in 2006 as an 18-inch-diameter borehole to 80 ft below ground surface (bgs). The drillers reportedly equipped the well with a 12-inch-diameter, SDR-21 PVC casing to 80 ft bgs and perforations from 10 to 60 ft. Floyd Wells filled the annular space with an unspecified gravel pack from 80 ft up to 22 ft, followed by the cement sanitary seal from 22 ft up to ground surface, despite the shallow top of perforations (this is a common anomaly as a 22-ft deep conductor casing may have been used). The wellhead elevation is approximately 231 ft AMSL and is about 250 lateral ft at its closest point to the main Santa Ynez River channel (as measured via Google Earth).

Work Investigation Record

Date 8/23/06 Well Site #:

Casing Information Borehole

Type: Steel ☐ PVC ☒ Other ☐ Total Depth of Well: 80'

Class/Gage/NSF: SDR 21 Annular Seal Depth: 22'

ASTM#: Well Bore Diameter: 18"

Diameter: 12" Total Depth: 80' Sealing Material: 6 sack cement

Casing Schedule Amount: ≈ 1 yard

0' - 80' = Blank Method of Pour: Pump

10 - 60 = Screen

60 - 80 = "Blank" Use of Tremie: yes

Driller(s): Floyd V. Wells

Shallow alluvial well construction record.

Photo 1. The shallow alluvial water well at 5645 Santa Rosa Road.

Photo 2. The deep bedrock water well (following its 2019 construction) at 5645 Santa Rosa Road.

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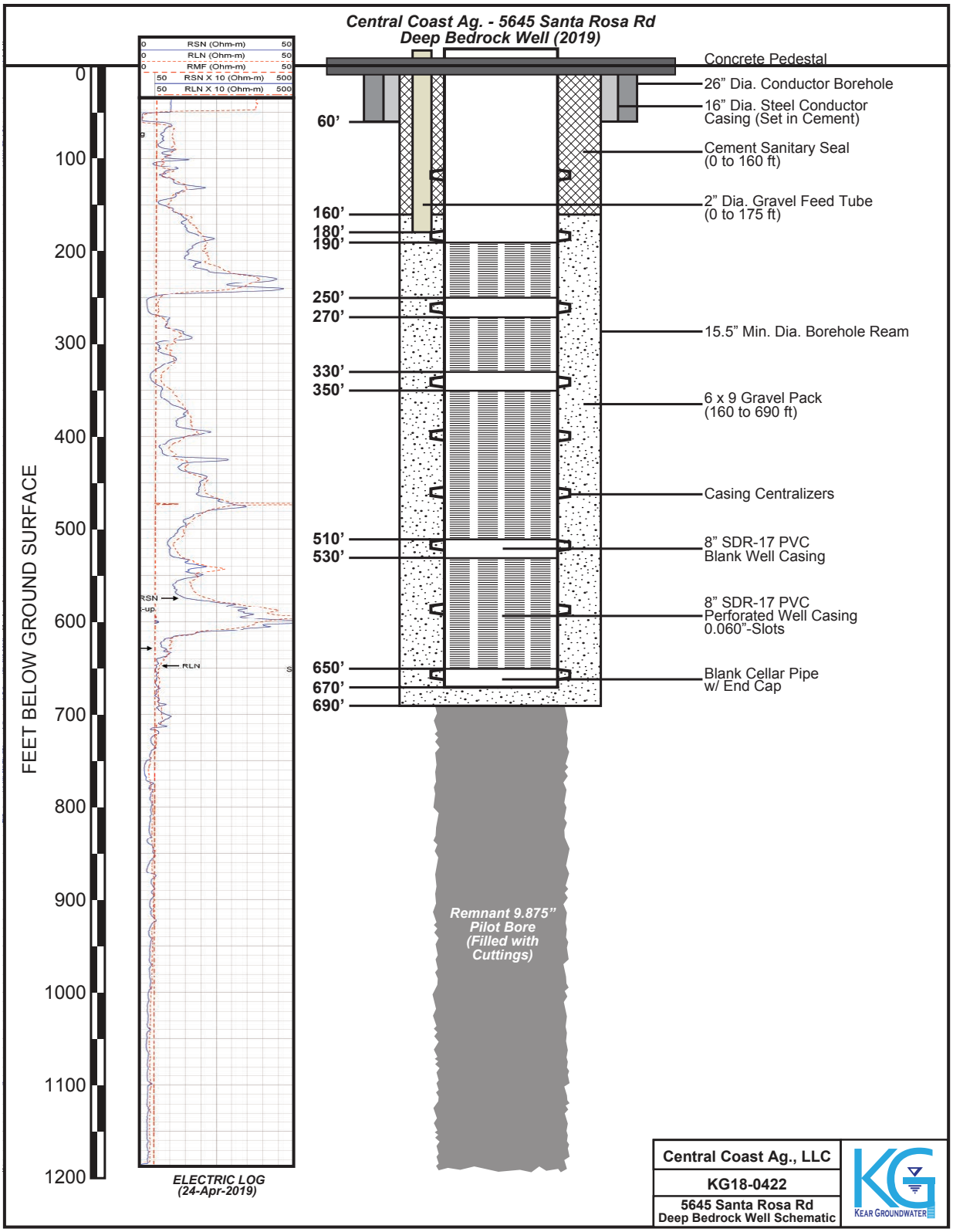
Hansen Well-Do Service, Inc. (Hansen) drilled the deep bedrock well in 2019 as a 15.5-inch-diameter to 690 ft bgs. Hansen drilled the initial pilot borehole to total depth of 1200 ft bgs. The drillers equipped the well with an 8-inch-diameter, SDR-17 PVC casing to 670 ft bgs and perforations (as 0.060-inch-aperture slots) from 190 to 250 ft, 270 to 330 ft, 350 to 510 ft, and 530 to 650 ft, with a blank cellar pipe and end-cap from 650 to 670 ft (well construction schematic on following page). Hansen filled the annular space between the well casing and borehole with gravel pack (6 x 9 gradation) from 690 ft up to 160 ft bgs. Hansen then emplaced the annular 10-sack sand-slurry (with 2% retardant for the PVC casing) cement seal over two pours: from 160 ft up to about 55 ft bgs with 4 cubic yards on May 16, and from 55 ft up to ground surface with 2.5 cubic yards on May 17, 2019 (poured under inspection by a County Environmental Health Specialist). The wellhead elevation is approximately 388 ft AMSL and is about 2000 lateral ft at its closest point to the main Santa Ynez River channel (as measured via Google Earth).

The operational capacity and schedule for the well during a typical year is described in the "Cannabis Cultivation Operations and Groundwater Demand" section, below.



