East Valley Reclamation Authority Meeting
Wednesday, December 2, 2020 at 1:00 PM
Valley Sanitary District Board Room, 45-500 Van Buren Street

*******SPECIAL NOTICE – VIA VIDEOCONFERENCE*******

Pursuant to the Governor's Executive Order N-25-20 issued March 4, 2020 and N-25-20 issued March 18, 2020, the Joint Powers Authority's regular meeting with be conducted remotely via Zoom.

Members of the public wanting to participate in the open session of the meeting may do so via the following Zoom registration link https://zoom.us/j/96167129778 Meeting ID 691 6712 9778 or by calling 669-900-9128 or 253-215-8782. Members of the public wanting to address the Board, either during public comment or for a specific agenda item, or both, are requested to send an email notification no later than 12:30 p.m. on the day of the meeting to the Valley Sanitary District's Clerk of the Board at hgould@valley-sanitary.org.

Page

1. CALL TO ORDER

1.1. Roll Call

1.2. Pledge of Allegiance

2. PUBLIC COMMENT

This is the time set aside for public comment on any item not appearing on the agenda. Please notify the Secretary in advance of the meeting if you wish to speak on a non-hearing item.

3. CONSENT CALENDAR

Consent calendar items are expected to be routine and noncontroversial, to be acted upon by the Board of Directors at one time, without discussion. If any Board member requests that an item be removed from the consent calendar, it will be removed so that it may be acted upon separately.

3.1. Approve the Minutes of July 20, 2020 3 - 4

3.1 July 20, 2020 EVRA Minutes.pdf

4. NON-HEARING ITEMS

4.1. Adopt Resolution 2020-18 Appointing Clerk of the Board 5 - 6

4.1 Staff Report Appoint Clerk of the Board.pdf

4.1 Attachment A Resolution 2020-18.pdf

4.2. Approve an Amendment to the Professional Services Agreement with Geoscience in the amount of $90,000 to provide subsurface geophysical survey and analysis to determine if subsurface structures (i.e., fault) exist and where they might be able to assist with the injection feasibility study to augment the groundwater supply in the Indio Subbasin for a total revised amount not to exceed $176,824 and authorize the City Manager to execute the amendment 7 - 65

4.2 EVRA Staff Report - Geoscience TM1.pdf

4.2 Attachment A 201119_FINAL_TM-1_IPR EVAL.pdf

5. GENERAL MANAGER'S REPORTS

6. AUTHORITY BOARD MEMBER COMMENTS AND/OR QUESTIONS

7. ADJOURN

Pursuant to the Brown Act, items may not be added to this agenda unless the Secretary to the Board has at least 72 hours advance notice prior to the time and date posted on this notice.

EAST VALLEY RECLAMATION AUTHORITY

REGULAR MEETING
JULY 20, 2020
MINUTES

President Glenn Miller called to order the Regular Meeting of the East Valley Reclamation Authority at 2:09 p.m. in the Valley Sanitary District Board Room located at 45-500 Van Buren Street, Indio, California.

1. CALL TO ORDER

1.1 Roll Call

Directors Present: President Glenn Miller *(City of Indio)*
Vice President Dennis Coleman *(Valley Sanitary District)*
Secretary Elaine Holmes – via telephone *(City of Indio)*
Treasurer William Teague *(Valley Sanitary District)*

Staff Present: Beverli A. Marshall – General Manager, *Valley Sanitary District*
Trish Rhay – General Manager, *Indio Water Authority*
Holly Gould – EVRA Clerk of the Board, *Valley Sanitary District*
Ron Buchwald – District Engineer, *Valley Sanitary District (via telephone)*
Reymundo Trejo – Assistant General Manager, *Indio Water Authority*
Brian Kinder – Manager of Finance & Customer Service*, Indio Water Authority (via telephone)*
Adekunle Ojo – Principal Management Analyst, *Indio Water Authority (via telephone)*

1.2 Pledge of Allegiance

2. PUBLIC COMMENT - NONE.

3. CONSENT CALENDAR

3.1 Minutes of June 8, 2020

3.2 Warrants February 20 to June 30, 2020

It was moved by Treasurer Teague, seconded by Secretary Holmes and unanimously carried to ***ADOPT*** the Consent Calendar as submitted.

4. ADMINISTRATIVE ITEMS

4.1 Approve a Professional Services Agreement with Geoscience to Provide Engineering Services to Determine Spreading and Injection Capabilities to Augment the Groundwater Supply in the Indio Subbasin for an Amount Not to Exceed $86,824 and Authorize the City Manager or Designee to Execute the Agreement.
Recommendation: Approve

Reymundo Trejo, Indio Water Authority, informed the ~~b~~Board that they received three (3) proposals and unanimously selected Geoscience. The study will focus on surface spreading versus injection and should take approximately six (6) months to complete. This report will state exactly what can be done and what is most cost efficient.

It was moved by Vice President Coleman, seconded by Treasurer Teague, and unanimously carried to **APPROVE** a professional services agreement with Geoscience to provide engineering services to determine spreading and injection capabilities to augment the groundwater supply in the Indio subbasin for an amount not to exceed $86,824 and authorize the City Manager or Designee to execute the agreement.

5. GENERAL MANAGERS' REPORT

Trish Rhay, IWA, gave an update on the Salt and Nutrient Management Planning and the challenges they are facing. She also gave an update on the Indio Subbasin Alternative Plan.

Beverli Marshall, Valley Sanitary District, stated that the District tis moving forward with Phases 1, 2 and 3 of the plant expansion. Ron Buchwald informed the Board that the design phase of the project was awarded to Schneider Electric and Stantec for $2.2 million. The District will be applying for grant funding for this project~~s and funding~~.

6. AUTHORITY BOARD MEMBER COMMENTS AND/OR QUESTIONS

The members expressed their pleasure of how both staff from IWA and VSD are working on getting this project moving forward.

7. ADJOURN

There being no further business to discuss, the meeting ***ADJOURNED*** at 2:52 p.m.

Holly Gould
EVRA Clerk of the Board
Approved:

SUBMITTAL TO THE JOINT POWERS AUTHORITY
EAST VALLEY RECLAMATION AUTHORITY

Board of Directors Meeting
December 2, 2020

TO: EVRA Board of Directors

THROUGH: Beverli A. Marshall, SDA, VSD General Manager

FROM: EVRA JPA Staff

SUBJECT: Appointment of East Valley Reclamation Authority Clerk of the Board

RECOMMENDED MOTION
Staff recommends that the Board adopt a Resolution appointing the Clerk of the Board of the East Valley Reclamation Authority.

SUMMARY
To facilitate the duties of the East Valley Reclamation Authority, the Board appoints a Clerk of the Board in accordance with Section 4.2 and 4.3 of the Joint Power Agreement. Staff recommends that the Board appoint Holly Gould of Valley Sanitary District as Clerk of the Board effective January 1, 2021, and that all administrative duties remain with Valley Sanitary District.

Attachment A: Resolution 2020-18

	Account Number	**Dollars**
Costs associated with this action		$0
Current Fiscal Year Budget		$0

Legal Review	N/A	
City of Indio Review		
Valley Sanitary District Review		

RESOLUTION NO. 2020-18

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE EAST VALLEY RECLAMATION AUTHORITY APPOINTING A CLERK OF THE BOARD

WHEREAS, the East Valley Reclamation Authority (the "Authority") is a joint powers authority duly organized and existing under and pursuant to Articles 1 through 4 (com1mencing with Section 6500), Chapter 5, Division 7, Title 1 of the California Government Code (the "Act") pursuant to that certain Joint Exercise of Powers Agreement, dated as of December 18, 2013, (the "Joint Powers Agreement"), by and between the City of Indio (the "City") and the Valley Sanitary District (the "District");

WHEREAS, the Board of the Authority desires to appoint a "Clerk of the Board" to carry out the administrative and secretarial functions of the East Valley Reclamation Authority;

NOW, THEREFORE, THE EAST VALLEY RECLAMATION AUTHORITY DOES HEREBY RESOLVE, DETERMINE AND ORDER AS FOLLOWS:

Section 1. The above recitals, and each of them, are true and correct.

Section 2. The Authority hereby appoints Holly Gould as Clerk of the Board of the East Valley Reclamation Authority.

Section 3. This Resolution shall take effect January 1, 2021.

PASSED, APPROVED, and ADOPTED this 2nd day of December 2020, by the following roll call vote:

AYES:
NAYS:
ABSENT:
ABSTAIN:

____
Glenn Miller, President

ATTEST:

____
Elaine Holmes, Secretary

SUBMITTAL TO THE JOINT POWERS AUTHORITY
EAST VALLEY RECLAMATON AUTHORITY

Board of Directors Meeting
December 2, 2020

FROM: EVRA JPA Staff

SUBJECT: Approve an Amendment to the Professional Services Agreement with Geoscience in the amount of $90,000 to provide subsurface geophysical survey and analysis to determine if subsurface structures (i.e., fault) exist and where they might be to assist with the injection feasibility study to augment the groundwater supply in the Indio Subbasin for a total revised amount not to exceed $176,824 and authorize the City Manager to execute the amendment.

RECOMMENDED MOTION: That the East Valley Reclamation Authority (EVRA) Board approve amendment to Professional Services Agreement with Geoscience to a revised not-to-exceed amount of $176,824 and authorize the City Manager to execute the agreement.

SUMMARY: The EVRA seeks to make beneficial use of a local water reuse program by utilizing treated effluent from the Valley Sanitary District treatment facility, which would normally be lost downstream, to recharge the local groundwater basin. On July 20, 2020, the EVRA board approved an agreement with Geoscience for a not-to-exceed amount of $86,824. The scope of work for the agreement included three items as follows:

1. Review existing data and numerous past reports to determine if spreading of treated effluent is feasible

(continued on next page)

Prepared by:
Reymundo Trejo, PE
IWA Assistant General Manager

JPA Member's Review		
City of Indio Review	Trish Rhay IWA General Manager	
Valley Sanitary District Review	Beverli Marshall General Manager	
Financial Review	Brian Kinder IWA Manager of Finance & Customer Service	

2. Determine injection capabilities at the VSD site by preparing a bid package to drill a borehole
3. Determine percolation of existing treated effluent along the discharge channel

Geoscience has completed scope item number 1 and submitted a Technical Memorandum (TM) summarizing their findings. Specifically, the TM determined that spreading was not feasible, and that injection would be the effective means of augmenting the basin with highly treated effluent reuse water. TM concluded that previous studies have illustrated the complexity of the geology surrounding and underlying the project site. The presence of fine-grained lakebed deposits near the surface of the VSD site would impede or preclude water from the surface from recharging the targeted Upper and Lower Aquifer systems. Therefore, the use of spreading ponds to infiltrate treated effluent is not suitable for this area. Instead, injection wells may provide a viable alternative for recharging highly treated wastewater into targeted aquifers.

Upon further review of available data and prior to engaging on the scope of work items 2 and 3, the Geoscience team raised a technical concern pertaining to a data gap that may have an impact on the effectiveness of drilling a borehole at the VSD site. In order to have a higher level of technical confidence to site an exploratory boring and obtain the needed technical information, the team recommends a subsurface geophysical survey to collect data that may confirm the presence of a fault underneath the proposed injection site at VSD. If a fault exists, it may preclude the construction of an injection well that can effectively inject treated water at the VSD site. However, by identifying the potential fault Geoscience would be able to better locate an exploratory borehole to evaluate injection potential at the VSD. Implementing the proposed subsurface geophysical survey will yield three major benefits to the development of the EVRA project:

1. Survey results will confirm injection at the site is possible, consistent with VSD's current treatment plant upgrades and CEQA language in the environmental report that will be made available for public comment following its completion.
2. Survey results will provide a higher level of technical confidence in effectiveness of drilling a borehole at the VSD site, should the conclusions indicate the absence of a fault.
3. Survey data will contribute data toward the development of a Groundwater Model necessary to satisfy the Department of Drinking Water requirements in obtaining a permit to operate the full scale Recycled Water Treatment and Injection project.

The risk of drilling and collecting samples and downhole logging of an exploratory boring without the survey is that a fault may be present and could result in collecting data that is not applicable to design of the injection well. The cost for the drilling of a borehole is estimated to be approximately $350,000. In order to best execute this project, staff recommends moving forward with one of the following options:

Recommended Action – Approve amendment to the current Geoscience contract in the amount of $90,000, to provide a Geophysical Survey. Once Geophysical Survey results confirm no fault is present, Geoscience will continue with scope of work items 2 and 3.

Optional Action – Staff to request Bids for Geophysical Survey services, and postpone scope of work items 2 and 3 until Geophysical Survey is complete. This option will require an additional two to three months for the evaluation of bids and Board approval process.

ENVIRONMENTAL IMPACT: Currently, this project phase is for research, planning, and preliminary design services. Staff will address environmental impacts before any construction-type activities takes place.

FINANCIAL ANALYSIS:
The Fiscal Year 2020-2021 EVRA Operating Budget includes $300,000 for the Feasibility Study - Spreading or Injection. The cost for the revised scope of services through this amendment total $176,824; the account balance of agreement if approved will be $123,176.

ATTACHMENT:
1. Draft Technical Memorandum No. 1

Evaluation of Indirect Potable Reuse at the Valley Sanitary District Water Reclamation Facility

Prepared For: East Valley Reclamation Authority

November 2020

GEOSCIENCE Support Services, Inc. | P (909) 451-6650 | F (909) 451-6638
620 Arrow Highway, Suite 2000, La Verne, CA 91750 | Mailing: P.O. Box 220, Claremont, CA 91711
www.gssiwater.com

GEOSCIENCE

THIS TECHNICAL MEMEORANDUM IS RENDERED EAST VALLEY RECLAMATION AUTHORITY AS OF THE DATE HEREOF, SOLELY FOR THEIR BENEFIT IN CONNECTION WITH ITS STATED PURPOSE AND MAY NOT BE RELIED ON BY ANY OTHER PERSON OR ENTITY OR BY THEM IN ANY OTHER CONTEXT. AS DATA IS UPDATED FROM TIME TO TIME, ANY RELIANCE ON THIS REPORT AT A FUTURE DATE SHOULD TAKE INTO ACCOUNT UPDATED DATA.

THIS DOCUMENT HAS BEEN CHECKED FOR COMPLETENESS, ACCURACY, AND CONSISTENCY BY THE FOLLOWING PROFESSIONALS:

Logan Wicks, PG
Project Geohydrologist
PG No. 9580

PROFESSIONAL GEOLOGIST
LOGAN EDWARD WICKS
No. 9580
Exp. 10-31-2021
STATE OF CALIFORNIA

Brian Villalobos, PG, CHG. CEG
Principal
CHG No. 794

CERTIFIED HYDROGEOLOGIST
BRIAN A. VILLALOBOS
No. 794
Exp April 30, 2022
STATE OF CALIFORNIA

EVALUATION OF INDIRECT POTABLE REUSE AT THE VALLEY SANITARY DISTRICT WATER RECLAMATION FACILITY FOR EAST VALLEY RECLAMATION AUTHORITY

CONTENTS

FIGURES

FIGURES (continued)

TABLES

APPENDIX

Ltr.	Description
(Attached)	
A	Permits Required for EVRA's Groundwater Recharge Project

EVALUATION OF INDIRECT POTABLE REUSE AT THE VALLEY SANITARY DISTRICT WATER RECLAMATION FACILITY FOR EAST VALLEY RECLAMATION AUTHORITY

1.0 EXECUTIVE SUMMARY

The Indio Water Authority (IWA) has completed several investigations to determine the feasibility of using discharge from the Valley Sanitary District (VSD) Water Reclamation Facility to recharge groundwater supplies. Since the 1950s, the VSD has discharged treated wastewater under permit, into the Whitewater River/Coachella Valley Storm Channel (CVSD) shown on Figure 1. The existing discharge point is located at the northeast portion of the VSD site (see Figure 2). With an increasing service area and number of connections, the amount of discharge into channel has increased. Current estimates indicate that a groundwater replenishment project could possibly recharge up to 7.7 million gallons per day (MGD).

The East Valley Reclamation Authority (EVRA), comprised of IWA and VSD, retained Geoscience to evaluate local data, review previous studies, and explore groundwater recharge options that will utilize treated effluent from VSD's Water Reclamation Facility as the recharge source. The ultimate purpose of this investigation was to develop a better understanding of available groundwater recharge options, including indirect potable reuse (IPR) through surface spreading or injection.

Previous studies have illustrated the complexity of the geology surrounding and underlying the project site. The presence of fine-grained lakebed deposits near the surface of the VSD site would impede or preclude water from the surface from recharging the targeted Upper and Lower Aquifer systems. Therefore, the use of spreading ponds for IPR is not suitable for this area. Instead, injection wells may provide a viable alternative for recharging treated wastewater into targeted aquifers. Additional work is needed to verify site-specific, subsurface hydrogeologic conditions.

