LAS VIRGENES - TRIUNFO
JOINT POWERS AUTHORITY
AGENDA

4232 Las Virgenes Road, Calabasas CA 91302

CLOSING TIME FOR AGENDA IS 8:30 A.M. ON THE TUESDAY PRECEDING THE MEETING. GOVERNMENT CODE SECTION 54954.2 PROHIBITS TAKING ACTION ON ITEMS NOT ON POSTED AGENDA UNLESS AN EMERGENCY, AS DEFINED IN GOVERNMENT CODE SECTION 54956.5 EXISTS OR UNLESS OTHER REQUIREMENTS OF GOVERNMENT CODE SECTION 54954.2(B) ARE MET.

5:00 PM August 7, 2017

PLEDGE OF ALLEGIANCE

1 CALL TO ORDER AND ROLL CALL

2 CHAIR/VICE CHAIR

A Welcome TSD Director Ray Tjulander to JPA Board of Directors

B Recognition of Director Steven D. Iceland's Service to the JPA

3 APPROVAL OF AGENDA

4 PUBLIC COMMENTS

Members of the public may now address the Board of Directors **ON MATTERS NOT APPEARING ON THE AGENDA**, but within the jurisdiction of the Board. No action shall be taken on any matter not appearing on the agenda unless authorized by Subdivision (b) of Government Code Section 54954.2

5 CONSENT CALENDAR

A Minutes: Special Meeting of July 10, 2017 and Special Meeting of July 18, 2017

Approve.

6 ILLUSTRATIVE AND/OR VERBAL PRESENTATION AGENDA ITEMS

A Legislative Update: Syrus Devers, Best Best & Krieger LLP

B Pure Water Project Las Virgenes-Triunfo: Update

7 ACTION ITEMS

A Digester No. 1 Rehabilitation Project: Construction Award

Appropriate an additional $709,788; award a construction contract to Pacific Hydrotech Corporation, in the amount of $1,272,240; and reject all remaining bids upon receipt of duly executed contract documents for the Digester No. 1 Rehabilitation Project.

B Pure Water Project Las Virgenes-Triunfo: Adoption of Negative Declaration and Execution of Notice of Authority Acceptance for 30800 Agoura Road (APN 2061-001-025)

Adopt the Negative Declaration for the purchase and continued maintenance of 30800 Agoura Road in its current condition; approve Policy Principles for Future Use of 30800 Agoura Road; and authorize the Administering Agent/General Manager to execute the Notice of Authority Acceptance for 30800 Agoura Road (APN 2061-001-025).

C Tapia Water Reclamation Facility Chloride Study: Request for Proposals

Approve the issuance of a Request for Proposals for the Tapia Water Reclamation Facility Chloride Study.

D Characterization, Evaluation and Control of Invasive Species in the Malibu Creek Watershed: Research Report

Receive and file JPA Report No. 2755.00: *The Characterization, Evaluation and Control of Invasive Species in the Malibu Creek Watershed*.

8 BOARD COMMENTS

9 ADMINISTERING AGENT/GENERAL MANAGER REPORT

10 FUTURE AGENDA ITEMS

11 INFORMATION ITEMS

A Surface Water Augmentation Regulations: Public Review

B Planned Potable Reuse Projects in California

12 PUBLIC COMMENTS

Members of the public may now address the Board of Directors **ON MATTERS NOT APPEARING ON THE AGENDA**, but within the jurisdiction of the Board. No action shall be taken on any matter not appearing on the agenda unless authorized by Subdivision (b) of Government Code Section 54954.2

13 CLOSED SESSION

14 ADJOURNMENT

Pursuant to Section 202 of the Americans with Disabilities Act of 1990 (42 U.S.C. Sec. 12132), and applicable federal rules and regulations, requests for a disability-related modification or accommodation, including auxiliary aids or services, in order to attend or participate in a meeting, should be made to the Executive Assistant/Clerk of the Board in advance of the meeting to ensure availability of the requested service or accommodation. Notices, agendas, and public documents related to the Board meetings can be made available in appropriate alternative format upon request.

TRIUNFO SANITATION DISTRICT
A PUBLIC AGENCY

NEWS RELEASE

CONTACT:
Mr. Sandy Warren
Public Affairs
805-658-4608
sandywarren@triunfosanitation.com

Raymond Tjulander Appointed to Triunfo Sanitation District Board of Directors

VENTURA, Calif., July 20 – Raymond Tjulander, a retired aerospace engineer, has been appointed as a Director of the Triunfo Sanitation District, filling the vacancy created by Steven Iceland's resignation on June 5, 2017. Tjulander, a resident of Westlake Village, took the oath of office at a special meeting of the Triunfo Sanitation District Board on Wednesday, July 19. Tjulander was selected from a field of four applicants who interviewed for the position.

James Wall, District Board Chairman, stated, "With four qualified applicants, our decision was not an easy one. In the end, we selected Ray on the basis of his professional background, record of community service, and his commitment to helping ensure the District's continued provision of quality water supply and wastewater treatment services." In addition to Wall, Directors Janna Orkney, Susan Pan, and Michael Paule participated in the interview process.