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Hydrogeologic Overview

The 100.92-total-acre 5645 Santa Rosa Road property is situated within the Santa Ynez Valley, just south of the westward-draining Santa Ynez River between the Santa Rita Hills in the north and the Santa Ynez Mountains in the south (Figure 2 for watershed map). The subject parcel appears to be almost entirely within the delineated Santa Ynez River Valley Groundwater Basin ("Santa Ynez Basin," California Dept. of Water Resources, Bulletin 118, Basin No. 3-15), excluding the parcel's higher-elevation, southwestern corner (where deep well is located). Specifically, the 5645 Santa Rosa Road property is within the Santa Ynez River Alluvial Corridor/Sub-Basin (SYRAB), between the up-gradient Buellton Uplands Sub-Basin (BUB) and the down-gradient Lompoc sub-basins.

The Santa Ynez Basin is bounded by the Pacific Ocean on the west and by the consolidated/semi-permeable rocks that form the Santa Ynez Mountains to the south, the San Rafael Mountains to the northeast, and the Purisima Hills to the northwest. Groundwater aquifers are stored in unconsolidated alluvial deposits (SYRAB) and in the older sedimentary formations (primarily the semi-consolidated Orcutt Formation, Paso Robles Formation, and Careaga Sandstone, especially where fractured). The SYRAB and the BUB are generally separated by the Santa Ynez River Fault Zone (mapped as a separate limb from the larger Santa Ynez Fault). Local groundwater aquifers around the parcel are principally comprised of the unconsolidated alluvium deposits as well as the secondary fractures of the older bedrock formations.

Santa Barbara County Water Agency's (SBCWA) Groundwater Basins Status Report (2014), more detailed than SBCWA's most recent (August 2019) Summary Report, estimates an annual extraction of 1000 acre-ft from the SYRAB with around 90,000 acre-ft usable groundwater in storage (1.11% of total storage extracted annually). At the BUB, the County estimates an annual extraction of 2000 acre-ft with around 154,000 acre-ft usable groundwater in storage (1.30% of total storage extracted annually). An additional 800 acre-ft (annually) of estimated groundwater surplus from the BUB would conceptually recharge the SYRAB as underflow. Other groundwater sub-basins of the larger Santa Ynez Basin include the Santa Ynez Uplands (with

11,000 acre-ft annual extraction and 900,000 acre-ft estimated storage), and the Lompoc Uplands/Plain/Terrace Basins (with 28,000 acre-ft annual extraction and 170,000 acre-ft estimated storage).

Groundwater within the SYRAB is managed in accordance subject to water rights agreements (Decision 89-18) so as to protect downstream water rights from Bradbury Dam. Therefore, downstream water levels fluctuate less in response to climate-related trends and more so to water available according to the Decision.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA) of 2014 is a three-bill package (AB 1739, SB 1168, and SB 1319) that sets the framework for statewide long-term sustainable groundwater management by local authorities. SGMA requires the formation of new groundwater sustainability agencies (GSAs) tasked with assessing the conditions in their local basins and adopting locally-based sustainable management plans. SGMA provides local GSAs with tools and authority to (1) require registration of groundwater wells, (2) measure and manage extractions (including limiting the amount of water pumped by individual well owners), (3) require reports and assess fees, and (4) request revisions of basin boundaries, including establishing new sub-basins. GSAs responsible for high- and medium-priority basins must adopt long-term groundwater sustainability plans (GSPs) by 2022 (or 2020 if in overdraft). Plans will be evaluated every five years. GSAs have until 2040 to achieve groundwater sustainability.

Via the California Statewide Groundwater Elevation Monitoring (CASGEM), the DWR ranks the 204,642-acre Santa Ynez Basin as a medium-priority basin. The Santa Ynez Basin has been divided into three management areas, known as the "Eastern Management Area," "Central Management Area," and the "Western Management Area." Each management area now has its own GSP. The 5645 Santa Rosa Road parcel is within the Western Management Area. The Western Management Area GSA includes the Santa Ynez River Water Conservation District (SYRWCD), the SBCWA, the City of Lompoc, Vandenberg Village Community Services

District (VVCSD), and the Mission Hills Community Services District (MHCSD). The SYRWCD is a public agency formed in 1939 to protect/preserve local water rights/supplies of the Santa Ynez/Lompoc Valleys.

Per the GSP (WMAGSA, 2022), the current estimate of the sustainable yield, defined by SGMA as the maximum quantity of water that can be withdrawn annually without causing undesirable results, is currently estimated to be 26,400 acre-ft per year for the WMA based on the historical water budget.

Hydrostratigraphy

The Santa Ynez River Valley is filled in the low-lying basins with Quaternary-aged alluvium of fluvial origin, with sediment derived from the weathering and erosion of the surrounding mountains. Alluvial deposits are comprised of an unconsolidated mixture of gravels, sands, silts, and clays of various thicknesses. Groundwater is stored in coarser-grained aquifers separated by finer-grained aquitards. Alluvium is generally separated into recent, active (Holocene-aged, Qa) and older, dissected (Pleistocene-aged, Qoa) terrace deposits. Alluvial deposits reach a maximum thickness of around 150 ft within the SYRAB before gradually thinning toward the foothills and becoming either too thin or unsaturated for sustained groundwater development.

Around the 5645 Santa Rosa Road parcel, basin fill sediments are unconformably underlain by older, Tertiary-aged sedimentary and volcanic formations, including, from youngest to oldest (all Miocene-aged and marine-deposited) the Monterey Shale (Tm; including its more siliceous lower member, Tml), the Tranquillon Volcanic Formation (Ttb), and the Rincon Shale (Tr). Younger sedimentary units are exposed in the northern foothills of the Santa Ynez Valley and include the Plio-Pleistocene-aged nonmarine (Paso Robles Formation, QTp) and Pliocene-aged marine sediment (Careaga Sandstone, Tca).