2.0 INTRODUCTION

2.1 Background

The Indio Water Authority (IWA) services approximately 38 square miles of the Coachella Valley in Riverside County, and is located approximately 120 miles east of Los Angeles and 30 miles east of the City of Palm Springs (Figure 1). Much of this service area is also covered by Valley Sanitary District (VSD), which formed in 1925 under the California Sanitary Act of 1923. VSD is responsible for the collection and treatment of municipal sewage as required by permits issued by the California Regional Water Quality Control Board (RWQCB).

Ten cities, including Indio, make up the geographic area known as the "Coachella Valley." As the largest city in the Coachella Valley, Indio has a growing population of approximately 85,000 residents. With nearly 23,500 service connections and eight major annual festivals and events that bring thousands more visitors each year to the continually growing IWA system, both IWA's demands and needs must also increase. Therefore, near the end of 2013, IWA and VSD formed a Joint Powers Agreement for East Valley Reclamation Authority (EVRA), with the main objective to augment local water resources through beneficial water reuse.

In an effort to develop beneficial use through a local water reuse program in the City of Indio, Geoscience Support Services, Inc. (Geoscience) has been tasked with investigating whether indirect potable reuse (IPR) aquifer recharge is feasible at the VSD facility. The VSD facility receives wastewater which is then treated and discharged into the Whitewater River/Coachella Valley Storm Channel (CVSC). The CVSC is considered a soft bottom channel, meaning that the bottom of the channel is comprised of native wash and windblown sand material. The discharged wastewater continuously flows at or near the channel surface for five miles to the area just upstream of the Coachella Sanitary District Wastewater Treatment Plant. The greatest surface flow occurs within approximately 2.7 miles of the VSD facility. The purpose of this study is to verify findings from previous studies, increase understanding of aquifer systems in the project area, and evaluate IPR options for recharging approximately 7.7 million gallons of treated wastewater from the VSD facility.

2.2 Previous Work

Over the past two decades, IWA has completed numerous planning level reports that focused on creating supplemental water supplies by recharging the Indio Subbasin with either treated imported water or with highly treated recycled water from the VSD facility. Most reports lacked additional information necessary to consider recharge by injection wells. Report findings and recommendations from 2005 to present include:

- The 2005 report by Lee & Ro, Inc. (Lee & Ro) provided recommendations regarding the proposed VSD plant expansion. Five borings were drilled in late March 2005 to explore subsurface conditions, which confirmed low permeability materials representing the semi-perched aquifer.

- The 2008 report by Petra Geosciences, Inc. (Petra) completed a desktop study and described areas within the City of Indio that might be suitable for aquifer recharge through surface infiltration to both the upper and lower aquifers, without the use of injection wells. Petra identified five potential areas that may allow surface infiltration to recharge the upper aquifer, two of which would also provide recharge to the lower aquifer. However, field data collection was recommended to determine subsurface conditions

- The 2009 reports by Petra presented results for the Phase 1 hydrogeologic investigation to assess Poses Park as a potential site for artificial recharge facilities. Data from this investigation concluded that artificial recharge to the lower aquifer by surface spreading is not feasible due to the thickness of low permeability sediments; the vertical percolation of water spread at the surface would be stopped from reaching the lower aquifer. Based on geologic mapping, well data, and geophysical surveys, the 2009 Petra report suggested that groundwater storage is likely feasible in parts of Fargo subbasin. However, water quality in Fargo subbasin is poor.

- In 2018, Petra completed a study for an area immediately north of Posse Park, in the City of Indio, as a potential site for artificial recharge facilities. Borings encountered a thick layer clay at approximately 240 feet below ground surface (ft bgs). Geological mapping and geophysical logs confirmed faulting as a broad zone, hundreds of feet wide, potentially acting as barriers to groundwater flow to the south. Surface spreading of water would not recharge into the lower aquifer beneath the valley area from this location.

- The 2018 report by Hazen and Sawyer found that groundwater recharge via spreading or injection is a favorable recycled water alternative and recommended 1) conducting percolation testing and soil borings near the evaporation ponds at the VSD facility to confirm hydrogeologic findings and adequacy for percolation, and 2) consideration of groundwater recharge via injection if surface spreading is not feasible.

2.3 Purpose and Scope

The current scope is to review previous studies and explore groundwater recharge options that will utilize treated effluent from VSD’s Water Reclamation Facility as the recharge source. While an estimated 0.5 MGD of wastewater will still be required to flow into the CVSC to maintain habitat, groundwater credit may also be obtained for surface water used for habitat. The ultimate purpose of this investigation is to develop a better understanding of available groundwater recharge options, including IPR through spreading or injection. Based on an initial review of the geohydrology, Geoscience has concluded that surface water spreading would not allow sufficient groundwater recharge due to the presence of fine-grained materials in the subsurface. The supporting information for this conclusion is presented below. Geoscience, as a part of the approved scope of work, proposed an approach to evaluate injection capabilities in the lower aquifer with a goal of increasing local groundwater supplies.

The scope of work for this study includes:

- Researching and reviewing geohydrologic literature for the project area and compiling information. Data include well construction details, well locations, water levels, well production, and water quality data, which will be used to assess groundwater recharge capability and monitoring methodology. Figures 1 and 2 show wells used for this technical memorandum (TM).

- Preparing this TM evaluating recharge options at the VSD facility and outlining a proposed regulatory strategy for groundwater recharge by injection.

- Validating the conceptual hydrogeologic model to a depth of about 1,000 feet below the VSD facility and presenting existing data that support the use of injection for IPR at the VSD site, rather than surface water spreading. Once the conceptual model is confirmed, Geoscience will prepare exploratory drilling technical specifications for a deep boring at the VSD site to collect data for the assessment of subsurface conditions.

- Preparing a monitoring network to collect water level and water quality data to identify the influence and extent of treated wastewater being introduced into the CVSC. This will provide a better understanding of the fate of treated wastewater that has historically been and is currently being discharged into the CVSC.

2.4 Sources of Data

The data collection effort began with obtaining available data from IWA and VSD. This included:

- Groundwater production reports provided by IWA,
- Well static water levels and pumping levels provided by IWA,
- Groundwater quality data provided by IWA,
- Video survey reports provided by IWA,
- Well logs from DWR and the Geoscience well log database,
- Effluent discharge data from VSD,
- Treatment plant effluent water quality provided by VSD,

- Past reports from Hazen & Sawyer, Lee & Ro, and Petra.

A complete list of references is provided in Section 7.0 of this TM.

3.0 GEOHYDROLOGY

To assess the recharge feasibility of an area, the geohydrology must first be determined to understand if an area is adequate for groundwater recharge and what type of recharge is most appropriate. The geologic history around the VSD site is very complex. This area has been deformed by the San Andreas Fault, which caused uplift of the Indio Hills and extensive subsidence of the valley floor. These processes have defined the recent (Pleistocene to present) sedimentation of this area. Regional and site-specific geohydrology is discussed in the following sections.

3.1 Regional Geohydrologic Setting

The study area is located within the southeastern Coachella Valley, which is in the northern portion of the Salton Trough and in the Colorado Desert Geomorphic Province (CDGP) (Figure 1). The CDGP encompasses a northwest trending area stretching from Palm Springs to Imperial Valley, also referred to as the Salton Trough (Norris and Webb, 1990). Deposited sediments are estimated to be 2 to 5 miles thick (Biehler, et. al., 1964; Fuis and Kohler, 1984; Kohler and Fuis, 1986). Weathered material from the surrounding Transverse Ranges and Peninsular Ranges, and deposits from the Colorado River have filled the basin with sediments since at least the late Miocene (Petra, 2018). The Salton Trough formed by crustal extension, starting as a half-graben basin followed by bounding of the San Andreas fault zone to the northeast and the San Jacinto fault zone to the southwest (Powell, 1993; Proctor, 1968; Stock and Hodges, 1989).

3.2 Groundwater and Aquifer Systems in the Project Area

Much of the current geohydrologic understanding for the area surrounding the City of Indio comes from the Department of Water Resources' (DWR's) 1964 study, Bulletin 108, which includes descriptions of geologic and hydrostratigraphic units. Figure 1 from Bulletin 108 (DWR, 1964), shown below, illustrates a generalized hydrostratigraphic section in the vicinity of the VSD site. As shown, water-bearing materials in the area can be divided into:

- A semi-perched aquifer,
- The Upper Aquifer,
- An aquitard, and
- The Lower Aquifer.

This Figure also shows the generalized thicknesses of the units, including near surface sediments from approximately 0 – 100 ft of fine-grained lake-bed deposits which are known to impede the vertical movement of groundwater. According to Petra (2018), the Lower Aquifer in the study area is likely present within the Palm Springs Upper Formation rather than the Ocotillo Conglomerate as stated in the DWR hydrostratigraphic sequence below.

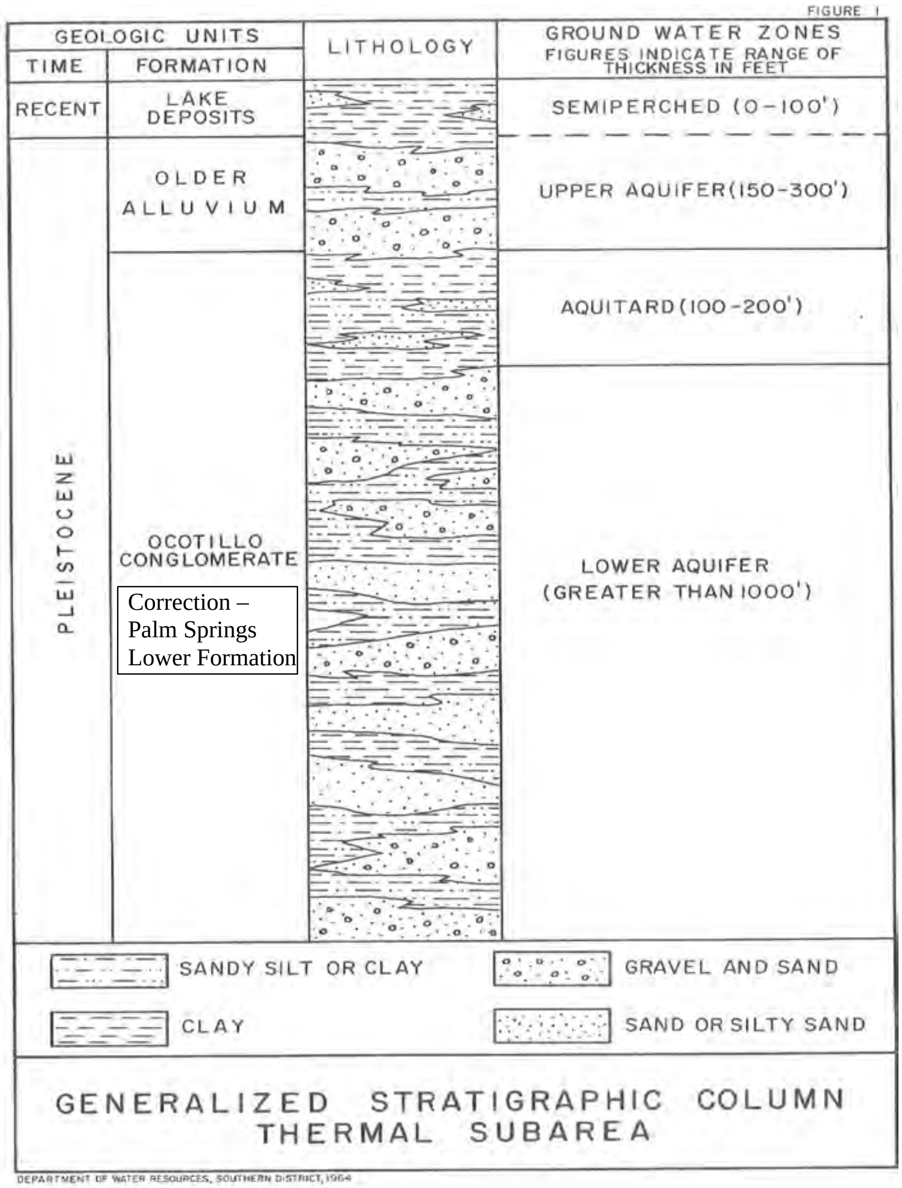

Figure 3-1. Generalized Stratigraphic Column in the Vicinity of the Project Site

(Source: Figure 1 from DWR, 1964)

3.2.1 Semi-Perched Aquifer

The Semi-Perched Aquifer is made up of late Pleistocene to Holocene Lake Cahuilla deposits, which consist of interbedded sands, silts, and clays. The last high stands related to the ancient Lake Cahuilla reached an elevation over 50 ft above mean sea level (amsl) (Suitt, 1996). Water levels in this aquifer are typically between 6 and 20 ft bgs under natural conditions and the aquifer is reported to be between 0 and 100 ft thick (DWR, 1964). These thinly interbedded lake deposits restrict the vertical movement of water. Therefore, surface water does not percolate quickly or deeply. The area west of the Coachella Canal is outside of the Semi-Perched Aquifer. According to Petra (2018), shallow monitoring wells show the Semi-Perched Aquifer at deeper levels – contrary to DWR's depiction. More work is necessary to understand the extent of the Semi-Perched Aquifer. Water quality in the Semi-Perched Aquifer is generally considered to be poor.

3.2.2 Upper Aquifer

In the project area, the Upper Aquifer is located below the Semi-Perched Aquifer, with alternating sequences of alluvial and lake deposits from approximately 150 to 300 ft bgs (Petra, 2018). In this area, this aquifer was initially developed for agriculture use. Historically, wells completed in this aquifer typically had good production yields. However, due to over pumping and degraded water quality, few wells are solely screened in this aquifer today. The last IWA well to be installed in the Upper Aquifer was abandoned in 2007, in part due to poor water quality.

3.2.3 Aquitard

An aquitard is defined as a fine-grained unit that separates two groundwater aquifers. Aquitards impede vertical groundwater migration from an upper aquifer to a lower one. When assessing groundwater recharge potential, it is important to understand the extent and thickness of any aquitards present in the project area. In the area of the VSD facility, an aquitard unit has been identified. Reported thickness of the aquitard is between 100 to 200 ft. The lateral extent, however, is not well defined. With regards to potential recharge to the Lower Aquifer, this aquitard likely acts as a capping unit for the Lower Aquifer – preventing injected recharge from migrating upward and containing the recharge in the preferred Lower Aquifer. Similarly, any recharge to the Upper Aquifer in this area would be restricted from traveling downward to the Lower Aquifer.

3.2.4 Lower Aquifer

The Lower Aquifer is made up of interbedded fine- and coarse-grained materials. The Lower Aquifer reaches depths greater than 1,000 ft, according to DWR (1964). This aquifer is the primary source of groundwater for the Valley. This lower unit is primarily recharged from the infiltration of surface water in the western region, where the aquitard is missing. Artificial recharge projects have targeted the lower aquifer to mitigate falling groundwater levels in the lower aquifer. This western area of the valley is underlain by material that represents undifferentiated Upper and Lower Aquifer.

3.3 Historical Groundwater Elevations

Historical groundwater elevations in the vicinity of the VSD site are relatively well documented for the Lower Aquifer. However, the Upper and Semi-Perched Aquifers have very little data. This is likely due to poor historical record keeping and the fact that water quality from both the Semi-Perched and Upper Aquifers is poor. Selected hydrographs from IWA wells around the VSD site are shown on Figure 3. These data demonstrate that, while groundwater levels do fluctuate somewhat over time, they appear to be fairly stable (i.e., no long-term regional decline). Short-term periods of decline are typically followed by periods of recovery. These fluctuations can likely be attributed to, among other factors, annual precipitation events and the corresponding availability of natural recharge for aquifers. In most of the selected wells, water levels appear to be increasing slightly over the past ten years. This increase in water levels may be due to several variables, including decreased pumping activity in the area, increased precipitation, and basin management practices. Table 3-1 below summarizes average water levels in active IWA wells over the past five years. The large differences seen between water levels in Wells 1B and 1C and other wells in the area indicate that these two Upper Aquifer wells are (at least in part) hydraulically disconnected from the Lower Aquifer.