Triunfo Sanitation District Board members are elected at large and serve staggered four-year terms – Tjulander will serve out Iceland's term through December 2018.

Commenting on his appointment, Tjulander said, "It's a great honor to be joining such a terrific team. I will work my hardest to insure the best possible service to all our customers."

Prior to his retirement, Tjulander's career included 38 years with NASA as an engineer and project manager. Among his projects were design of the main engines on the space shuttle and the Chandra X-Ray Observatory. Tjulander's community service includes serving as a juror on the Ventura County Grand Jury and a trainer with the California Grand Jury Association. Additionally, he has served on the Thousand Oaks Cable TV Oversight Committee, The Thousand Oaks Residents Roundtable, and the Ventura County Transportation Commission. Tjulander's education includes a Bachelor of Science Degree in Chemical Engineering from the University of Idaho and graduate studies in business administration at California State University Northridge.

About TSD

Triunfo Sanitation District provides sewage collection services and wastewater treatment, supplies potable water, and treats and sells recycled water in the southeastern portion of Ventura County. The District covers approximately 50 square miles and serves a population in excess of 30,000. For additional information, visit www.triunfosanitation.com.

# # #

LAS VIRGENES – TRIUNFO
JOINT POWERS AUTHORITY
MINUTES
SPECIAL MEETING

5:00 PM July 10, 2017

PLEDGE OF ALLEGIANCE

The Pledge of Allegiance to the Flag was led by Chair Wall.

1. CALL TO ORDER AND ROLL CALL

The meeting was called to order at **5:00 p.m.** by Chair Wall in the Board Room at Las Virgenes Municipal Water District headquarters at 4232 Las Virgenes Road in Calabasas, California. Josie Guzman, Clerk of the Board, conducted the roll call.

Present: Directors Caspary, Lewitt, Orkney, Pan, Paule, Polan, Renger, and Wall.
Absent: Director Peterson.

2. APPROVAL OF AGENDA

Director Paule moved to approve the agenda. Motion seconded by Director Polan. Motion carried by the following vote:

AYES: Caspary, Lewitt, Orkney, Pan, Paule, Polan, Renger, Wall
NOES: None
ABSENT: Peterson
ABSTAIN: None

3. PUBLIC COMMENTS

None.

4. CONSENT CALENDAR

A Minutes: Regular Meeting of June 5, 2017 and Special Meeting of June 19, 2017: Approve

Director Caspary moved to approve the Consent Calendar. Motion seconded by Director Orkney. Motion carried by the following vote:

AYES: Caspary, Lewitt, Orkney, Pan, Paule, Polan, Renger, Wall
NOES: None
ABSENT: Peterson
ABSTAIN: None

5. ILLUSTRATIVE AND/OR VERBAL PRESENTATION AGENDA ITEMS

A Pure Water Project Las Virgenes-Triunfo: Update

Administering Agent/General Manager David Pedersen provided the following update:

Advanced Water Treatment Site: RMC Water and Environment (RMC) is working with staff to conduct due diligence. RMC and staff visited the site on June 20th to view the topography, the location of oak trees and streams, and other potential obstacles for siting the advanced water treatment plant. The Negative Declaration (ND) is nearly ready for public circulation. The ND would be used for the potential purchase and acquisition of the property and for maintaining the property in its current condition. The effective date of the option agreement was announced by the escrow officer to be June 14, 2017, and the JPA has 60 days, until August 14, 2017, to issue a notice of preliminary acceptance of the property. Staff will make a recommendation at the August 7th JPA Board meeting regarding whether to issue the notice of preliminary acceptance. Staff will also present a summary of all due diligence work done to date, a copy of the property appraisal, and a recommendation to adopt the Negative Declaration. Staff met with City of Agoura Hills staff on June 15th to discuss the proposal and plans for the property.

Draft Policy Principles: Administering Agent/General Manager David Pedersen reviewed the draft policy principles for future use of 30800 Agoura Road.

Director Orkney referred to Draft Policy Principle No. 5 and noted that the area currently has a variety of architectural styles.

Director Lewitt referred to Draft Policy Principle No. 8 and requested an example of project-related impacts to the community. Administering Agent/General Manager David Pedersen responded that there could be impacts to the existing trail system and impacts from future construction activities.

Director Caspary suggested establishing the trail outside of the project footprint early on in the project.

Director Paule suggested including a policy principle for noise mitigation measures for nearby residents.

Director Polan referred to Draft Policy Principle No. 7 for the onsite treatment of captured stormwater and inquired whether all of the stormwater would be captured.

Administering Agent/General Manager David Pedersen responded that the concept would be to capture only the first flush of stormwater that falls on the site and that could potentially run off.

Director Lewitt suggested including a policy principle for light pollution mitigation.

Director Polan suggested including a policy principle for installation of a solar panel system in order to minimize the carbon footprint. Director Pan suggested installing solar panels on the rooftop. Administering Agent/General Manager David Pedersen responded that staff would look into draft policy principles related to renewable energy and offsetting the energy demands either onsite or offsite.

Director Pan suggested a policy principle for stormwater capture and putting it into the advanced treatment system as another new water source and onsite retention.