Groundwater Recharge and Levels

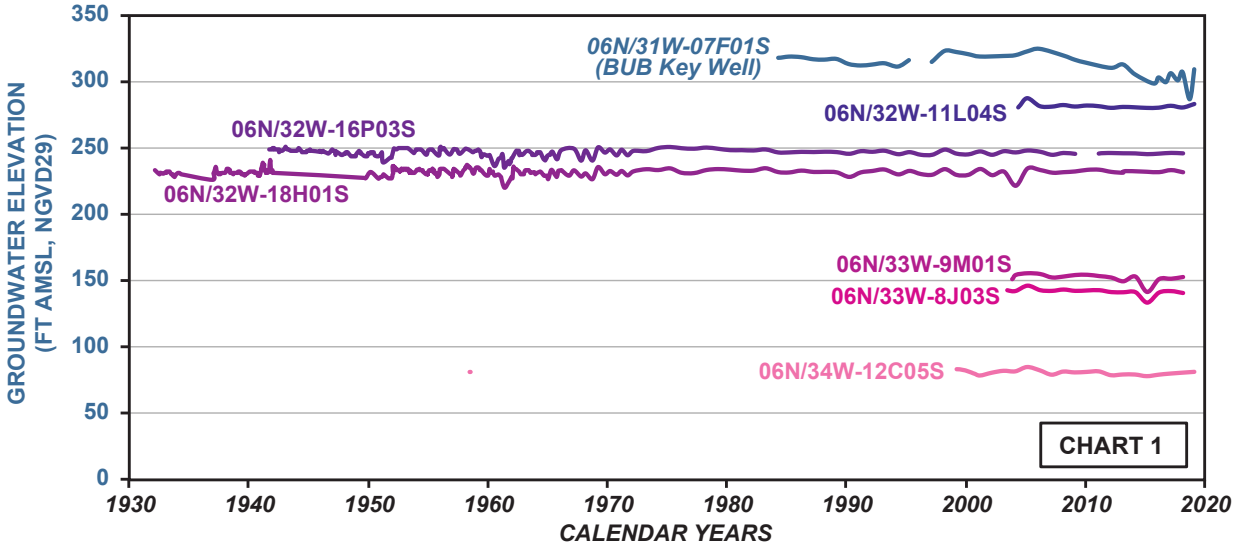
Recharge to local aquifers is derived from percolation of precipitation, irrigation return flow, seepage from streams and rivers, and subsurface inflow. Precipitation at the parcel averages 18 to 20 inches annually but reaches over 30 inches along the nearby ridge tops (Figure 3 for annual rainfall isohyets). Per the Federal Emergency Management Agency's (FEMA) National Flood Hazard Layer (NFHL), the 100-year (1% annual chance) flood hazard zone follows the Santa Ynez River channel and the lower-lying, northern two-thirds (roughly) of the property.

Surface water moves westward along the Santa Ynez River system before reaching the Lompoc sub-groundwater basins or discharging into the Pacific Ocean. Groundwater flows generally east to west, parallel to the Santa Ynez River flow regime, with some localized water table depressions in high pumping zones (such as by the northern part of the Lompoc Plain with municipal supply wells for the City of Lompoc). Water levels within the Central Management Area have historically remained stable with minimal declines (SBCWA, 2019).

Available hydrographs from local groundwater wells (via the United States Geological Survey's [USGS] National Well Information System and DWR Water Data Library) reflect the fairly stable local water levels over the last many decades (Chart 1; Figure 2 for well locations). Per the WMAGSA (2022), local water level elevations are relatively stable to slightly declining, following periods of prolonged drought in the late 1990s and late 2010s, with seasonal variations up to 10 ft. These seasonal and longer-term trends are determined primarily by managed releases from Cachuma Reservoir and extractions of the underflow water from wells in the river alluvium.

Level data are available from 1984 to present at the key well within the BUB, the reportedly 633-ft-deep assigned State Well Number 06N/31W-07F01S. The water level has ranged from as shallow as about 60 ft bgs in 2006 to as deep as about 87 ft bgs during the drought in 2015. Along the SYRAB, actively-monitored wells with long-term records include those assigned State Well Numbers 06N/32W-11L04S, -16P03S, -18H01S, 06N/33W-08J03S, -09M01S, and 06N/34W-12C05S, demonstrating historically stable water levels between around 30 and 60 ft

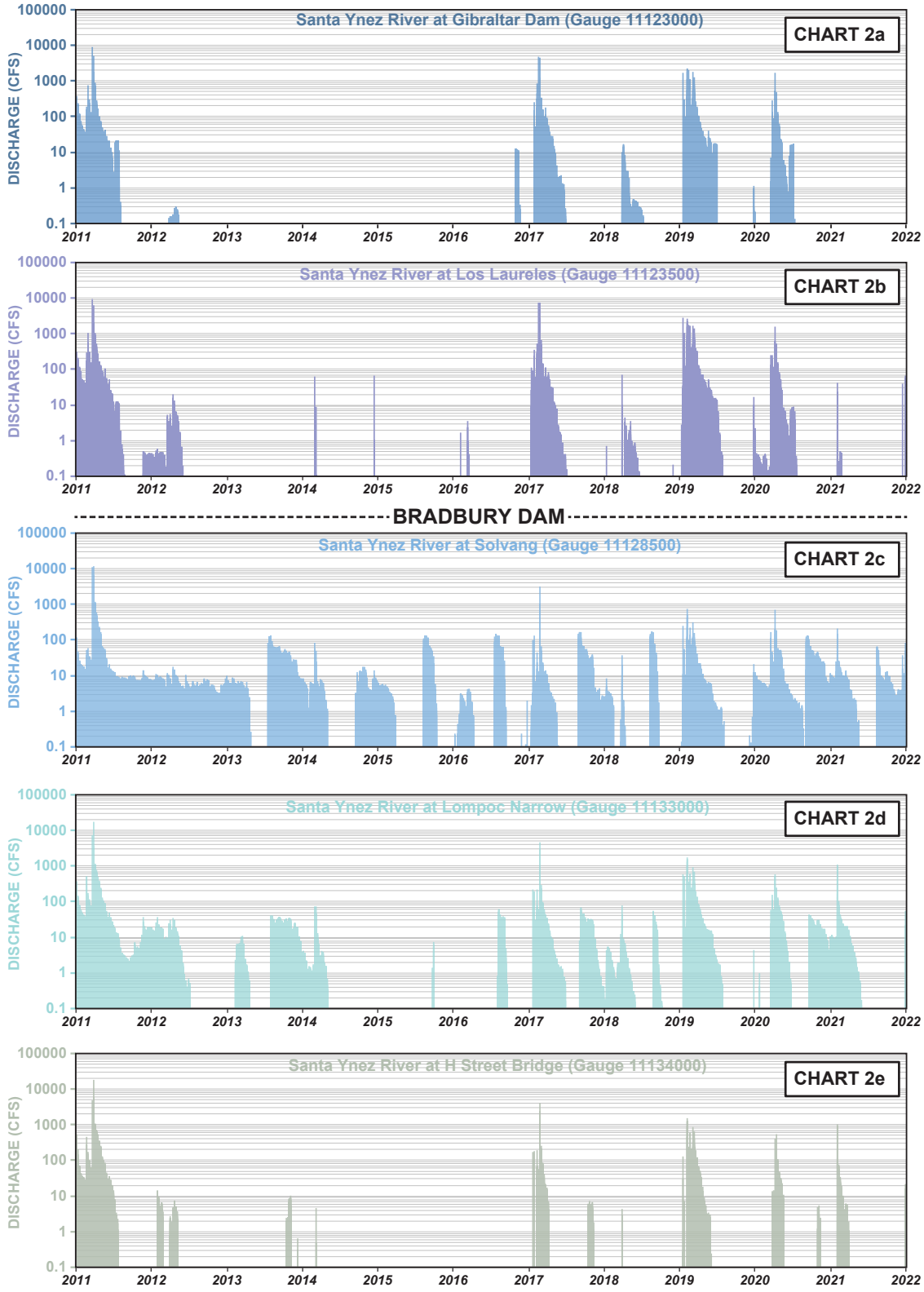
bgs with well depths (where reported) as shallow as 50 ft and as deep as 162 ft bgs. The WMAGSA uses SWN 06N/33W-08E02S for its selected hydrograph of the Santa Ynez River Alluvium, with recent data available from the United States Bureau of Reclamation (USBR).