Table 3-1. Five-Year Historical Water Level Data

Station ID	Date Range (5-year avg.)	Well Elevation (ft amsl)	Groundwater Elevation (ft amsl)	Depth to Water (ft bgs)
Well 1B*	**1/15 to 4/20**	**-23**	**89.40**	**66.40**
Well 1C**	**3/20 to 5/20**	**-27**	**93.30**	**66.30**
Well 1E	1/15 to 5/20	-27	138.40	111.40
Well 2D	3/15 to 5/20	-3	123.20	120.20
Well 3A	1/15 to 5/20	-7	130.80	123.80
Well 13A	3/15 to 4/20	8	104.00	112.00
Well BB	3/15 to 5/20	-23	145.00	122.00
Well U	1/15 to 5/20	-22	138.10	116.10
Well Z	1/15 to 5/20	6	127.50	133.50

*Well screened in Upper Aquifer
**Well screened in Upper and Lower Aquifer

3.4 Groundwater Occurrence and Movement

Groundwater in the vicinity of the VSD site has been recorded at two distinct levels due to the stratified aquifer system (i.e., Semi-Perched, Upper, and Lower Aquifers). Unfortunately, too few water level data exist to fully map groundwater elevations and flow directions for the Semi-Perched and Upper Aquifers. However, three IWA wells were constructed in the Upper Aquifer north of the VSD site and are some of the closest wells with current water level data. According to the 2018 Petra report, water levels in Well

1A, which was abandoned in 2007, ranged from 31 to 47 ft bgs from 1992 to 2002. Recently compiled IWA water level data for Wells 1B and 1C show April 2020 water levels in the Upper Aquifer of 67 an 65 ft bgs, respectively. Groundwater flow direction in the Upper Aquifer is difficult to determine with the few water level data that exist. However, there seems to be a relatively consistent gradient between Wells 1B and 1C from the northwest to the southeast, similar to that observed in the Lower Aquifer.

Most wells in the area are screened in the Lower Aquifer (below approximately 550 ft bgs). IWA Well 1E (near Wells 1B and 1C) recorded a groundwater level for the month of April 2020 of 104 ft bgs. Other wells in the area that are only screened in the Lower Aquifer have water levels generally consistent with Well 1E ranging from approximately 110 ft to 130 ft bgs, that indicate groundwater generally flows to the south-southeast.

3.5 Groundwater Quality

Groundwater in the Lower Aquifer around the VSD site is reported to be of relatively good quality. Recent groundwater quality for local IWA production wells is summarized in Table 3-2 below and on Figure 3.

Table 3-2. Recent Groundwater Quality

Well ID	Nitrate as NO3 (mg/L)	Nitrate as N (mg/L)	Hexavalent Chromium (ug/L)
Well 1B	4	1	**11**
Well 1C	3	1	**10**
Well 1E	2	0	**17**
Well 2C	2	1	**17**
Well 2D	2	1	**19**
Well 3A	4	1	**14**
Well 3B	4.7	1	**14**
Well 3C	2.7	0.62	**17**
Well 4A	8.4	2.3	**10**
Well 4B	6.6	1.5	9.2
Well 4C	2.8	12	2
Well 13A	2	0.44	**14**
Well 13B	1.5	0.34	NA
Well AA	3.2	0.73	**15**
Well BB	2.5	0.56	**17**
Well S	26	5.9	7.9
Well T	9.2	2.1	**10**
Well U	5.3	1.2	**14**
Well V	12	2.7	**10**

Well ID	Nitrate as NO3 (mg/L)	Nitrate as N (mg/L)	Hexavalent Chromium (ug/L)
Well W	2.6	0.6	**14**
Well Z	2.9	0.76	**12**

BOLD values indicate water quality equal to or above current or preexisting maximum contaminant level (MCL) or notification level. State Water Resources Control Board Division of Drinking Water (DDW) primary MCL for Nitrate as N 10 mg/L; Nitrate as NO3 45mg/L; No MCL for Hexavalent Chromium in California yet, however the old MCL was 10 ug/L.

In many of the wells, Hexavalent Chromium (chromium VI, a naturally-occurring metal present in basin sediments) concentrations exceed the outdated primary maximum contaminant level (MCL) of 10 micrograms per liter (ug/L). While chromium VI does not currently have an MCL, total chromium concentrations for all of the wells are well below the MCL of 50 ug/L. Concentrations of nitrate reported as N range from 0 to 6 milligrams per liter (mg/L), below the MCL of 10 mg/L. Nitrate reported as NO3 for the same wells ranges from 1.5 to 26 mg/L – well below the MCL of 45 mg/L.

3.6 Aquifer Yield

An evaluation of potential aquifer recharge requires considering the production capacity of the targeted aquifer to estimate the storage capacity and potential injection rates. Potential injection rates for injection wells can be estimated by assuming half of a given well's production rate or potential yield. This is discussed further in Section 4.3, below. Specific capacity is a typical metric for analyzing a production wells' efficiency and potential yield. Specific capacity is defined as the amount of drawdown measured within a well pumping at a known rate and is expressed as the pumping rate divided by the drawdown. Generally, the specific capacity of a well is a measure of its ability to yield water and can be used to estimate the potential yield of an aquifer when aquifer pumping test data are not available (Ferris, 1963). However, it should be noted that specific capacity is somewhat variable and is affected by the pumping rate, static water level decline, and well inefficiencies (e.g., improper well development and/or clogging of well perforations and aquifer materials from corrosion and/or bacterial infestation).

Pumping parameters for selected water supply wells in the IWA and VSD service areas are presented in Table 3-3 below. The data in the table are those reported on DWR water well driller's reports following construction. As such, these data are most representative of aquifer production potential (not accounting for any potential regional water changes) since they were measured at the time the well was newly constructed.

Table 3-3. Aquifer Yield by Well

Well ID	Active/ Inactive	Screened Aquifer	Static Water Level[1] (ft bgs)	Production[1] (gpm)	Drawdown[1] (ft)	Specific Capacity[1] (gpm/ft)
Well 1B	Active	Upper	33	1,400	15	93.33
Well 1C	Active	Upper/Lower	17	2,700	86	31.40
Well 1E	Inactive	Lower	138	2,871	59	48.66
Well 2C	Active	Lower	-	-	-	-
Well 2D	Active	Lower	47*	2,400	80	30.00
Well 3A	Active	Lower	43*	3,730	43	86.74
Well 3B	Active	Lower	44*	2,900	57	50.88
Well 3C	Active	Lower	48*	3,000	-	-
Well 4A	Active	Lower	50*	2,000	85	23.53
Well 4B	Inactive	Lower	115	2,500	-	-
Well 4C	Active	Lower	123	3,500	23	152.17
Well 13A	Active	Lower	135	2,996	46	65.13
Well 13B	Unknown	Lower	135	2,974	106	28.06
Well AA	Active	Lower	129	3,000	54	55.56
Well BB	Active	Lower	107	3,000	75	40.00
Well S	Active	Lower	131	3,500	34	102.94
Well T	Active	Lower	149	3,000	120	25.00
Well U	Active	Lower	112	3,000	33	90.91
Well V	Active	Lower	147	3,000	27	111.11
Well W	Inactive	Lower	154	3,000	35	85.71
Well X	Pending	Lower	128	-	-	-
Well Y	Pending	Lower	127	3,000	51	58.82
Well Z	Active	Lower	127	3,000	51	58.82

Notes:
See Figure 1 for well locations.
[1] Obtained at time of well construction, reported on DWR log
- Well test data NOT reported on DWR log
* Static water levels at time of test likely not accurate based on a comparison with current water levels

Of the active wells provided by IWA, data from the time of original construction indicate that specific capacity ranged from approximately 31 to 93 gallons per minute per foot (gpm/ft) of drawdown, with instantaneous discharge rates ranging from approximately 1,400 to 2,700 gpm for the Upper Aquifer. The Lower Aquifer, in which more wells are completed, has specific capacity values ranging from approximately 23 to 120 gpm/ft with instantaneous discharge rates ranging from approximately 2,000 to 3,730 gpm. These data suggest that highly permeable aquifer materials are present within 2 miles of the vicinity of the VSD site and that the potential exists for high instantaneous production rates.

4.0 EVALUATING POTENTIAL INDIRECT POTABLE REUSE METHODS

IPR involves using treated wastewater to recharge groundwater and increase groundwater storage in the local groundwater system. IPR projects may be used for long-term storage (banking) or shorter-term recharge and extraction. Both strategies help improve local groundwater storage and supply by increasing water levels and potentially improving groundwater quality in a given aquifer. The purpose of the current investigation is to further understand the geohydrologic conditions under the VSD site with the intent of recommending the most feasible approach (spreading or injection) for IPR. Although there are hydrogeologic data gaps in this initial phase of investigation of the VSD site when addressing the potential feasibility of an IPR project, current data suggest the site is technically feasible. However, additional site and local investigations should include deep borings and geophysical survey lines to verify the distribution of lithologic materials.

4.1 Recharge through Spreading

IPR with recharge through spreading basins involves conveying treated water to engineered surface basins or "ponds" where the treated water percolates into underlying groundwater aquifers. From there it can be extracted or recovered by downgradient pumping wells. While spreading is the simplest, and therefore cheapest, IPR method, it also has its limitations. Spreading basins work best in an area underlain by thick, permeable sediments – typically present in unconfined aquifer conditions. Sufficient storage under the spreading site is also necessary so that recharge will not cause excessive mounding, rejected recharge, or potential surface issues like liquefaction, water logging of shallow soils, or artesian conditions in undesirable areas caused by shallow groundwater levels. Groundwater quality of the receiving water is another important factor to consider. Therefore, the characteristics of near-surface sediments need to be understood and considered along with these other important variables to evaluate IPR recharge through spreading.

The area that has been identified by EVRA to be utilized for spreading treated wastewater is located at the southern end of the VSD site. It is an area of approximately 20 acres where the old biological treatment ponds were located. If this area were to be used for spreading, it would require excavation and disposal of any accumulated solids. In addition, while Hazen and Sawyer (2018) estimated infiltration rates of 1.5 ft per day using approximately 12 acres to infiltrate 5.9 MGD, the cross-section below illustrates that a continuous perched aquifer exists under the VSD site. The two underlying aquitard units are composed of fairly thick interbedded silts and clays up to 70 ft below the VSD site (Lee and Ro, 2005). Studies conducted by Petra (2008, 2009, and 2018) also confirm the presence of lake-bed sediments underlying the area, which are typically fine-grained and generally of very low permeability. These sediments would impede downward percolation from any surface water spreading.

Therefore, while the selected IPR area is large enough to accommodate surface spreading, it is not suitable for surface water recharge to either the Upper Aquifer or, more importantly, the Lower Aquifer due to the fine-grained nature of the underlying sediments of the semi-perched aquifer and interbedded silt and clay layers. Our recommendation to no longer investigate surface spreading at the VSD site is detailed in the next section.

4.2 Hydrogeologic Recommendations for Spreading

Historically, production wells extracted water from the Upper Aquifer, above the aquitard. As groundwater levels dropped from increased pumping, water quality degraded. Subsequent production wells were therefore drilled into the Lower Aquifer, below the aquitard (approximately 550 ft bgs). Currently, almost all of the water produced in this area is pumped from the Lower Aquifer. Consequently, the Lower Aquifer represents the target aquifer for IPR operations.

A brief review of the five borings conducted for the 2005 geotechnical investigation by Lee & at the VSD site indicates that most of the soil material in the upper 70 feet is low permeability clay, organic clay, silt, or organic silt. The inset below is a geologic cross-section constructed from the 2005 boring data. The clay/silt layers appear to be continuous at two separate depths, one from approximately 10 to 20 ft bgs (representing a 10-ft continuous low permeability layer) and the second from approximately 30 to 60 feet bgs (representing a 30-ft continuous low permeability layer). Groundwater encountered in the borings likely represent groundwater levels from the Semi-Perched Aquifer. The lithologic cross-sections on Figures 4 and 5, are regional, but also illustrate the subsurface conditions at the VSD site to 1,000 feet. The shallow fine-grained sediments are likely the Pleistocene to Holocene lakebed deposits of Lake Cahuilla, which were identified by DWR (1964) within 100 ft bgs of much of the Coachella Valley.

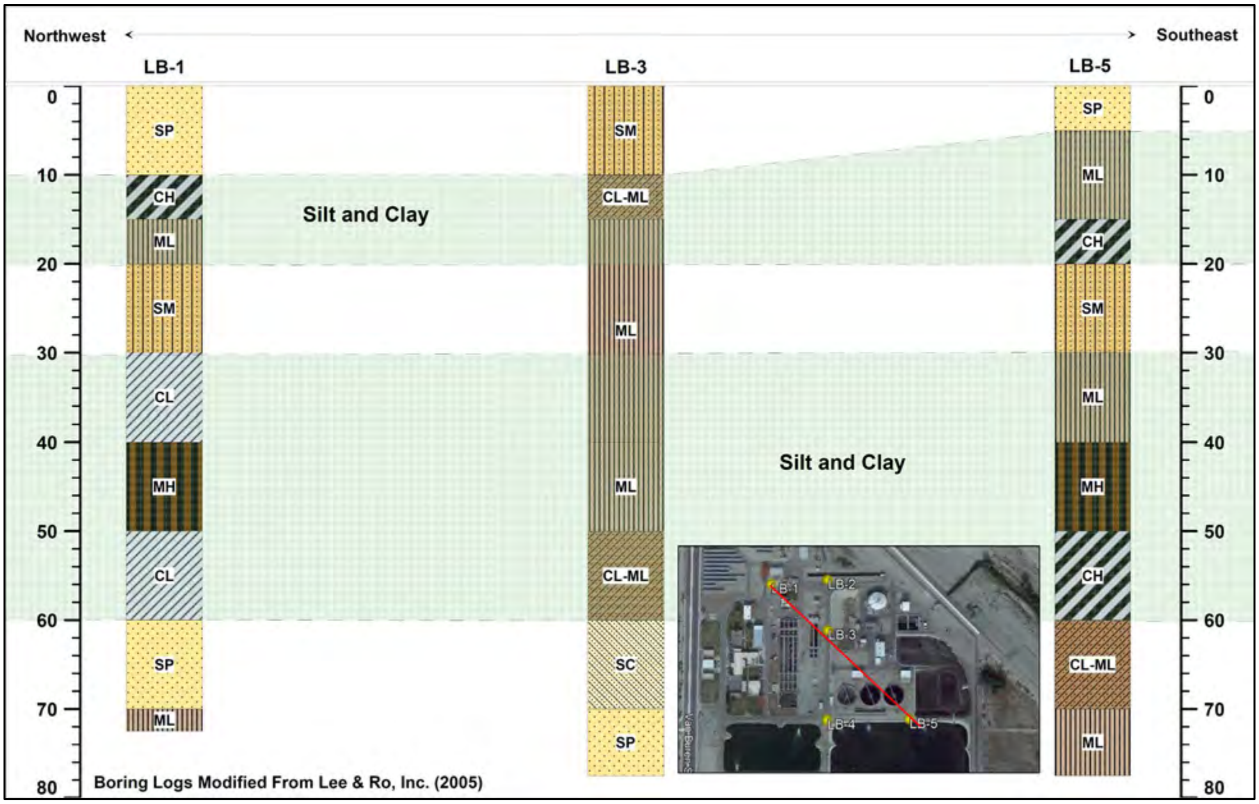

Figure 4-1. Generalized Cross-Section Underlying the VSD Site (LB-1 to LB-5)

These and other previous investigations provide sufficient information regarding the unsuitability of the VSD site for potential IPR through surface spreading. Through review, it was confirmed that due to the fine-grained lakebed deposits near the surface of the VSD site, spreading would not be a viable method of recharge to the Upper or Lower Aquifer systems and should no longer be investigated.

4.3 Recharge through Injection

Injection wells are often utilized where space is an issue or in areas with complex aquifer systems containing two or more hydraulically disconnected aquifers. In particular, injection wells are an appropriate means of recharging water to a desired aquifer below confining (i.e., aquitard) unit(s) – much like the conditions present below the VSD site. Cross-sections A-A’ and B-B’ on Figures 4 and 5, respectively, show the main hydrogeologic units and approximate depth of the Upper and Lower Aquifer systems near the VSD site. In this area, wells have historically been constructed in both the Upper and Lower Aquifers. In Cross-sections A-A’ and B-B’ on Figures 4 and 5 a slight anomaly presented itself when reviewing the well logs and drawing the cross-sections. Well logs B-94 and Coachella 11 appear to show an offset in the aquitard dividing the Upper and Lower Aquifers. This offset (up on the northeast and down on the southwest) may be due to natural subsidence in the valley due to rotational extension from the

San Andreas and San Jacinto Fault Zones. This offset may also be an ancient splay of the San Andreas Fault which has been eroded and recovered with sediments from the Pleistocene and Holocene and appears to be no longer active. Either way, this anomaly will need to be further investigated to either rule out or locate the potential fault. Work completed by Jänecke (2018) suggests that the anomaly may be along the trend of a buried fault located along the eastern Salton Sea. The presence of a fault as a potential barrier to groundwater movement in the lower aquifer could act to constrain the flow of injected water from some downgradient wells. Alternatively, if fault is present and represented by a thick gouge zone, then the injection wells will have to be constructed outside of this zone. Further field investigation is required to evaluate this condition.

Injection wells are often constructed much like production wells. They typically consist of a louvered screen, annular seal, conductor pipe, sounding or gravel tubes, and SCADA system connected to automated injection and backwashing schedules. Due to the nature of injection, well screens tend to foul (clog) fairly quickly compared to pumping wells. Therefore, injection wells are typically constructed with dedicated air valves to bleed undesired entrained air and submersible pumps for routine backwashing to help break up any fouling on the screen. This intermittent backwashing assists well efficiency and lengthens the time interval between well rehabilitations.

It is common practice when estimating the potential rate of injection to halve the rate of extraction for wells screened in the same aquifer. For example, if a production well screened in a given aquifer is able to extract approximately 2,000 gpm, the potential injection rate is approximately 1,000 gpm (2,000 gpm/2 = 1,000 gpm). Recent wells constructed in the Upper and Lower Aquifers had average instantaneous extraction rates of 2,050 and 2,970 gpm. Therefore, it extremely probable that utilizing injection wells in the vicinity of the VSD to recharge the lower aquifer is feasible. However, to further validate this assumption, deep exploratory seismic surveys and boreholes located at or very near the VSD site should be conducted to confirm aquifer depths and the distribution of lithologic materials. This will allow for a better understanding of site-specific hydrogeology directly beneath the VSD site and provide important data to use as a basis for design for IPR injection wells.

5.0 PERMITTING CONSIDERATIONS

As part of this project, Woodard & Curran prepared a memo outlining permitting considerations for recharge projects for EVRA (Appendix A). Multiple permits are needed for the proposed IPR project. The primary permitting agencies for this project will be the State Water Resources Control Board (SWRCB) – Division of Water Rights, the SWRCB – Division of Drinking Water (DDW) and the Colorado River Regional Water Quality Control Board (RWQCB). The Division of Water Rights will need to approve a Wastewater Change Petition to change VSD's existing discharge point prior to the Colorado River RWQCB adopting a permit for the groundwater replenishment project. After the project concept is finalized, it is recommended that EVRA begin engaging with DDW and the RWQCB early to determine if these agencies have any concerns about the project that will need to be addressed in the permitting submittals. The permitting submittals can be developed in tandem with the design of the project. The other major permitting requirement is the completion of the environmental documentation for the California Environmental Quality Act (CEQA). This must be completed to construct the project and to receive Wastewater Change Petition approval and the RWQCB permit for the project.

A detailed permitting schedule showing how these permits fit together is included in Woodard & Curran's report, included here as Appendix A. The inset figure below shows a detailed permitting flowchart describing the steps and time need for an IPR Project (this flowchart can also be found on Attachment A of Appendix A of this report).

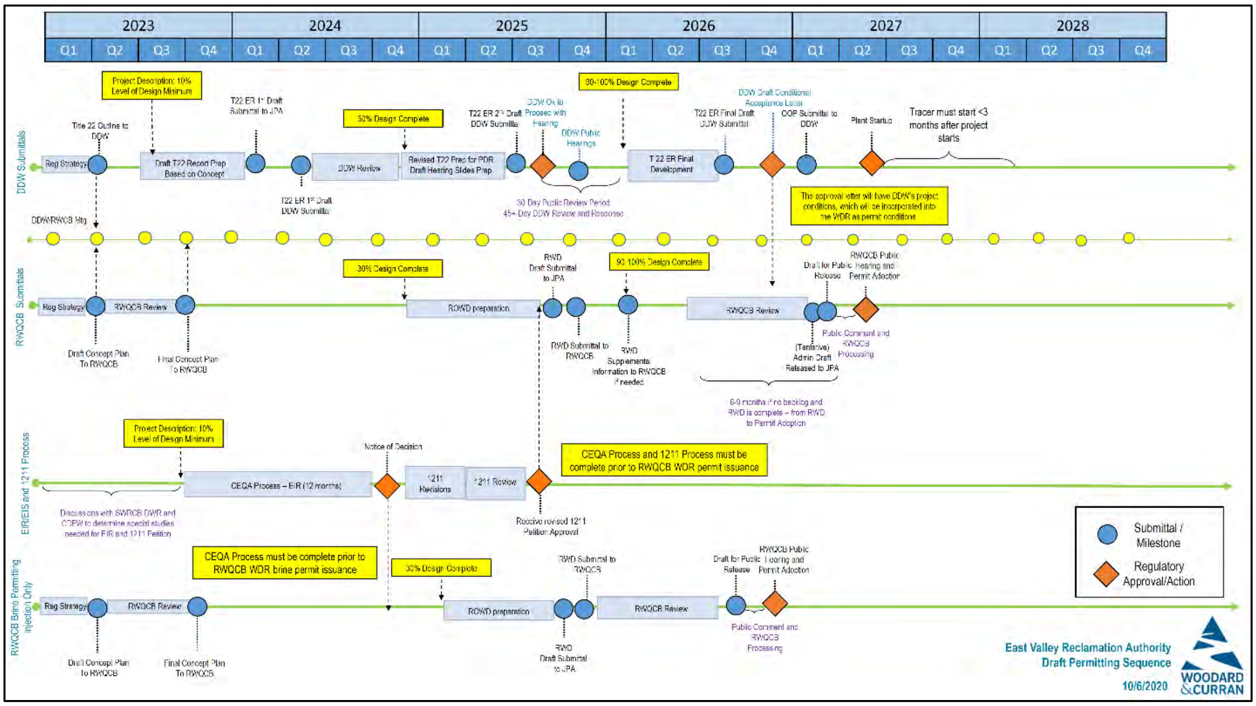

Figure 5-1. Permitting Flowchart

6.0 FINDINGS AND RECOMENDATIONS

The area identified by EVRA to be utilized for IPR activities, at the southern end of the VSD site, is located within a geologically complex area of the Salton Trough which has been subject to compressional and extensional forces from the San Andreas and San Jacinto fault systems. Hydrostratigraphic units below the VSD site include a Semi-Perched Aquifer, Upper Aquifer, Aquitard, and Lower Aquifer.

Previous studies have confirmed the presence of lake-bed sediments underlying the VSD site, which are typically fine-grained and generally of low permeability. These sediments would impede downward percolation from any surface water spreading. Therefore, the use of spreading ponds for IPR is not suitable for this area. Instead, injection wells may provide a viable alternative for recharging treated wastewater into targeted aquifers (i.e., Upper and/or Lower Aquifers).

An anomaly in the geology through Cross-Section B-B’ suggests that there may be either subsidence or an ancient fault buried beneath the surface. Additional work (i.e., geophysical survey, and deep boring) is needed to verify site-specific, subsurface hydrogeologic conditions. The data collected from this work could be used to assist in the design and locating potential IPR injection and/ or monitoring wells.

7.0 REFERENCES

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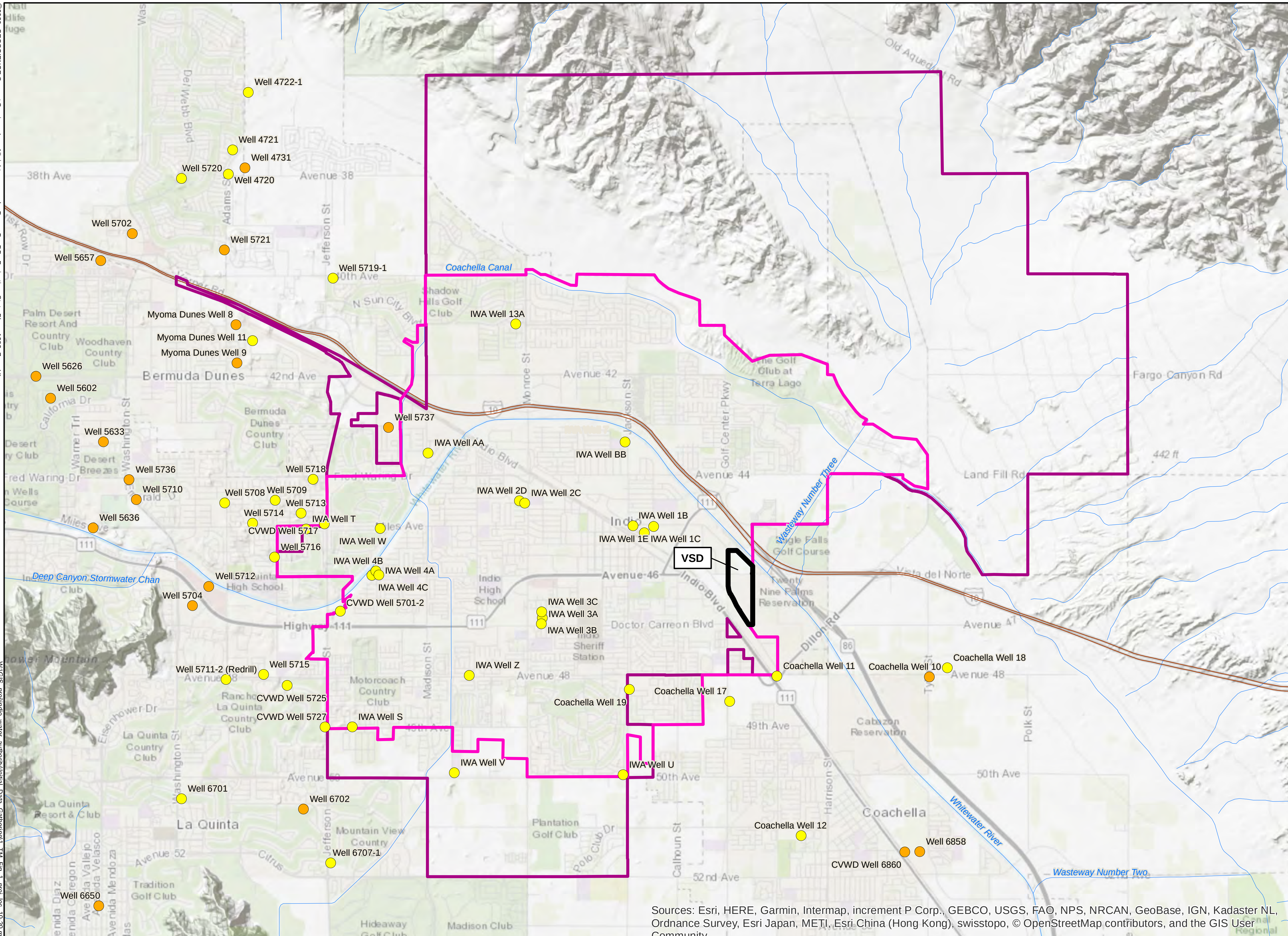
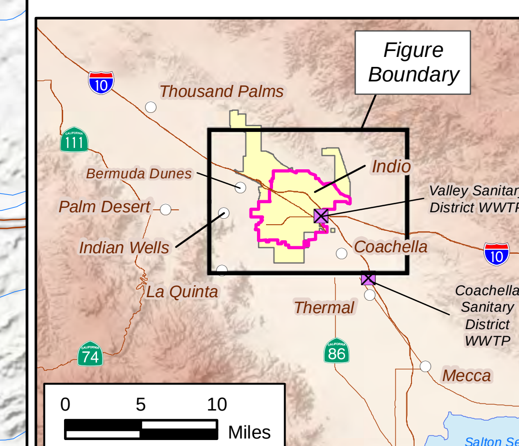
FIGURES



EXPLANATION

- Valley Sanitary District Wastewater Treatment Plant
- Valley Sanitary District Service Area
- Indio Water Authority Boundary (Digitized from IWA Website, 2020)
- Active Production Well
- Inactive Production Well



PROJECT LOCATION

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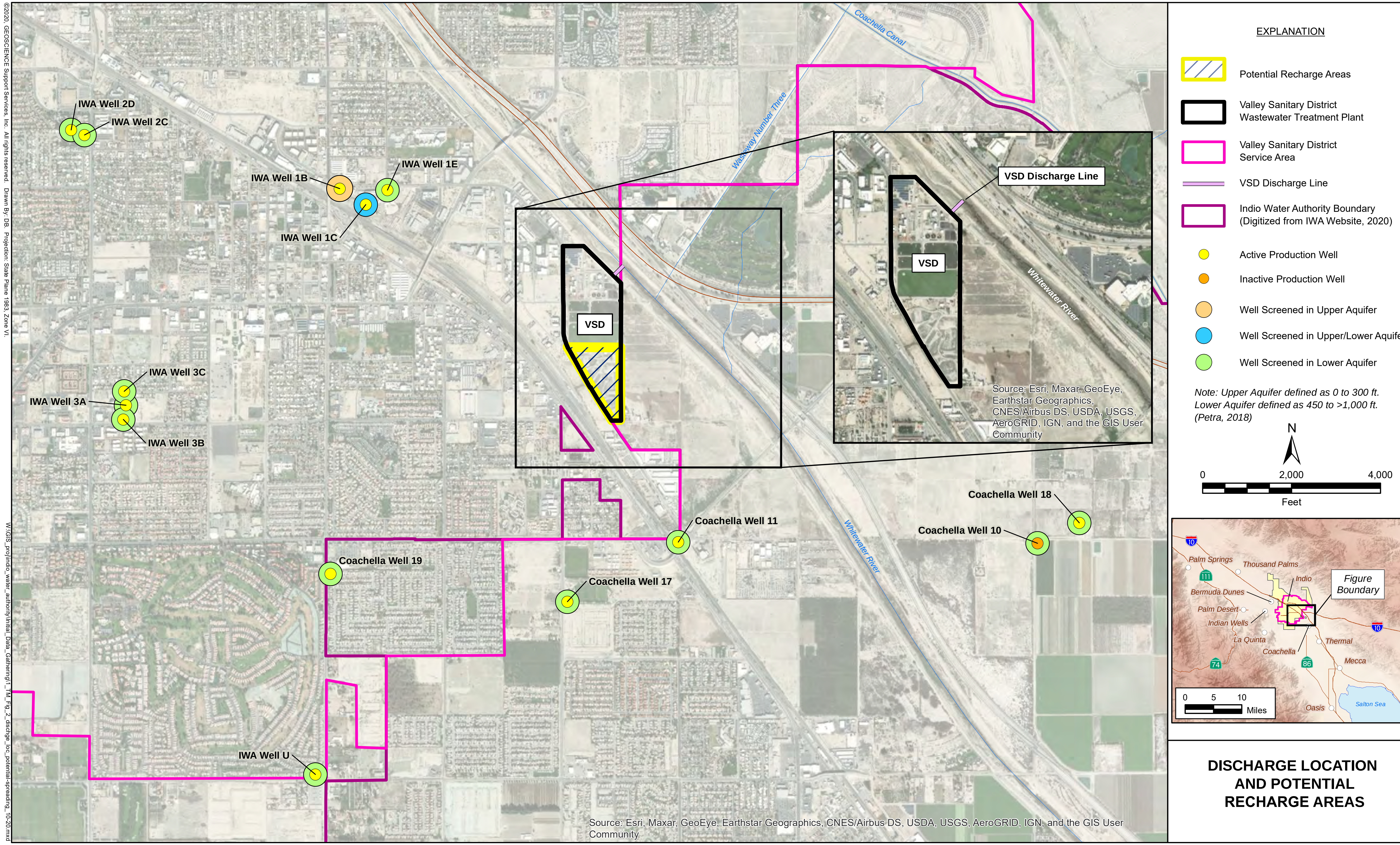
Nov-20

EAST VALLEY RECLAMATION AUTHORITY

FIGURE 1

EVALUATION OF INDIRECT POTABLE REUSE AT THE VALLEY SANITARY DISTRICT WATER RECLAMATION FACILITY FOR EAST VALLEY RECLAMATION AUTHORITY