Santa Ynez River Surface Water Flow Regime

The 92-mile-long Santa Ynez River drains nearly 900-square-miles from east to west across the Santa Ynez Valley. Dams impound its flow into reservoirs, largely for water supply purposes, at three locations: from upstream to downstream, Jameson Lake behind Juncal Dam (constructed 1930), Gibraltar Reservoir behind Gibraltar Dam (constructed 1920), and Lake Cachuma behind the Bradbury Dam (constructed 1950-53). Stream discharge along the majority of the Santa Ynez River is controlled by Lake Cachuma operations. Reportedly, the Santa Ynez River had the largest run of steelhead in Southern California prior to dam constructions (CDFW, 2013). Its watershed is generally divided into lower and upper sub-basins relative to Bradbury Dam.

In addition to numerous precipitation stations, Santa Barbara County's Flood Control District (SBFCD) and the USGS currently maintain automated river/stream gauges within the County (Figure 3 for gauge locations). There are four gauges with continuous/long-term records along the Santa Ynez River: from upstream to downstream, Gibraltar Dam Outflow (USGS 11123000) [Chart 2a], Los Laureles, above Lake Cachuma (USGS 11123500) [Chart 2b], Solvang (USGS 11128500) [Chart 2c], and Lompoc Narrows (USGS 11133000) [Chart 2d]. Each gauge records the stream discharge (flow), water temperature, gauge height, specific conductance, and dissolved oxygen every 15 minutes. Additional daily discharge records are available at other gauges, including at the H Street bridge in Lompoc (USGS 11134000) [Chart 2e].


Santa Ynez River at Gibraltar Dam (Gauge 11123000)
CHART 2a
Santa Ynez River at Los Laureles (Gauge 11123500)
CHART 2b
BRADBURY DAM
Santa Ynez River at Solvang (Gauge 11128500)
CHART 2c
Santa Ynez River at Lompoc Narrow (Gauge 11133000)
CHART 2d
Santa Ynez River at H Street Bridge (Gauge 11134000)
CHART 2e
DISCHARGE (CFS)
100000
10000
1000
100
10
1
0.1
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

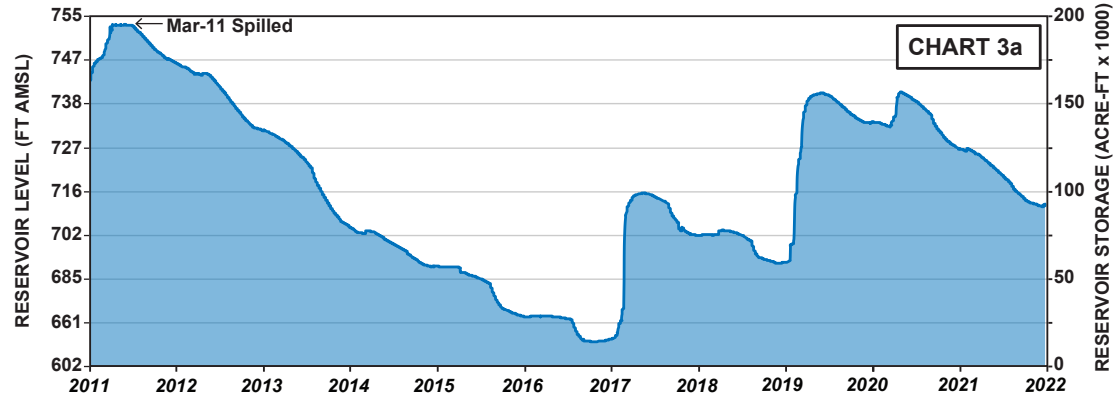
Lake Cachuma Inflows and Outflows

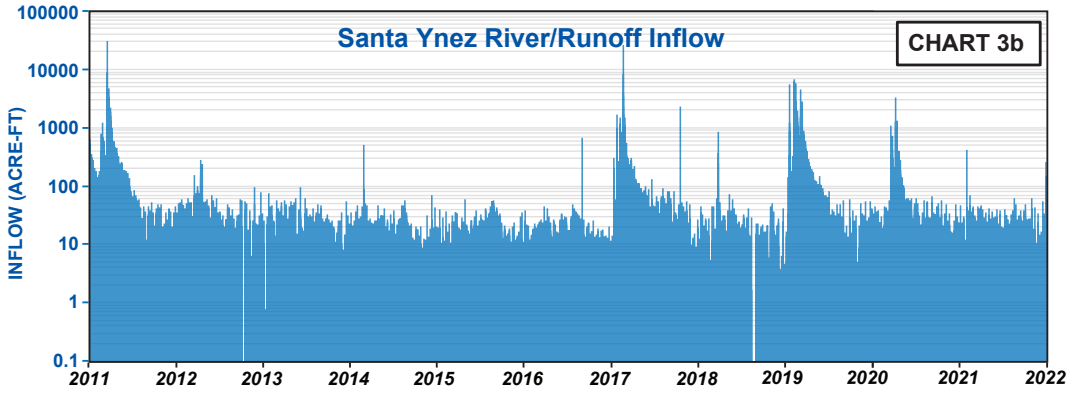
The USBR constructed the 279-ft-tall earthen Bradbury Dam between 1950 and 1953, as part of its Cachuma Project to store excess Santa Ynez River discharge. Lake Cachuma filled for the first time by 1958. The reservoir's maximum storage capacity is 193,305 acre-ft (currently around 93,101 acre-ft, or 48.2% filled, and rising with the December 2021 rains) [Chart 3a]. Approximately 10% of its storage capacity has been lost due to silt accumulation behind the Dam (SBFCD, 2016). At the Dam's base, the Santa Ynez River's elevation is around 560 ft AMSL. The spillway elevation is 753 ft AMSL (actually spills at 750 ft but is surcharged to 753 ft for fish release). A recent (31-Jan-2022) reservoir surface elevation is 712.10 ft AMSL.

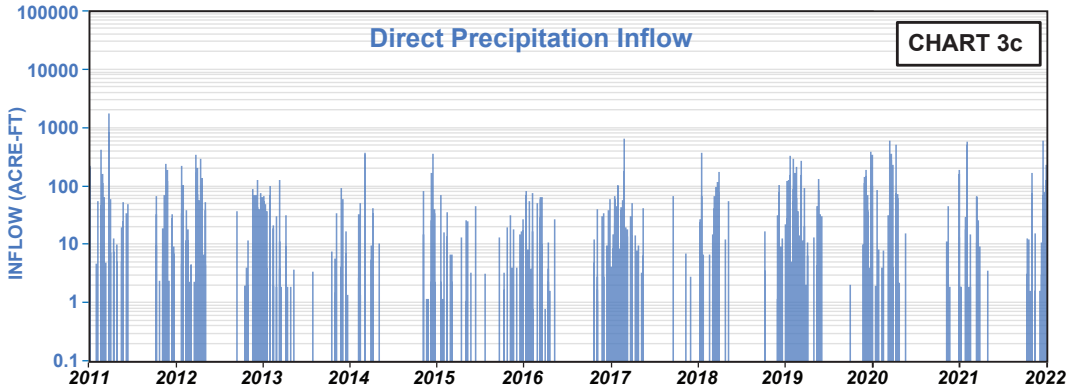
The USBR provides daily summaries on the reservoir's elevation, storage, inflows, and outflows.