GEOSCIENCE



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DISCHARGE LOCATION AND POTENTIAL RECHARGE AREAS

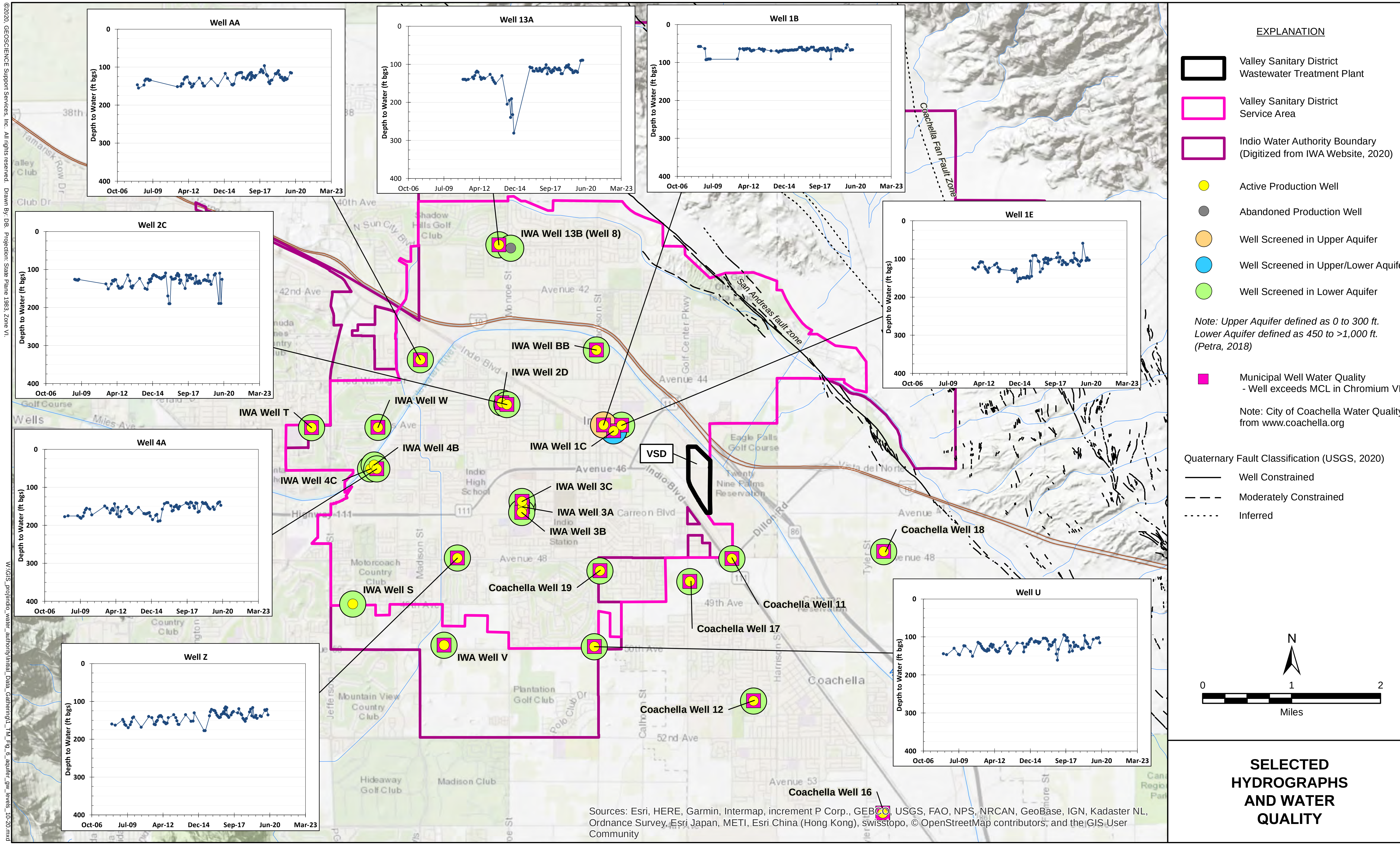
Nov-20

EAST VALLEY RECLAMATION AUTHORITY

FIGURE 2

EVALUATION OF INDIRECT POTABLE REUSE AT THE VALLEY SANITARY DISTRICT WATER RECLAMATION FACILITY FOR EAST VALLEY RECLAMATION AUTHORITY

GEOSCIENCE



SELECTED HYDROGRAPHS AND WATER QUALITY

Nov-20

EAST VALLEY RECLAMATION AUTHORITY

FIGURE 3

EVALUATION OF INDIRECT POTABLE REUSE AT THE VALLEY SANITARY DISTRICT WATER RECLAMATION FACILITY FOR EAST VALLEY RECLAMATION AUTHORITY

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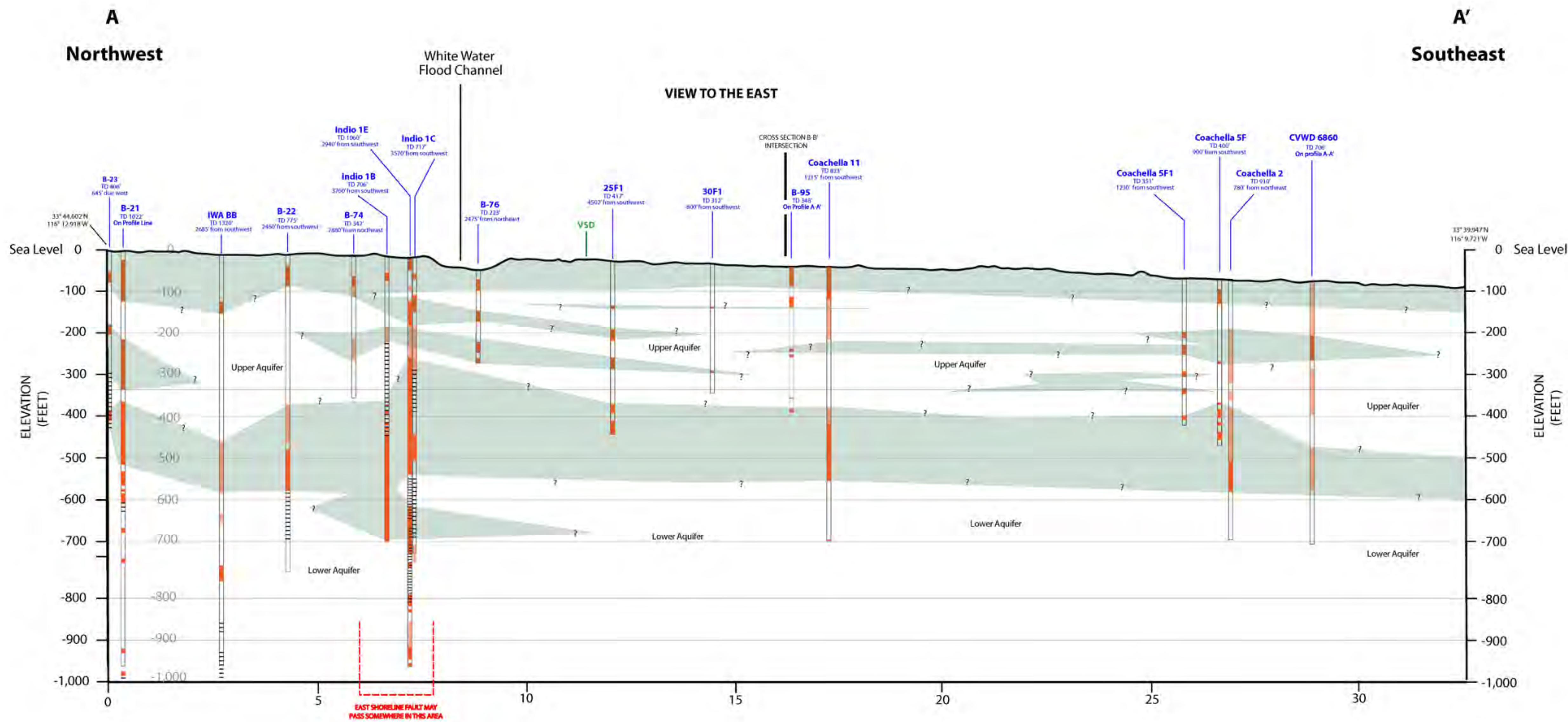

EXPLANATION

Valley Sanitary District Wastewater Treatment Plant

Valley Sanitary District Service Area

Indio Water Authority Boundary (Digitized from IWA Website, 2020)

Active Production Well

Inactive Production Well

SYMBOL DESCRIPTIONS

Likely permeable sediments (sands and gravels)

Semipermeable sediments (minor clay or hard formations)

Sediments evaluated to be dominantly impermeable (siltsones, clay, hard formations)

Select well screen intervals

Scale
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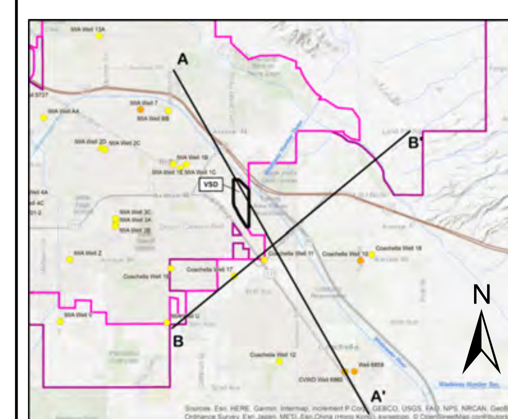
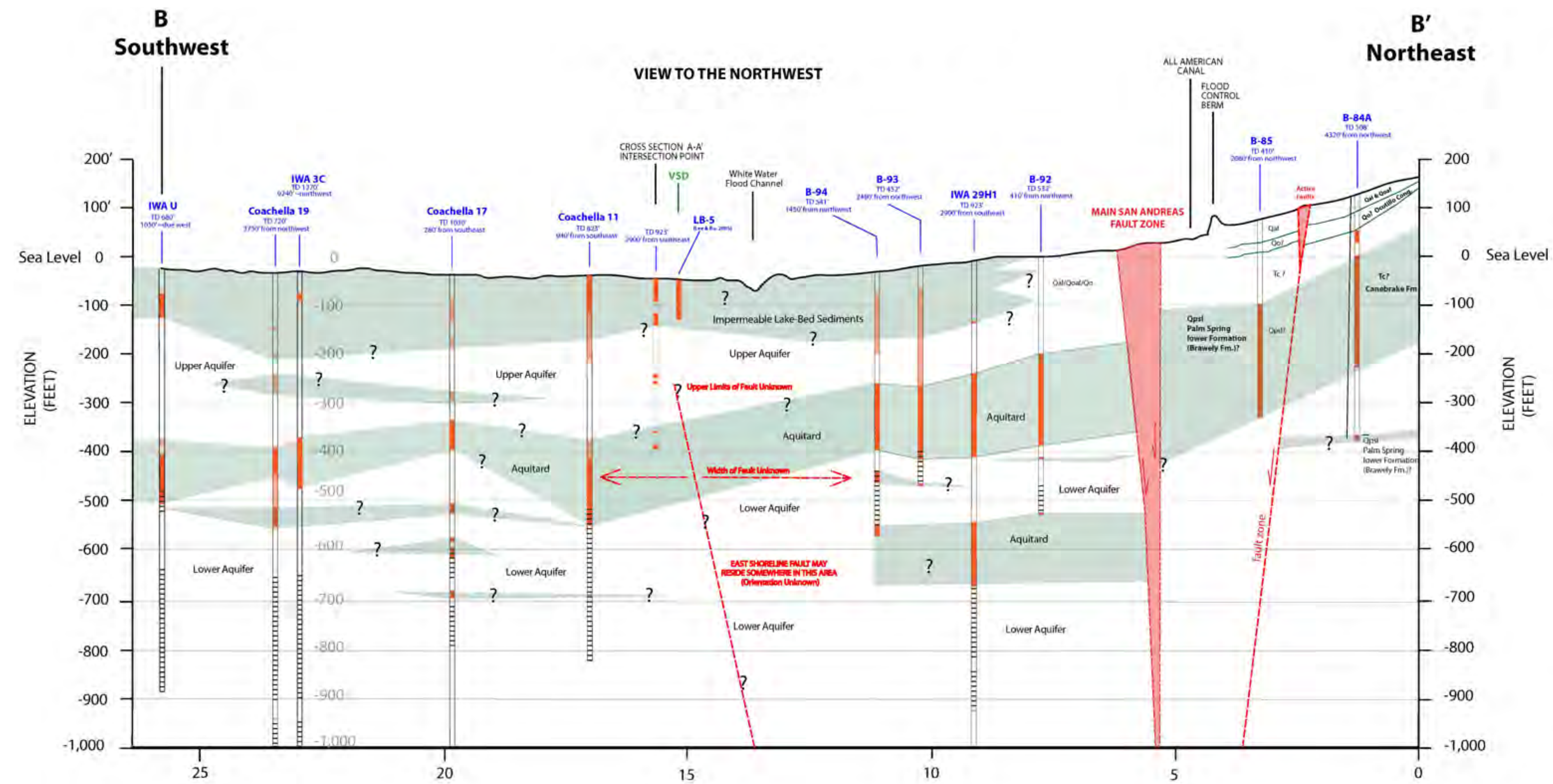
Vertical: 1"=100'



KENNEY GEOSCINECE
JN 754-20
CLIENT: GEOSCIENCE
CONTACT: LOGAN WICKS
DATE: 2020.09.25
DATE MODIFIED: 2020.10.08

CROSS-SECTION A-A'



EXPLANATION

Valley Sanitary District Wastewater Treatment Plant

Valley Sanitary District Service Area

Indio Water Authority Boundary (Digitized from IWA Website, 2020)

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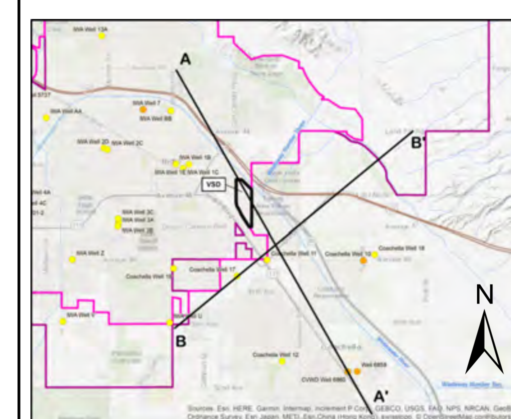

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JN 754-20
CLIENT: GEOSCIENCE
CONTACT: LOGAN WICKS
DATE: 2020.09.25
DATE MODIFIED: 2020.10.08

CROSS-SECTION B-B'

APPENDIX A

Permits Required for EVRA's Groundwater Recharge Project

GEOSCIENCE

TECHNICAL MEMORANDUM

TO: Reymundo Trejo, Indio Water Authority & Ron Buchwald, Valley Sanitary District

CC: Logan Wicks, PG, Geoscience Support Services, Inc.
Brian Villalobos, PG, Geoscience Support Services, Inc.

PREPARED BY: Erica Wolski, PE

DATE: November 19, 2020

RE: Permits Required for EVRA's Groundwater Recharge Project

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EXECUTIVE SUMMARY

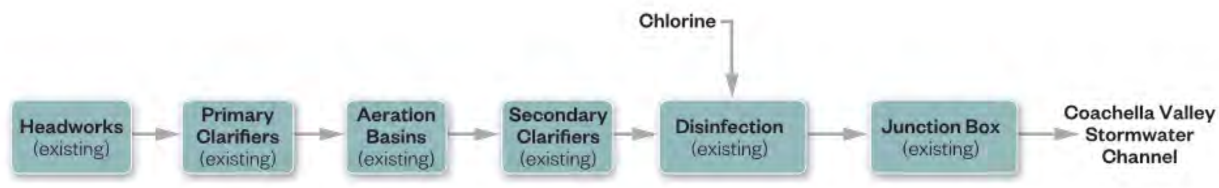
Valley Sanitary District (VSD) and Indio Water Authority (IWA) have formed a Joint Powers Authority (JPA), East Valley Reclamation Authority (EVRA), to explore a potential groundwater replenishment project using treated recycled water. VSD provides wastewater collection and treatment for the City of Indio and portions of the City of Coachella and unincorporated Riverside County. To accomplish this project, multiple permits are needed. The primary permitting agencies for this project will be the State Water Resources Control Board (SWRCB) – Division of Water Rights, the SWRCB – Division of Drinking Water (DDW) and the Colorado River Regional Water Quality Control Board (RWQCB). The Division of Water Rights will need to approve a Wastewater Change Petition to change VSD's existing discharge point prior to the Colorado River RWQCB adopting a permit for the groundwater replenishment project. After the project concept is finalized, it is recommended that EVRA begin engaging with DDW and the RWQCB early to determine if these agencies have any concerns about the project that will need to be addressed in the permitting submittals. The permitting submittals can be developed in tandem with the design of the project. The other major permitting requirement is the completion of the environmental documentation for the California Environmental Quality Act (CEQA). This must be completed to construct the project and to receive Wastewater Change Petition approval and the RWQCB permit for the project. A detailed permitting schedule showing how these permits fit together is included as **Attachment A**. The remaining permits will be required depending on the proposed project and the full list of permits is included in **Table 1**.

1. INTRODUCTION

Valley Sanitary District (VSD) and Indio Water Authority (IWA) have formed a Joint Powers Authority (JPA), East Valley Reclamation Authority (EVRA), to explore a potential groundwater replenishment project using treated recycled water. VSD provides wastewater collection and treatment for the City of Indio and portions of the City of Coachella and unincorporated Riverside County. VSD has an existing wastewater treatment plant with a permitted capacity of 13.5 million gallons per day (MGD) located in Indio, CA. IWA provides domestic water supply to the City of Indio and relies solely on groundwater wells for water supply.

2. EXISTING PERMITS

Since the 1950s, VSD has discharged treated wastewater to the Whitewater River/Coachella Valley Storm Channel (CVSC). VSD's existing wastewater treatment consists of the treatment train shown in **Figure 1** and discharges disinfected secondary effluent to the CVSC. The existing VSD discharge point is at the northeast of VSD's wastewater treatment plant site. The CVSD is not lined and discharges to the CVSC infiltrate into the shallow aquifer. VSD's discharge maintains a wetted area up to five miles downstream. The Coachella Sanitary District's Wastewater Treatment Plant is the next discharger downstream of VSD's plant. VSD technically discharges to a river even though the discharge primarily infiltrates to the groundwater basin. This discharge is regulated under a National Pollutant Discharge Elimination System (NPDES) permit and is therefore required to meet both federal Clean Water Act requirements and any additional state discharge requirements. VSD's NPDES permit was just renewed in 2020 and its discharge is currently regulated under R7-2020-0007.