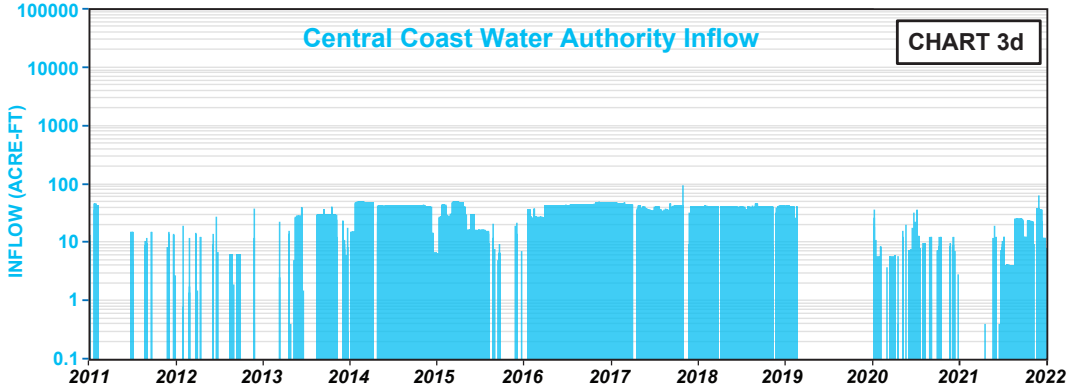
Inflow into Lake Cachuma occurs via (1) the Santa Ynez River runoff [Chart 3b], (2) precipitation directly on the reservoir surface [Chart 3c], and (3) the State Water Project through the Central Coast Water Authority (CCWA) [Chart 3d]. Inflow to the Lake from the River is calculated as the sum of the storage change, releases, and evaporation minus contributions from the CCWA and direct precipitation.

Outflow from Lake Cachuma occurs via (1) the Tecolote Tunnel, for delivery to the Cities of Santa Barbara, Goleta, Montecito, Summerland, and Carpinteria through the South Coast Conduit [Chart 4a], (2) continuously pumped water to Hilton Creek as required by the National Marine Fisheries Service for steelhead trout [Chart 4b], (3) generally annual, late-summer controlled outlet releases from the Tunnel to the Santa Ynez River, including subject to Decision 89-18 [Chart 4c], (4) the spillway when the maximum storage capacity is exceeded (most recently in March 2011) [Chart 4d], and (5) evaporation [Chart 4e]. The region's arid climate results in evaporation losses around 16,000 acre-ft per year (SBFCD, 2016).









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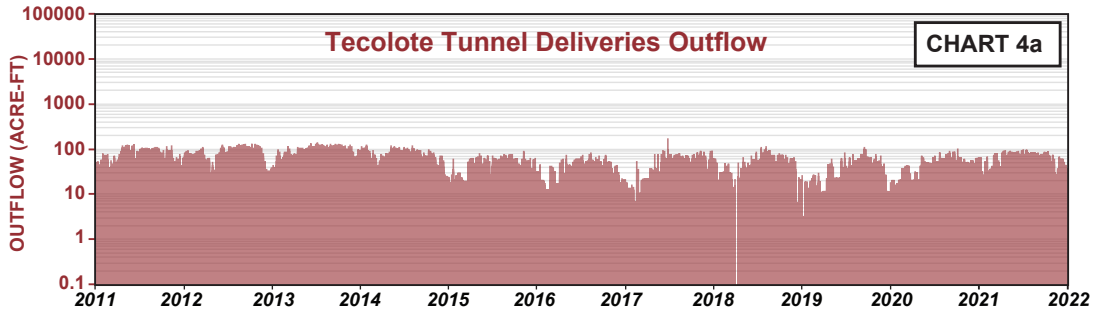
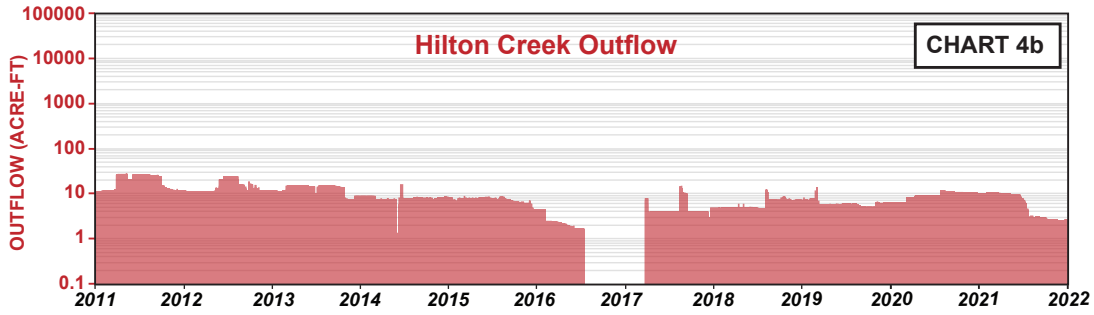
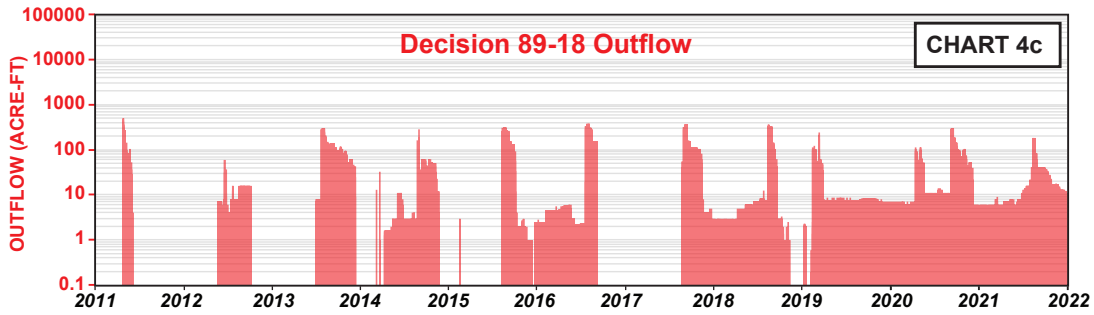
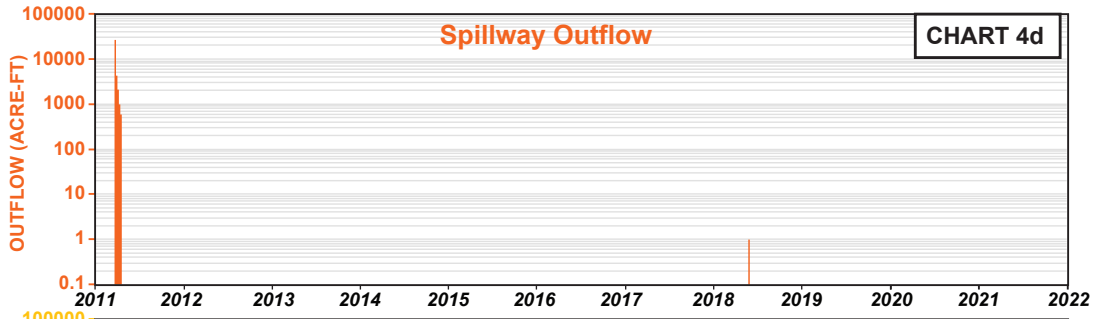
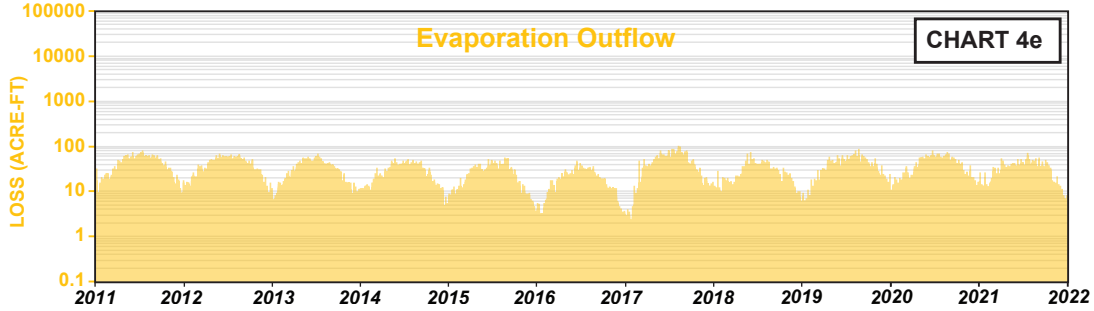

Tecolote Tunnel Deliveries Outflow
CHART 4a
OUTFLOW (ACRE-FT)
100000
10000
1000
100
10
1
0.1
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022


Hilton Creek Outflow
CHART 4b
OUTFLOW (ACRE-FT)
100000
10000
1000
100
10
1
0.1
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022


Decision 89-18 Outflow
CHART 4c
OUTFLOW (ACRE-FT)
100000
10000
1000
100
10
1
0.1
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

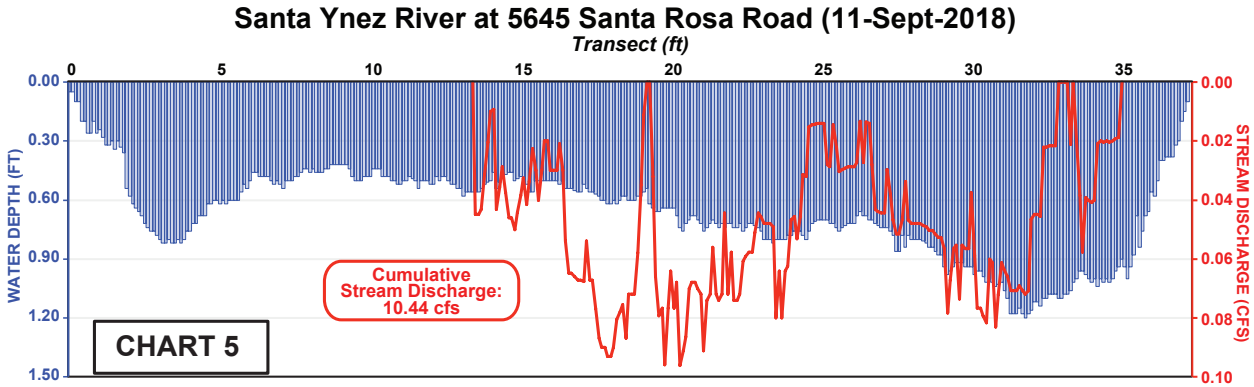

Spillway Outflow
CHART 4d
OUTFLOW (ACRE-FT)
100000
10000
1000
100
10
1
0.1
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022


Evaporation Outflow
CHART 4e
LOSS (ACRE-FT)
100000
10000
1000
100
10
1
0.1
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

The Santa Ynez River Hydrology Model, first developed by the SBCWA in 1979, estimates the following average annual values for surface water budgets at Lake Cachuma. During the 1918-1993 simulation period, the model estimates a total of 85,768 acre-ft of annual inflows, with 74,171 acre-ft from runoff, 7663 acre-ft from the CCWA, and 3934 acre-ft from direct precipitation. The model estimates 85,672 acre-ft total outflow, with 11,066 acre-ft to evaporation, 35,350 acre-ft to spills/leakage, 23,053 acre-ft to deliveries (not including an additional 2050 acre-ft lost to infiltration along the Tecolote Tunnel), 5819 acre-ft to Decision 89-18 releases, 2721 acre-ft to fish/habitat releases, and finally 7663 net acre-ft to other State Water Project deliveries (City of Solvang Master Plan EIR, 2012).

Local River Geomorphology

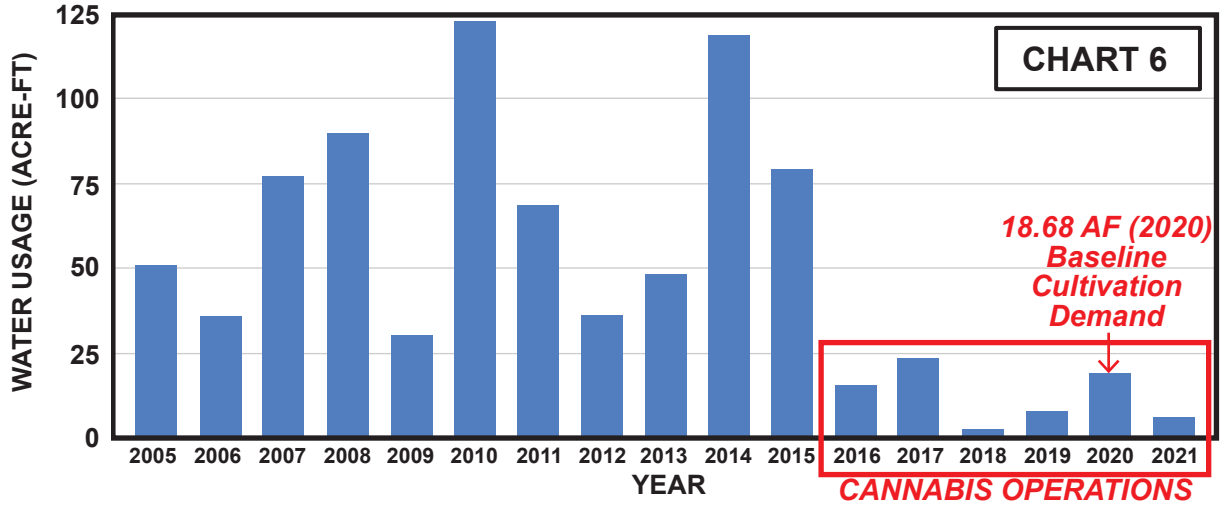
On September 11, 2018, KG measured the stream discharge across an approximately 38-ft-long transect of the Santa Ynez River (Figure 1 for transect location). KG measured the water depth and linear velocity (with a flow probe) at one-tenth-ft increments along the transect, in general agreement with the methods employed by the USGS on open-channel flow measurements. Discharge (in cubic ft per second, cfs) is estimated by multiplying the three parameters together: water depth (ft) x width (ft) x velocity (ft/sec). At the 5645 Santa Rosa Road property on September 11, 2018, KG estimated about 10.44 cfs stream discharge within the Santa Ynez River around 3:30 to 4:30PM (Chart 5), in good general agreement with data from the local USGS stream gage near Solvang (7.5 and 10.6 cfs during the day of September 11, 2018).