Source: Figure 6-1 (Hazen, 2018).

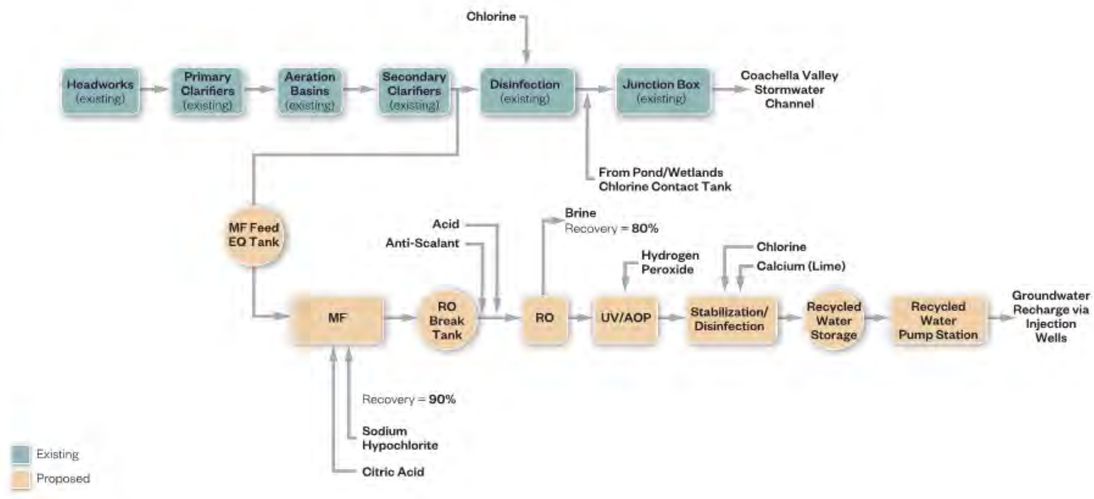
Figure 1. Existing VSD WWTP Treatment Processes

IWA has an existing domestic water treatment and distribution system and is regulated under a Drinking Water Supply Permit and amendments issued by the State Water Resources Control Board (SWRCB) Division of Drinking Water (DDW). IWA currently has twenty active groundwater wells in service that are primarily located in the City of Indio, upgradient of the VSD discharge to the groundwater basin.

3. PROPOSED PROJECT

The 2018 *Recycled Water Program Development Feasibility Study* authored by Hazen and Sawyer (Hazen, 2018) for EVRA ranked two groundwater recharge opportunities as the top two preferred projects: 1) spreading tertiary effluent at VSD's existing plant site and 2) injecting tertiary effluent at VSD's existing plant site. Groundwater recharge at other locations and non-potable reuse were considered but ranked lower than these two options.

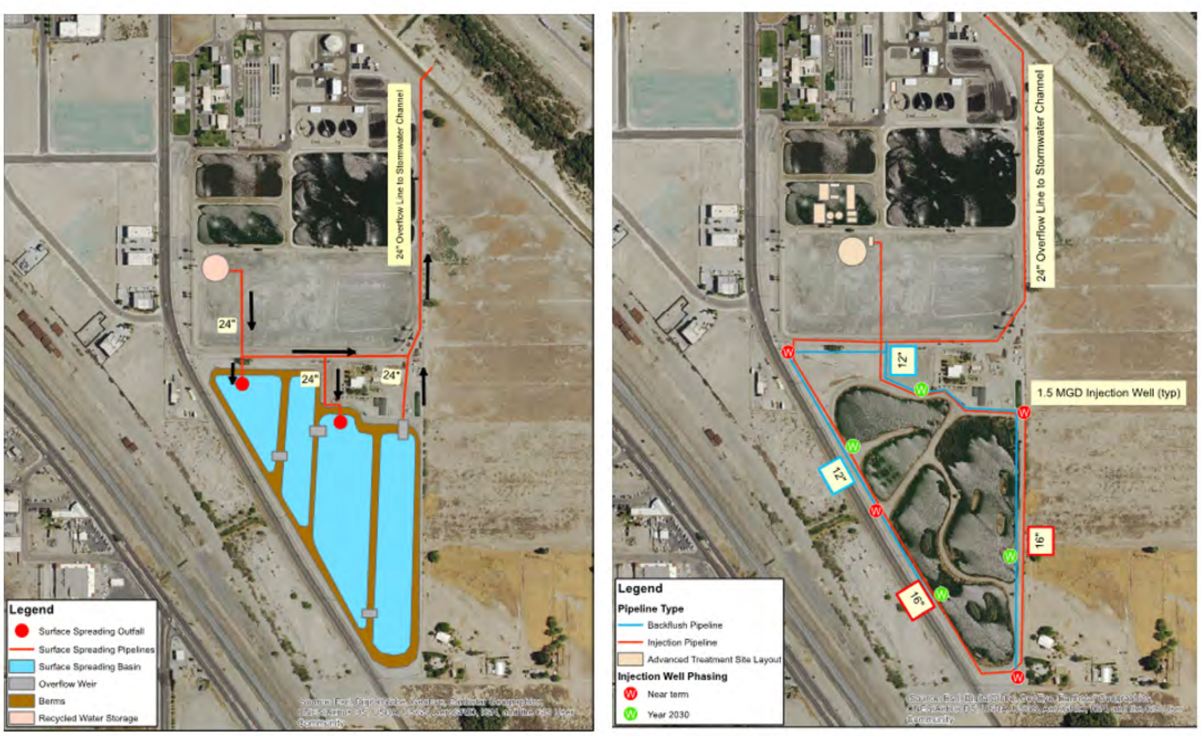
For the spreading option, tertiary treatment consisting of filtration and disinfection to meet the requirements of disinfected tertiary effluent per the water recycling requirements in Title 22 of the California Code of Regulations (CCR) would be constructed at VSD's existing plant site. For the injection option, an advanced treatment plant consisting of membrane filtration (microfiltration or ultrafiltration) followed by reverse osmosis (RO) and an ultraviolet (UV) disinfection / advanced oxidation process (AOP) that meets the requirements of Article 5.2 (Title 22 CCR) for subsurface injection, would be constructed at VSD's existing plant site. An example advanced treatment process is shown in **Figure 2**.



Source: Figure 6-9 (Hazen, 2018).

Figure 2. Proposed Advanced Treatment for Injection at VSD

As shown in **Figure 3**, tertiary effluent would be spread or advanced treated effluent would be injected at the southern end of VSD's existing plant site.



Source: Figures 7-1 and 7-3 (Hazen, 2018).

Figure 3. Proposed Spreading and Injection Siting at VSD

4. PROJECT PARTICIPANTS AND REGULATORY REQUIREMENTS

Project participants include Federal, State, and local agencies. To ensure protection of water quality and public health, the use of recycled water is regulated under several State laws, regulations, and policies. Different State regulatory responsibilities are assigned to the SWRCB DDW and the Colorado River Regional Water Quality Control Board (RWQCB).

4.1 Project Participants

The project will require collaborative efforts between EVRA and several local, State, and Federal agencies. General responsibilities of major agencies are summarized as follows:

East Valley Reclamation Authority (EVRA)

EVRA will be the Project Sponsor with roles as identified in state regulation. Responsibilities include the following:

- Administration, ownership, construction, operation, and maintenance.
- Environmental compliance, permitting, monitoring, and reporting.

California State Water Resources Control Board, Division of Water Rights

- Reviews and approves Orders Approving Change in Place of Use and Quantity of Discharge (Wastewater Change Petitions) per California Water Code Sections 1210 through 1212.

Colorado River Regional Water Quality Control Board (RWQCB)

- Oversees surface water and groundwater quality and establishes water recycling and waste discharge requirements in the Colorado River Region.
- Incorporates recommendations from the SWRCB DDW into permits for water recycling and groundwater recharge projects.
- Issues and enforces water recycling and waste discharge permits and requirements.

California State Water Resources Control Board, Division of Drinking Water (SWRCB DDW)

- Administers California's Drinking Water Program.
- Establishes criteria to protect the public health regarding recycled water production and use.
- Adopts Water Recycling Criteria in the California Code of Regulations, Title 22, including regulations with specific criteria for groundwater recharge projects.
- Holds public hearings on potable reuse projects and makes recommendations to the RWQCB for inclusion into the water recycling requirements, or project permit.

Indio Subbasin Groundwater Sustainability Agencies (GSA)

IWA along with Coachella Valley Water District, Coachella Water Authority, and Desert Water Agency, are each exclusive GSAs that oversee and manage the portions of the Indio Subbasin that overlay each of their respective service areas. As the project will affect portions of the basin outside of IWA's jurisdiction, IWA will need to coordinate with the affected agencies.

4.2 Regulatory Requirements

Implementation of the project will be achieved through approvals and permitting from the Federal, State, and local agencies listed in **Table 1**. **Section 5** contains the state permitting requirements, which make up the bulk of the regulatory hurdles for groundwater recharge projects. **Section 7** discusses federal and local permitting and requirements.

Table 1. Permits and Approvals

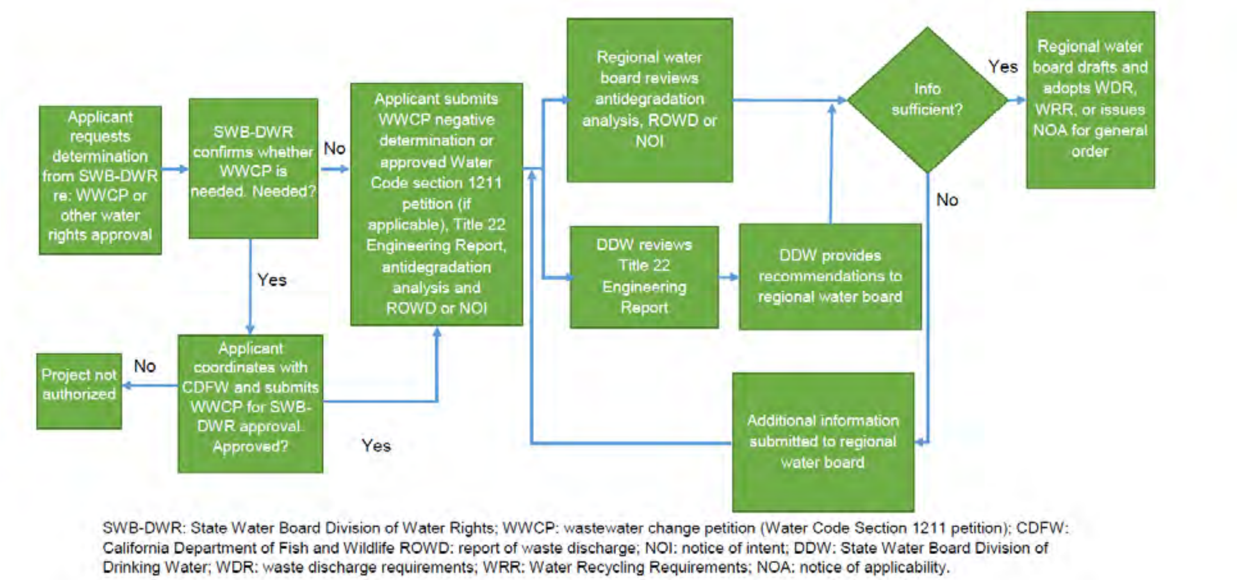
<table>
<tr><th>Permit/Approval</th><th>Agency</th></tr>
<tr><td>Water Code Section 1211 Wastewater Petition for Change</td><td>SWRCB – Division of Water Rights</td></tr>
<tr><td>Review and approval of Engineering Report; Recommendations to RWQCB for Water Recycling Requirements</td><td>SWRCB – DDW</td></tr>
<tr><td>Clean Water Act Section 401 General Water Quality Certification and Order</td><td>SWRCB – Water Quality Certification and Wetlands Program</td></tr>
<tr><td>Issuance of Waste Discharge Requirements (for recycled water project)</td><td rowspan="3">Colorado River RWQCB (Region 7)[1]</td></tr>
<tr><td>Issuance of Waste Discharge Requirements (for brine discharge – for injection only)</td></tr>
<tr><td>NPDES General Construction Permit/Stormwater Pollution Prevention Plan (SWPPP)</td></tr>
<tr><td>CA Fish & Game Code Section 1602 Streambed Alteration Agreement</td><td rowspan="2">California Department of Fish and Wildlife (CDFW)</td></tr>
<tr><td>CA Endangered Species Act consultation</td></tr>
<tr><td>Excavation and Dirt Moving Permit</td><td>California Division of Occupational Safety & Health (OSHA)</td></tr>
<tr><td>Safety Permit</td><td>California Division of Industrial Safety</td></tr>
<tr><td>Conditional Use Permit</td><td rowspan="5">City of Indio</td></tr>
<tr><td>Traffic Control Permit/Construction Staging and Traffic Management Plan</td></tr>
<tr><td>Approval of Construction SWPPP</td></tr>
<tr><td>Encroachment Permits</td></tr>
<tr><td>Haul Route Permit</td></tr>
<tr><td>Well/Boring Installation Permit</td><td rowspan="2">Riverside County Department of Environmental Health (DEH)</td></tr>
<tr><td>Oversees hazardous material/CUPA (Certified Unified Program Agency) plans</td></tr>
<tr><td>Underground Injection Control – Injection Well Registration (Injection only)</td><td>United States Environmental Protection Agency (USEPA), Region 9</td></tr>
</table>

5. STATE WATER RESOURCES CONTROL BOARD PERMITS

Figure 4 shows a flowchart from the SWRCB's Recycled Water Policy Staff Report (SWRCB 2018b), which details how the SWRCB - Division of Water Rights, SWRCB - DDW, and RWQCB requirements fit together before the RWQCB can issue a water recycling permit. The first step is working with the Division of Water Rights to receive an approved

[1] As the injection wells will be located at the VSD plant site, it is assumed that the injection well backflush can be routed to the head of the advanced treatment plant onsite and that this backflush does not need to be covered under the NPDES for Drinking Water System Discharges (General Order WQ 2014-0194-DWQ).

Water Code Section 1211 petition to change the existing discharge from the Whitewater River/CVSC to the proposed recycled water project. Concurrently, EVRA can submit a Title 22 Engineering Report to DDW and the Report of Waste Discharge and antidegradation analysis to the Colorado River RWQCB for review and approval. After receipt of DDW's comments, the RWQCB will draft the Waste Discharge Requirements (WDR) order for EVRA's recycled water project. Additional information about each of these permitting steps is detailed in the following sections. A more detailed permitting flowchart specific to the EVRA project is included as **Attachment A**.



Source: 2018 SWRCB Staff Report for Recycled Water Policy

Figure 4. SWRCB Recycled Water Project Permitting Process

5.1 Wastewater Change Petition – Section 1211

The California Water Code (CWC) states that the owner of a wastewater treatment plant shall hold the exclusive right to the treated wastewater. Before making a change in the point of discharge, place of use, or purpose of use of treated wastewater, the CWC requires the owner to obtain approval from the SWRCB Division of Water Rights. This is accomplished by filing a Section 1211 Petition for Change for Owners of Wastewater Treatment Plants (Wastewater Change Petition). Before approving the Wastewater Change Petition, the SWRCB must determine that the proposed change will not injure other legal users of water, will not unreasonably harm in-stream uses, and is not contrary to the public interest.

The project would change the place of use from the Whitewater River/CVSC to groundwater recharge and therefore would require a Section 1211 Petition. After filing the petition, the Division of Water Rights will issue a public notice to interested parties and downstream water rights holders. If protests are received, Division of Water Rights will review them to determine if the petition would cause injury to any other lawful use of water downstream of the current discharge. Ideally if protests are received, EVRA and the protestor(s) will collaborate to resolve the protest as it is easier to receive the Wastewater Change Petition if all protest(s) are withdrawn. The Division of Water Rights is also obligated to consider the effect of the proposed change in discharge on public trust resources and to protect those resources where feasible. At a minimum, this requires consultation with the California Department of Fish and Wildlife (CDFW) and may also require a consultation with the United States Fish and Wildlife Service (USFWS).

The Order will not be issued until the California Environmental Quality Act (CEQA) documentation is adopted by EVRA (see **Section 6**). However, it is recommended to consult with the Division of Water Rights earlier in the CEQA process in case special studies are recommended.

Use of New Development Flow to Avoid 1211 Petitions

Wastewater flows generated from new development that have not been previously discharged to a watercourse do not require a Section 1211 wastewater change petition. The Division of Water Rights further clarifies this requirement in its Frequently Asked Questions document by stating *"the quantity of water treated at a facility is not static but may increase over time. If a treatment plant discharges to a stream, but only plans to use increased flow that has never been discharged to the stream for a re-use project, a petition is not required. This only applies to the flow that has not been discharged to the stream.*

EVRA may be able to use wastewater flow from newly developed areas in VSD's collection area that has not been discharged to the Whitewater River/CVSC to support a small scale project for piloting the advanced treatment plant, spreading basin and/or injection wells until the Division of Water Rights issues its Wastewater Change Petition for the full project.