Cannabis Cultivation Operations and Groundwater Demand

Cannabis is planted from March through November at the 5645 Santa Rosa Road property. Plants are harvested twice a year under outdoor canopies and six times a year under indoor canopies. Groundwater pumping generally occurs in the daytime hours. Plants are primarily irrigated with low-volume drip/micro-sprinkler methods. Per the SWRCB's Electronic Water Rights Information Management System (eWRIMS), no recordation of surface water diversion exists at the 5645 Santa Rosa Road property.

Chart 6 presents the historical water usage (2005 to 2015) comparison to that of the cannabis cultivation usage (2016 to 2021) at the 5645 Santa Rosa Road property. During the baseline 2020 year, cannabis cultivation required a total of 18.68 acre-ft (7.46 acre-ft from January to June and 11.22 acre-ft from July to December). This baseline represents about one-quarter of the historic average annual water usage at the property. A total of 18.68 acre-ft per year equates to an instantaneous groundwater demand at 5645 Santa Rosa Road of about 11.6 gpm, supplied by the northeastern shallow alluvial well with the southwestern deep bedrock well as a backup. Actual operational capacities are higher but for shorter pump durations.



Conclusions

KG has found that alluvial groundwater extraction for cannabis cultivation at 5645 Santa Rosa Road is unlikely to "substantially affect instream flows" along the local reaches of the Santa Ynez River. This finding is based on:

(1) the surface flow regime downstream of Bradbury Dam is overwhelmingly controlled by the Decision 89-18 water releases.
(2) the parcel overlies the Santa Ynez River Alluvial Corridor groundwater sub-basin, where groundwater levels have been historically stable and the SBCWA (2014) estimated only 1.11% extracted (about 1000 acre-ft) of the total usable groundwater (about 90,000 acre-ft).
(3) the 18.68 acre-ft baseline cultivation demand represents 0.07% of the 26,400 acre-ft per year estimated sustainable yield for the Western Management Area.

Additionally, KG has found that the deep bedrock well extracts exclusively "percolating groundwater" within an aquifer system (Monterey Shale and Tranquillon Volcanic fractures) that is distinct from the local Santa River Valley alluvial deposits and therefore should not be subject to the current regulatory framework during forbearance periods. Please do not hesitate to contact us with any questions. Please do not hesitate to contact us with any questions.

Best Regards,

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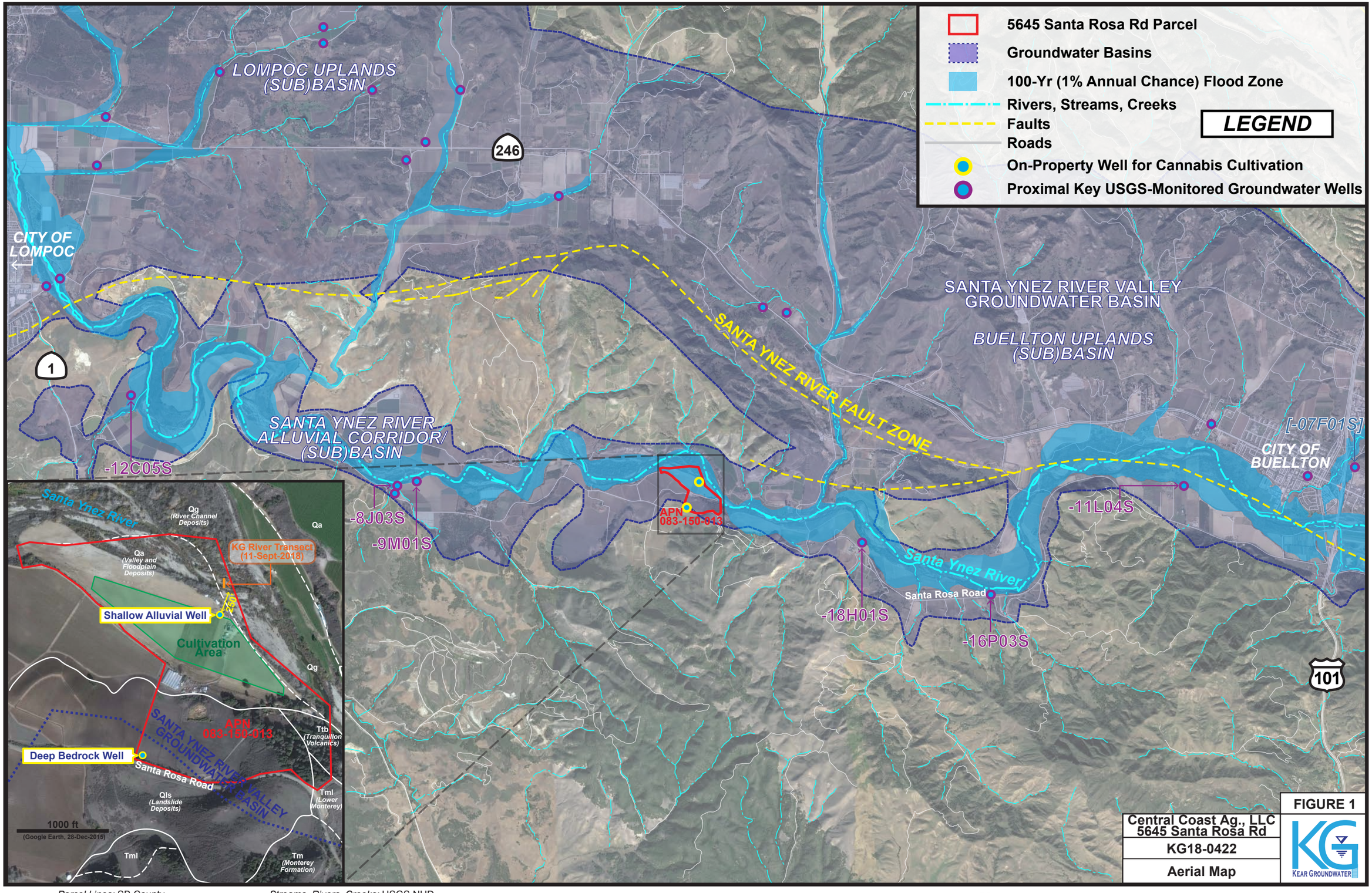


FIGURE 1

Central Coast Ag., LLC 5645 Santa Rosa Rd
KG18-0422
Aerial Map

KEAR GROUNDWATER

Parcel Lines: SB County
Groundwater Basins: DWR Bulletin 118
Aerial Image: Google Earth (11-Aug-2018)

Streams, Rivers, Creeks: USGS NHD
Flood Zone: FEMA NFHL
Faults: USGS EHP

0 1 2 Miles

N

5645 Santa Rosa Rd Parcel
Reservoirs and Lakes
Groundwater Basins
Watershed Boundaries
Santa Ynez Basin Western Management Area
Santa Barbara County Boundary
Rivers, Streams, Creeks
Faults
Major Roads
Proximal Key USGS-Monitored Groundwater Wells

LEGEND

CARRIZO PLAIN
SAN ANDREAS FAULT
SIERRA MADRE MOUNTAINS
CUYAMA VALLEY
SANTA MARIA VALLEY
CASMALIA HILLS
SOLOMON HILLS
SAN RAFAEL MOUNTAINS
SANTA YNEZ MOUNTAINS
PACIFIC OCEAN

166
33
246
101
154
1

-12C05S
-8J03S
-9M01S
-18H01S
-16P03S
-11L04S
-07F01S

Lompoc
Los Olivos
Buellton
Solvang
Santa Ynez
Santa Barbara

Lake Cachuma
Gibraltar Reservoir
Jameson Reservoir
Santa Ynez River

APN 083-150-013
Santa Ynez River Valley Groundwater Basin
Santa Ynez River Watershed

FIGURE 2

Central Coast Ag., LLC 5645 Santa Rosa Rd
KG18-0422
Watershed Map

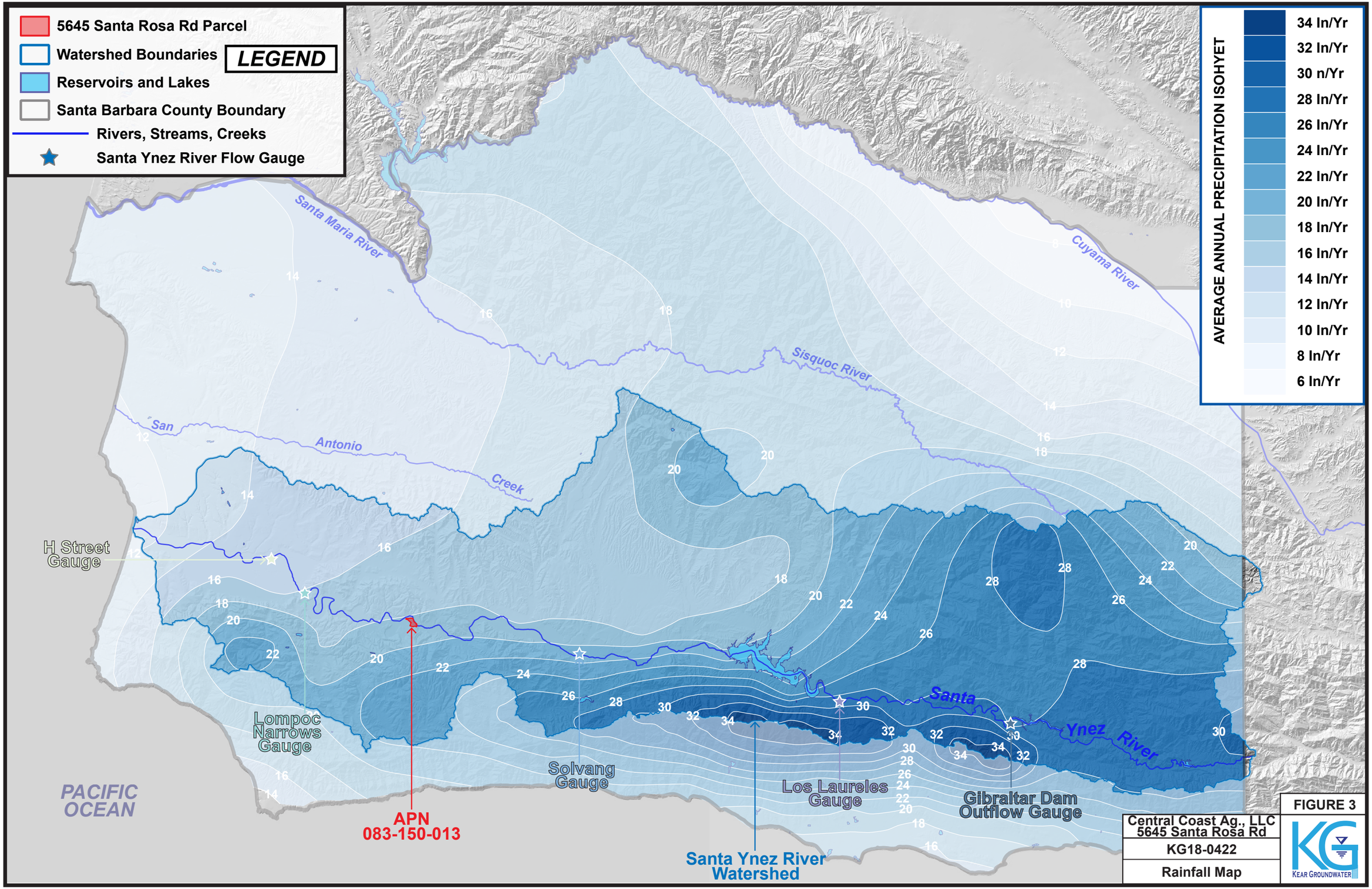
KEAR GROUNDWATER

Groundwater Basins: DWR Bulletin 118
Shaded Relief: Modified from USGS NED

Watersheds, Waterbodies: USGS NHD/WBD
Major Rivers & Streams: CDFW
Faults: USGS EHP

0 5 10 Miles

N



Rainfall Isohyets: SB County
Shaded Relief: Modified from USGS NED

Watersheds, Waterbodies: USGS NHD/WBD
Major Rivers, Creeks: CDFW
Stream Gauges: USGS

0 5 10 Miles

N

FIGURE 3

Central Coast Ag., LLC
5645 Santa Rosa Rd

KG18-0422

Rainfall Map

KEAR GROUNDWATER