5.2 Division of Drinking Water – Title 22 Engineering Report

Prior to June 18, 2014, the Water Recycling Criteria in the CCR, Title 22, Division 4, Chapter 3 (CCR, 2014) included narrative requirements for planned groundwater recharge projects. The regulations required that recycled water must be at all times of a quality that fully protects public health and that DDW recommendations would be made on an individual case basis taking into consideration all relevant aspects of each project, including the following factors: treatment provided; effluent quality and quantity; spreading area operations; soil characteristics; hydrogeology; residence time; and distance to withdrawal.

Since 1976, DDW issued numerous draft versions of more detailed groundwater recharge regulations that served as guidance for the six permitted projects in California prior to 2014:

- Water Replenishment District / Los Angeles County Sanitation District - Montebello Forebay Groundwater Recharge Project – surface spreading of tertiary recycled water, stormwater, untreated Colorado River water and State Project water (imported water)
- Inland Empire Utilities Agency - Chino Basin Groundwater Recharge Project – surface spreading of tertiary recycled water and stormwater;
- Alamitos Gap Seawater Intrusion Barrier – injection of full advanced treatment (FAT) recycled water and treated imported water; now using 100% FAT recycled water;
- West Coast Basin Seawater Intrusion Barrier – injection of 100% FAT recycled water in 2013;
- Dominguez Gap Seawater Intrusion Barrier – injection of FAT recycled water and treated imported water; now using 100% FAT recycled water; and
- Orange County Water District - Groundwater Replenishment System (GWRS) – injection and surface spreading of 100% FAT recycled water, expanded to 100 MGD in 2015.

Final groundwater recharge regulations were adopted and went into effect June 18, 2014. The groundwater recharge regulations are organized by type of project: (1) surface application (surface spreading) and (2) subsurface application (injection or vadose zone wells). Since 2014, only injection projects have been successfully permitted and the two existing spreading projects have not yet come into full compliance with the 2014 regulations. With the requirement for a large supply of diluent water (up to 80% for projects upon initiation) and the new notification levels for per- and polyfluoroalkyl substances (PFAS), such as PFOA and PFOA, tertiary spreading of recycled water has become less feasible unless a system is already spreading imported water supply and provides additional treatment beyond tertiary filtration and disinfection.

Project proponents that would like to recharge groundwater are required to complete a Title 22 Engineering Report for the project that addresses how the Title 22 CCR regulations are met. A detailed list of the types of information required to be included in the Title 22 Engineering Report is included in **Table 2.** DDW will review the report and after DDW provides initial approval of the report's completeness, the project proponent is required to hold a Title 22 public hearing. The hearing is required to be noticed and include a minimum 30-day public comment period. The project proponent is required to prepare a draft response to the comments for DDW review and revise the report as necessary to address these comments. However, the majority of project proponents that have held public hearings have found limited public attendance and have received few or no comments that require a change to the report. After the hearing and submittal of the revised report, DDW will generate a Conditional Approval Letter for the project, which will be included in the RWQCB's WDR permit for the discharge. Additional DDW requirements include review and approval of the tracer study protocol and report for determining underground retention time and review and approval of the Operations Optimization Plan, which is recommended to be submitted six months prior to when the project intends to begin operation.

Table 2: Groundwater Recharge Requirements to Address in the Title 22 Engineering Report

Requirement	Surface Spreading	Subsurface Injection
Enhanced Source Control	• Water recycling agency must develop a pretreatment program similar to those required for the federal Clean Water Act but with additional emphasis on constituents that may pass through treatment and could be harmful to human health.	• Same as Spreading.
Minimum Treatment Required	• Disinfected tertiary treatment required (filtration and disinfection that meets the minimum requirements for non-potable recycled water per Title 22) • Due to emerging contaminant issues, such as PFAS, many projects are finding additional treatment such as granular activated carbon (GAC) is needed. • Soil aquifer treatment	• Full advanced treatment (FAT) consisting of reverse osmosis (RO) and ultraviolet (UV) disinfection / advanced oxidation process (AOP). The UV/AOP is designed to meet a minimum of 0.5-log 1,4-dioxane removal or sufficient NDMA removal to meet the notification level, whichever is greater. • Alternative treatment, such as non-RO processes, may be considered and has been permitted in other states but has not been approved yet in California.

Requirement	Surface Spreading	Subsurface Injection
Pathogen Control and Multiple Barrier Requirements	• At least three barriers are required that achieve at least 1-log each with a maximum of 6-log per barrier. • Pathogen removal required: 12/10/10 (V/G/C)[2]	• Same as Spreading.
Total Organic Carbon (TOC) Limits	• TOC_{max} = 0.5 mg/L ÷ RWC • A project with a 20% RWC maximum will have a TOC effluent limit of 2.5 mg/L.	• The plant must produce purified recycled water with a TOC no greater than 0.5 milligrams per liter (mg/L). • Diluent water cannot be used to meet this requirement.
Recycled Municipal Wastewater Contribution (RWC) Limits	• Initial RWC limited to 20%. (Requires 80% diluent water via spreading non-recycled water or use of groundwater underflow) • RWC is limited by effluent TOC (see above). • Diluent water must meet primary drinking water standards, which is problematic if groundwater underflow is proposed as diluent and there are naturally occurring or manmade contaminants present in the groundwater basin.	• May be up to 100% • No diluent required
Chemical Standards	• <10 mg/L total nitrogen • Drinking water primary standards • Action levels for lead and copper • Notification Levels and Recycled Water Policy Chemicals of Emerging Concern (CECs) can be met after soil aquifer treatment.	• Same as Spreading except: o Notification Levels and Recycled Water Policy CECs must be met in the FAT effluent prior to recharge.
Underground retention time	• Can be credited with 1-log per month for virus reduction, no limit on virus credits due to underground retention. • Projects that use tertiary effluent for spreading and retain the effluent underground for at least six months are assumed to achieve a full 10-log reduction of *Giardia* and *Cryptosporidium.* • Spreading projects with less than six months retention time have not yet been successfully permitted due to the lack of *Giardia* and *Cryptosporidium* credits included in typical tertiary filtration and disinfection.	• Can be credited with 1-log per month for virus reduction for a maximum of 6-log. • No credit provided underground for *Giardia* and *Cryptosporidium.*

[2] *12-log enteric virus reduction, 10-log Giardia cyst reduction, 10-log Cryptosporidium oocyst reduction is required from raw sewage to extracted groundwater.*

Requirement	Surface Spreading	Subsurface Injection
Response Retention Time	• Minimum response retention time is two months • However most spreading projects provide at least six months retention in order to obtain *Giardia* and *Cryptosporidium* credits. No spreading projects have been permitted to date with less than six months retention.	• Minimum response retention time is two months. • Typically, an additional process beyond standard FAT such as free chlorine is needed to meet the required 12-log virus reduction.

5.3 RWQCB – Waste Discharge Requirements Permit

EVRA's service area is located within the jurisdiction of the Colorado River RWQCB. The Colorado River RWQCB is one of nine regional boards under the SWRCB and is responsible for regulating recycled water discharges to groundwater and surface water that are subject to state water quality regulations and statutes. The RWQCB's mission is "to preserve, enhance, and restore the quality of California's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations." Locally, the RWQCB implements policies and regulations, develops long-range plans, issues water recycling and waste discharge permits, and takes enforcement actions against violators of State and Federal environmental regulations.

In order to adopt a WDR permit for a groundwater recharge project, EVRA must submit a Report of Waste Discharge with a technical report describing the project, the required application fee, and completed CEQA documents to the RWQCB. Prior to issuing the WDR permit, DDW must provide a Conditional Approval Letter and the project must have an approved Wastewater Change Petition. The RWQCB will draft the WDR permit and will then typically provide a copy to the applicant for review and comment prior to releasing the draft WDR for public comment. After the public comment period closes, the RWQCB will address comments received and revise the permit (if applicable) prior to bringing the permit to a Board hearing for adoption.

5.3.1 Basin Plan

WDR issued by the Colorado River RWQCB are required to implement applicable State water quality control policies and plans, including water quality objectives and implementation policies established in the Basin Plan (CR-RWQCB, 2019). The Basin Plan designates beneficial uses of surface water and groundwater resources in the watershed and sets water quality objectives that must be attained to protect these beneficial uses and conform to the State's antidegradation policy. Discharges to surface water and/or groundwater must be of sufficient quality to not impact beneficial uses. **Table 3**Table 1 shows the beneficial uses of surface waters downstream of VSD's existing discharge (CVSC and Salton Sea) and the underlying groundwater basin (Coachella Valley Subunit).

Table 3: Beneficial Uses in the Project Area

Beneficial Use	Coachella Valley Storm Water Channel[1]	Salton Sea	Whitewater Hydrologic Unit – Coachella Valley Subunit
Municipal (MUN)			X
Agricultural Supply (AGR)			X
Aquaculture (AQUA)		X	
Freshwater Replenishment (FRSH)	X		
Industrial Service Supply (IND)		P	X
Groundwater Recharge (GWR)			

Beneficial Use	Coachella Valley Storm Water Channel[1]	Salton Sea	Whitewater Hydrologic Unit – Coachella Valley Subunit
Water Contract Recreation (REC1)	X[2]	X	
Non-contact Water Recreation (REC2)	X[2]	X	
Warm Freshwater Habitat (WARM)	X	X	
Cold Freshwater Habitat (COLD)			
Wildlife Habitat (WILD)	X	X	
Hydropower Generation (POW)			
Rare, Threatened or Endangered Species (RARE)	X[3]	X	

Source: Tables 2-3 and 2-5 of CR-RWQCB 2019.
Notes: X = existing use, P = potential use.
1. *Section of perennial flow from approximately Indio to the Salton Sea.*
2. *Unauthorized use.*
3. *Rare, endangered or threatened wildlife exists in or utilizes some of these waterway(s). If the RARE beneficial use may be affected by a water quality control decision, responsibility for substantiation of the existence of rare, endangered, or threatened species on a case-by-case basis is upon the California Department of Fish and Wildlife on its own initiative and/or at the request of the RWQCB; and such substantiation must be provided within a reasonable time frame as approved by the RWQCB.*

The RWQCB has not set numeric Water Quality Objectives for the groundwater basin and instead states:

> *Ideally the Regional Water Board's goal is to maintain the existing water quality of all nondegraded ground water basins. However, in most cases ground water that is pumped generally returns to the basin after use with an increase in mineral concentrations such as total dissolved solids (TDS), nitrate etc., that are picked up by water during its use. Under these circumstances, the Regional Water Board's objective is to minimize the quantities of contaminants reaching any ground water basin. This could be achieved by establishing management practices for major discharges to land. Until the Regional Water Board can complete investigations for the establishment of management practices, the objective will be to maintain the existing water quality where feasible.*

As numeric criteria have not been set, the RWQCB may require that EVRA determine the ambient groundwater quality in the project area and downgradient of the project area and to complete a detailed antidegradation analysis if any of the contaminants present in the treated effluent are anticipated to degrade the existing groundwater quality. If advanced treatment and injection is the chosen alternative, monitoring may need to be completed to determine that the lower salinity water produced by advanced treatment does not mobilize metals, such as arsenic and chromium, in the aquifer.

5.3.2 SWRCB Policies

There are two policies of particular importance with respect to groundwater recharge projects for protection of water quality and human health: (1) antidegradation policies, and (2) the Recycled Water Policy.

Antidegradation Policies

California's antidegradation policies are found in Resolution 68-16, Policy with Respect to Maintaining Higher Quality Waters in California, and Resolution 88-63, Sources of Drinking Water Policy. These resolutions are binding on all State agencies. They apply to both surface waters and groundwaters, protect both existing and potential uses, and are incorporated into RWQCB Basin Plans.

- **Resolution 68-16 (Antidegradation Policy):** The Antidegradation Policy requires that existing high water quality be maintained to the maximum extent possible, but allows lowering of water quality if the change is "consistent with maximum benefit to the people of the state, will not unreasonably effect present and anticipated use of such water (including drinking), and will not result in water quality less than prescribed in policies." The Antidegradation Policy also stipulates that any discharge to existing high quality waters will be required to "meet waste discharge requirements which will result in the best practicable treatment or control of the discharge to ensure that (a) pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained."
- **Resolution 88-63 (Sources of Drinking Water Policy)**: The Sources of Drinking Water Policy designates the municipal and domestic supply (MUN) beneficial use for all surface waters and groundwater except for those: (1) with TDS exceeding 3,000 milligrams per liter (mg/L), (2) with contamination that cannot reasonably be treated for domestic use, (3) where there is insufficient water supply, (4) in systems designed for wastewater collection or conveying or holding agricultural drainage, or (5) regulated as a geothermal energy producing source. Resolution 88-63 addresses only designation of water as drinking water source; it does not establish objectives for constituents that threaten source waters designated as MUN.

Recycled Water Policy

The Recycled Water Policy was adopted by the SWRCB on February 3, 2009 and became effective on May 14, 2009. It was subsequently amended on January 22, 2013 with regard to Contaminants of Emerging Concern (CEC) monitoring with an effective date of April 25, 2013. The Policy was a critical step in creating uniformity in how RWQCBs were individually interpreting and implementing Resolution 68-16 for water recycling projects, including landscape irrigation projects and groundwater recharge projects. In December 2016, the SWRCB adopted Resolution No. 2016-006, updating the Science Advisory Panel's recommendations for CEC monitoring in recycled water and updating the Recycled Water Policy to consider changes since 2013. On December 11, 2018, the SWRCB adopted Resolution No. 2018-0057, amending the Recycled Water Policy. The critical provisions in the Policy are summarized below:

- **Salt Nutrient Management Plans:** The 2009 Recycled Water Policy requires Salt Nutrient Management Plans (SNMPs) to be developed for every groundwater basin/sub-basin by May 2014 (May 2016 with a RWQCB-approved extension). The Coachella Valley SNMP was prepared in 2015. However, the RWQCB has not yet adopted the SNMP and recently provided comments on the SNMP that CVWD, DWA and IWA are working to address.
- **RWQCB Groundwater Requirements:** The Recycled Water Policy does not limit the authority of a RWQCB to include more stringent requirements for groundwater recharge projects to protect designated beneficial uses of groundwater, *provided* that any proposed limitations for the protection of public health may only be imposed following consultation with DDW. The Recycled Water Policy also does not limit the authority of a RWQCB to impose additional requirements for a proposed groundwater recharge of recycled water project that has a substantial adverse effect on the fate and transport of a contaminant plume (for example those caused by industrial contamination or gas stations), or changes the geochemistry of an aquifer thereby causing the dissolution of naturally occurring constituents, such as arsenic, from the geologic formation into groundwater. This provision requires additional assessment of impacts of a groundwater recharge of recycled water project on areas of contamination in a basin and/or if the quality of the water used for recharge (for example low salinity) causes constituents, such as naturally occurring arsenic, to become mobile and impact groundwater.
- **Antidegradation and Assimilative Capacity:** Assimilative capacity is typically defined as the difference between the ambient groundwater concentration and the concomitant groundwater quality objective. By the time EVRA's project is permitted, the Coachella Valley subunit should have an accepted SNMP, and

therefore, 2018 Recycled Water Policy Section 8.2.3 applies: "the antidegradation analysis may be based, in part, on the technical findings of the accepted salt and nutrient management plan as described in 6.2.2."

- **CECs:** As part of the Recycled Water Policy, a Science Advisory Panel was formed to identify a list of CECs for monitoring in recycled water used for groundwater recharge and landscape irrigation. The Panel completed its report in June 2010 and recommended monitoring selected health-based and treatment performance indicator CECs and surrogates for groundwater recharge of recycled water projects. The groundwater recharge monitoring recommendations were directed at surface spreading using tertiary recycled water (specifically monitoring recycled water and groundwater) and injection projects using RO and advanced oxidation processes (AOP) (specifically monitoring recycled water). The Recycled Water Policy was amended by the SWRCB on January 22, 2013 to include the CEC monitoring program and the Office of Administrative Law approved the Amendment on April 25, 2013. The Amendment provides the final list of specific CECs and monitoring frequencies for groundwater recharge projects and procedures for evaluating the data and responding to the results. The requirements for groundwater recharge projects will be incorporated into the permits for existing groundwater recharge projects and will be included as requirements for all future projects. The Panel was reconvened and modifications to the CEC monitoring requirements are included in the 2018 Recycled Water Policy. In addition to revisions to the list of CECs to be monitored, potable reuse projects must also complete bioanalytical screening. As part of the final Groundwater Recharge Regulations, DDW has its own CEC requirements and monitoring locations that must be met in addition to the Recycled Water Policy requirements.

5.4 RWQCB – Waste Discharge Requirements Permit for Brine Discharge

If injection is chosen and therefore an advanced treatment plant that includes reverse osmosis (RO) is required, an evaluation will need to be completed to determine how to handle the brine. If brine is hauled to another location, such as the Inland Empire Brine Line, a permit would not be needed from the RWQCB, however, EVRA would need to purchase capacity and receive a permit from the appropriate local agency. Currently, the Inland Empire Brine Line ends in Yucaipa, CA, which is approximately 60 miles to the west of Indio.

If local brine discharge options were considered, such as brine evaporation ponds or a discharge to the Salton Sea, a permit would be needed from the Colorado RWQCB. Due to the high salinity of the Salton Sea, the RWQCB may allow for brine discharge to the Salton Sea, if the toxic metals, such as selenium are removed prior to discharge. Some Northern California systems are currently studying wetlands for metals reduction in brine discharge prior to discharge to the San Francisco Bay. Depending on the results of those studies, this may be a viable option for EVRA as well.

In order for the RWQCB to adopt a WDR permit for a brine pond or brine discharge, EVRA must submit a Report of Waste Discharge with a technical report describing the project, the required application fee, and completed CEQA documents to the RWQCB. The RWQCB will draft the WDR permit and will then typically provide a copy to the applicant for review and comment prior to releasing the draft WDR for public comment. After the public comment period closes, the RWQCB will address comments received and revise the permit (if applicable) prior to bringing the permit to a Board hearing for adoption. The brine WDR permit can be issued as part of or separately from the groundwater recharge WDR permit.

6. ENVIRONMENTAL COMPLIANCE

6.1 California Environmental Quality Act (CEQA)

EVRA must complete the CEQA requirements prior to issuance of the Wastewater Change Petition and the RWQCB's WDRs for the groundwater recharge project. The CEQA process can be conducted concurrently with the preparation of facility planning/design. Due to the complexity of the project, it is anticipated that an Environmental Impact Report (EIR) would be required for this project.

California Endangered Species Act and Federal Endangered Species Act

Consultation with CDFW may be necessary if State-listed species are potentially impacted by project construction or operation. Consultation with USFWS may be necessary if federally listed species are potentially impacted by project construction or operation. Biological resources will need to be evaluated as part of the environmental compliance process.

The Coachella Valley Multiple Species Habitat Conservation Plan and Natural Community Conservation Plan (CVMSHCP) is a regional conservation plan that aims to protect acreage and 27 species in the Coachella Valley. IWA is a local permittee to the CDFW Natural Community Conservation Plan (NCCP) permit for the CVMSHCP and the Coachella Valley Conservation Commission (CVCC) is responsible for implementation of the CVMSHCP. During the CEQA process and Wastewater Change Petition process it is anticipated that EVRA will need to engage with CVCC in addition to CDFW. It is anticipated that some flow may need to be discharged into the Whitewater River/CVSC to maintain riparian habitat that has been created by VSD's existing discharge.

Lake & Streambed Alteration Agreement

A Lake & Streambed Alteration Agreement (LSAA) will be required from CDFW to ensure protection of existing fish and wildlife resources if alternations are made to the Whitewater River/CVSC for the project. The LSAA may include measures or modifications to reduce harmful impacts to fish and wildlife resources from project actions.

6.2 National Environmental Policy Act (NEPA)

If the proposed project seeks federal funding, then EVRA must also satisfy the requirements of the National Environmental Policy Act (NEPA), which although similar to CEQA, has its own unique requirements and typically require longer approval times. A few of the substantive differences between NEPA and CEQA are as follows:

- NEPA generally requires that any cost/benefit analysis prepared for the project be incorporated into or attached to the EIR. Incorporation of cost/benefit information is optional under CEQA unless it constitutes the basis for rejecting an environmentally superior alternative.
- NEPA requires that the project and each of the alternatives be analyzed equally and compared. Under CEQA, the analysis of significant effects of alternatives can be evaluated in less detail than the effects of the proposed project; however, each environmental issue should still be addressed for each alternative to allow for comparison of impacts with the proposed project.
- CEQA requires agencies to implement feasible mitigation measures. CEQA also requires the preparation of a Mitigation Monitoring or Reporting Program.
- The standards of significance under NEPA generally are less sensitive than those under CEQA.
- It is generally the case that the time commitment for a NEPA process involving an EIR will be longer than the CEQA process.

7. MISCELLANEOUS REQUIREMENTS

7.1 Federal Requirements

Groundwater recharge projects are exempt from the Federal Clean Water Act, except when a project involves a surface spreading site that is a Water of the United States (U.S.). For example, if the existing Whitewater River discharge were considered a groundwater recharge project instead of a waste disposal project, the Clean Water Act would still apply as the Whitewater River is a Water of the U.S.

If injection is chosen as the recharge alternative, the injection wells must be registered with the USEPA through its Underground Injection Control (UIC) Program. Other Federal agency approvals could include flood control and potential funding programs.

7.1.1 Underground Injection Control Program

The USEPA classifies groundwater injection wells as "Class V Wells." Before constructing a Class V well, the USEPA requires information to be submitted to the UIC Program, which is administered by USEPA Region 9 in California. The following basic information is required; more may be required by Region 9:

- Name and location of the facility;
- Name and address of a legal contact;
- Owner of the property;
- Nature and type of injection wells, and;
- Operating status of injection wells.

In most cases, Class V wells are "authorized by rule," which means that they may be operated without an UIC Program permit if underground sources of drinking water are not endangered. Since State and local regulations ensure the protection of drinking water sources, a UIC Program permit would not be required. However, the injection wells are required to be registered and that registration can be completed by filling out a form online:

https://www.epa.gov/uic/forms/underground-injection-well-registration-pacific-southwest-region-9

7.2 Other State Requirements

The spreading basin should be constructed in a manner which will avoid triggering the requirements for California Department of Water Resources - Division of Safety of Dams (DSOD) review. Dam heights of less than six feet do not fall under DSOD review. Additional information is provided on DSOD's website:

https://water.ca.gov/Programs/All-Programs/Division-of-Safety-of-Dams/Jurisdictional-Sized-Dams

7.3 County of Riverside Division of Environmental Health – Well Permits

The Riverside County Division of Environmental Health (DEH) will be responsible for issuing permits for drilling the injection wells and monitoring wells. These permits will be obtained on behalf of EVRA by the well drilling contractor.

7.4 City of Indio

The City will be responsible for issuing local permits including a Conditional Use Permit, Building & Safety Plan Check, Traffic Management Plans and Permits, Stormwater Pollution Prevention Plans for Construction, Encroachment Permits, and others. As the majority of the construction will take place within the VSD existing boundary, Encroachment Permits and Traffic Management Plans and Permits may not be needed unless work also occurs outside the plant boundary.

7.5 Coachella Water Authority

DDW requires that the owners of any domestic wells within a 10-year time of travel be notified of the proposed groundwater recharge project. As CWA owns the wells that are directly downgradient of the project and are estimated to be approximately seven to eight years downgradient (Hazen, 2018), EVRA should work with CWA to address any of their concerns during the CEQA and permitting processes. If CWA has significant opposition, it will be difficult for EVRA to receive its Wastewater Change Petition, DDW's conditional approval of the Title 22 Engineering Report and/or the WDR permit from the RWQCB.

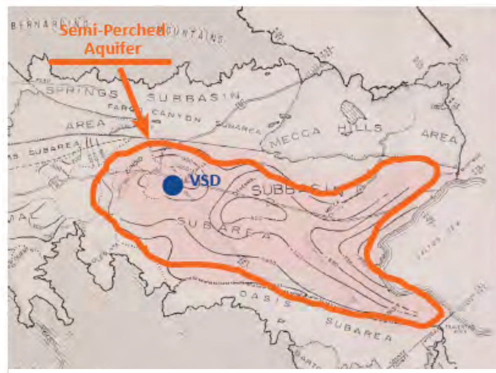
7.6 Tribal Coordination

The VSD plant site is adjacent to tribal-owned land. In order to complete a groundwater recharge project, a well control zone, where domestic water wells cannot be drilled or used, must be established. Groundwater monitoring wells must also be installed downstream of the spreading or injection site. The current location of the proposed spreading or injection site on the southern portion of the VSD plant site would result in portions of the well control zone and possible monitoring well sites to be established on tribal land. Therefore, in order to complete the project, EVRA would need to coordinate with the owner(s) of these downstream tribal lands and ensure the tribes are willing to enter an agreement to meet the regulatory requirements for the project.

7.7 Indio Subbasin GSA – Recharge Credits

One of the goals of the current project is to investigate how to obtain recharge credit for both the historical wastewater disposal and future groundwater recharge project. While most of the effluent discharged from VSD to the Whitewater River/CVSC infiltrates, the purpose of the discharge has historically been wastewater disposal and not groundwater recharge. The wastewater infiltrates into the shallow semi-perched aquifer, as shown in **Figure 5**, and is primarily prevented from reaching the lower aquifers, from which most agencies draw groundwater for domestic use.

In order to receive recharge credits for the historical discharge, it is anticipated that the other GSAs would request EVRA to demonstrate that the water discharged to the semi-perched aquifer has been beneficially used by downstream farmers or others or provided a beneficial effect on the lower aquifers and was not discharged to the Salton Sea without a direct beneficial use.



Source: GEOSCIENCE Support Services, Inc.

Figure 5. Location of VSD Discharge Compared to Semi-Perched Aquifer

8. REFERENCES

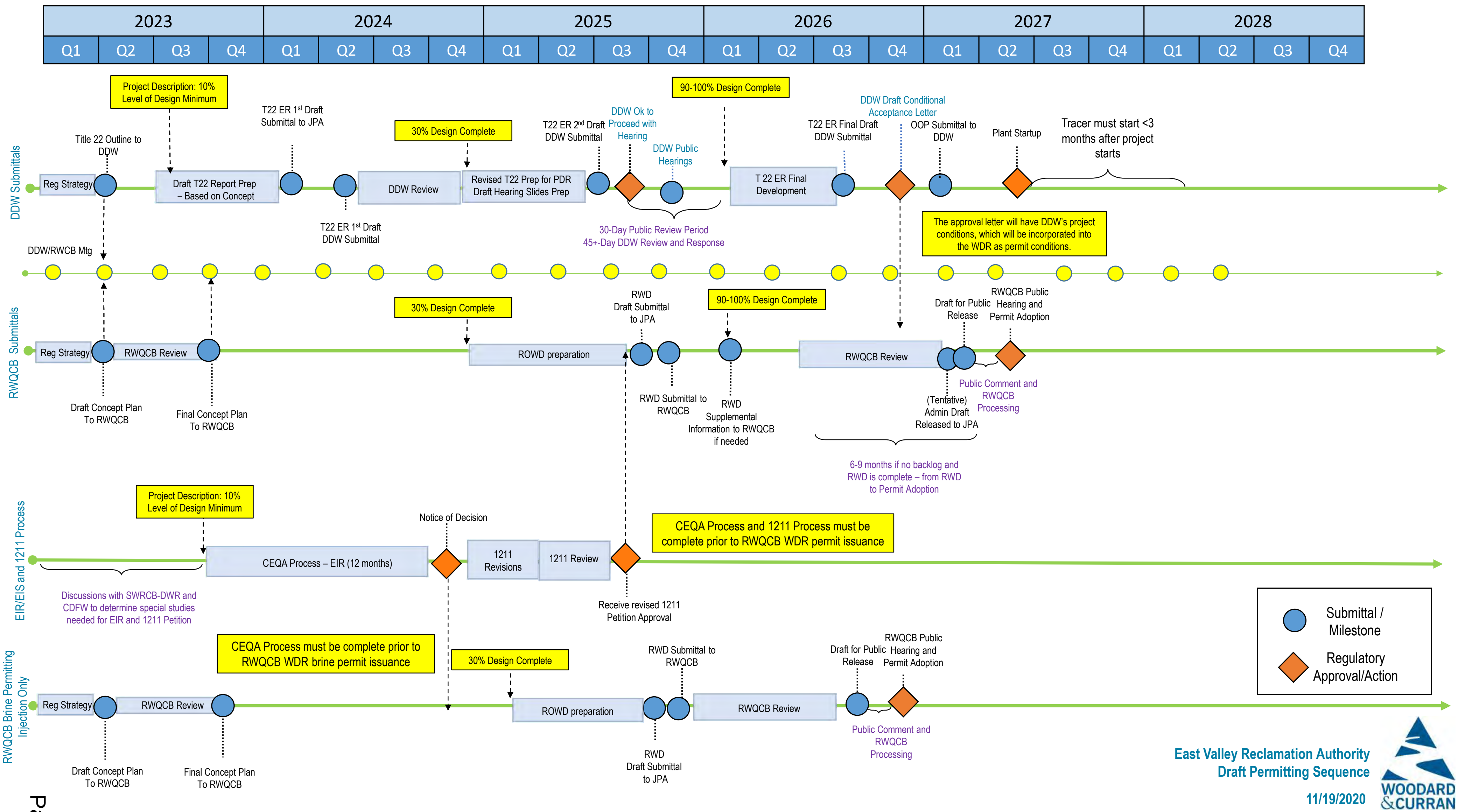
Colorado River Regional Water Quality Control Board (CR-RWQCB), 2019. *Water Quality Control Plan for the Colorado River Basin Region*. January 2019. Accessed online at: https://www.waterboards.ca.gov/coloradoriver/water_issues/programs/basin_planning/docs/2020/rb7bp_e2019.pdf

Hazen and Sawyer, 2018. *Recycled Water Program Development Feasibility Study, Technical Memorandum No. 1, Indio Water Authority / Valley Sanitary District (East Valley Reclamation Authority).* March 2018.

SWRCB, 2018a. "Amendment to the Water Quality Control Policy for Recycled Water". 2018, Accessed online at: https://www.waterboards.ca.gov/water_issues/programs/water_recycling_policy/

SWRCB, 2018b. "Final Staff Report with Substitute Environmental Documentation - Amendment to the Water Quality Control Policy for Recycled Water". 2018, Accessed online at: https://www.waterboards.ca.gov/water_issues/programs/water_recycling_policy/docs/2018/121118_7_final_staff_report.pdf

ATTACHMENT A – DETAILED PERMITTING FLOWCHART


2023
2024
2025
2026
2027
2028
Q1 Q2 Q3 Q4
DDW Submittals
Reg Strategy
Title 22 Outline to DDW
Project Description: 10% Level of Design Minimum
Draft T22 Report Prep – Based on Concept
T22 ER 1st Draft Submittal to JPA
T22 ER 1st Draft DDW Submittal
30% Design Complete
DDW Review
Revised T22 Prep for PDR Draft Hearing Slides Prep
T22 ER 2nd Draft DDW Submittal
DDW Ok to Proceed with Hearing
DDW Public Hearings
30-Day Public Review Period
45+-Day DDW Review and Response
90-100% Design Complete
T 22 ER Final Development
T22 ER Final Draft DDW Submittal
DDW Draft Conditional Acceptance Letter
OOP Submittal to DDW
Plant Startup
Tracer must start <3 months after project starts
The approval letter will have DDW's project conditions, which will be incorporated into the WDR as permit conditions.
DDW/RWCB Mtg
RWQCB Submittals
Reg Strategy
RWQCB Review
Draft Concept Plan To RWQCB
Final Concept Plan To RWQCB
30% Design Complete
ROWD preparation
RWD Draft Submittal to JPA
RWD Submittal to RWQCB
90-100% Design Complete
RWD Supplemental Information to RWQCB if needed
RWQCB Review
Draft for Public Release
RWQCB Public Hearing and Permit Adoption
(Tentative) Admin Draft Released to JPA
Public Comment and RWQCB Processing
6-9 months if no backlog and RWD is complete – from RWD to Permit Adoption
EIR/EIS and 1211 Process
Project Description: 10% Level of Design Minimum
CEQA Process – EIR (12 months)
Notice of Decision
1211 Revisions
1211 Review
Receive revised 1211 Petition Approval
CEQA Process and 1211 Process must be complete prior to RWQCB WDR permit issuance
Discussions with SWRCB-DWR and CDFW to determine special studies needed for EIR and 1211 Petition
RWQCB Brine Permitting Injection Only
CEQA Process must be complete prior to RWQCB WDR brine permit issuance
Reg Strategy
RWQCB Review
Draft Concept Plan To RWQCB
Final Concept Plan To RWQCB
30% Design Complete
ROWD preparation
RWD Submittal to RWQCB
RWD Draft Submittal to JPA
RWQCB Review
Draft for Public Release
RWQCB Public Hearing and Permit Adoption
Public Comment and RWQCB Processing
Submittal / Milestone
Regulatory Approval/Action
East Valley Reclamation Authority
Draft Permitting Sequence
11/19/2020
WOODARD &CURRAN

GEOSCIENCE Support Services, Inc. | P (909) 451-6650 | F (909) 451-6638

620 Arrow Highway, Suite 2000, La Verne, CA 91750 | Mailing: P.O. Box 220, Claremont, CA 91711