Director Polan commented on the architecture of the Hilton Foundation building and Westlake City Hall, and stated that he finds the lead structure style to be timeless.

6. ACTION ITEMS

A Rancho Las Virgenes Raw Sludge Wet Well Recirculation Modifications Project: Construction Award

Appropriate an additional $240,328; award a construction contract to Pacific Hydrotech Corporation, in the amount of $355,900; and reject all remaining bids upon receipt of duly executed contract documents for the Rancho Las Virgenes Raw Sludge Wet Well Recirculation Modifications Project.

Administering Agent/General Manager David Pedersen presented the report.

Director Orkney moved to approve Item 6A. Motion seconded by Director Pan.

Staff responded to questions related to the new pump system and removal of the integration/programming portion from the scope of work.

Motion carried by the following vote:

AYES: Caspary, Lewitt, Orkney, Pan, Paule, Polan, Renger, Wall
NOES: None
ABSENT: Peterson
ABSTAIN: None

B Rancho Las Virgenes Centrate Equalization Tank Project: Approval of Scope Changes for Design Services During Construction and Construction Management

Authorize the Administering Agent/General Manager to execute a Change in Scope to the professional services agreement with Pacific Advanced Civil Engineering (PACE), in the amount of $31,474, for additional design services during construction; and to the professional services agreement with Kennedy/Jenks Consultants, in the amount of $62,700, for additional construction management services for the Centrate Equalization Tank Project.

Administering Agent/General Manager David Pedersen presented the report.

A discussion ensued regarding the contractor's delays in completing the project and additional project costs, which would be borne by the contractor.

Director Caspary moved to approve Item 6B. Motion seconded by Director Lewitt. Motion carried by the following vote:

AYES: Caspary, Lewitt, Orkney, Pan, Paule, Polan, Renger, Wall
NOES: None
ABSENT: Peterson
ABSTAIN: None

C Pure Water Project Las Virgenes-Triunfo: Draft Preliminary Design Report for Pure Water Demonstration Project

Provide input and feedback on the proposed vision, layout and scope of the Pure Water Demonstration Project.

Administering Agent/General Manager David Pedersen presented the report.

Bruce Chalmers, representing CDM Smith, presented the Draft Preliminary Design Report for the Pure Water Demonstration Project.

The Board and staff toured the proposed future demonstration facility at LVMWD Building No. 1 to view the proposed layout.

The Board provided the following input:

- Concern with having black ceilings inside the Learning Center.
- Consider noise-dampening measures inside the demonstration facility.
- Inquiry regarding whether minerals would be put back in the treated water at the purified water tasting station.

- Input received on the design of the purified water tasting station such as making it colorful, use of stainless steel or a farmhouse sink, and having instrumentation to compare treated water versus tap water.
- Consider installing a working elevator for future use of the building.
- Consider identifying the building from the outside by installing either a cylindrical, porous metal painted blue to resemble water or some type of water feature.
- Consider use of energy recovery in the process to take care of the high-pressure brine.
- Consider the concentrated brine following precipitation.

Following the tour, Administering Agent/General Manager David Pedersen stated that staff would incorporate the Board's comments into the next steps for the Pure Water Demonstration Project, which would be brought at a future Board meeting.

7. BOARD COMMENTS

None.

8. ADMINISTERING AGENT/GENERAL MANAGER REPORT

Administering Agent/General Manager David Pedersen reported that flow augmentation to Malibu Creek began on July 3rd at approximately 450 gallons per minute (gpm), or 1 cubic foot per second (cfs). He responded to questions related to fiscal impacts and when augmentation ceased the prior year by stating that augmentation ceased last year in September/October. He also stated that staff would provide data on the costs at the end of the augmentation season.

Director Caspary inquired whether staff would be attending the public information meeting for the Salt and Nutrient Plan for San Fernando Valley Groundwater Basin on July 13th. Administering Agent/General Manager David Pedersen responded that Carlos Reyes, Director of Resource Conservation and Public Outreach, and Dave Roberts, Resource Conservation Manager, would be attending the meeting.

9. FUTURE AGENDA ITEMS

None.

10. INFORMATION ITEMS

A Pure Water Project Las Virgenes-Triunfo: Preliminary Financial Feasibility Report

Tyler Old, representing the PFM Group, provided a PowerPoint presentation and responded to questions posed by the Board. The Board requested a copy of the presentation.

11. PUBLIC COMMENTS

None.

12. CLOSED SESSION

A Conference with JPA Legal Counsel – Potential Litigation (Government Code Section 54956.9): One Case

In the opinion of Legal Counsel, disclosure of the identity of the litigants would be prejudicial to the JPA.

The Board recessed to Closed Session at **6:42 p.m.** and reconvened to Open Session at **6:53 p.m.**

Authority Counsel Wayne Lemieux announced there was no reportable action taken during the Closed Session.

13. ADJOURNMENT

Seeing no further business to come before the Board, the meeting was duly adjourned at **6:53 p.m**.

James Wall, Chair

ATTEST:

Glen Peterson, Vice Chair

LAS VIRGENES – TRIUNFO
JOINT POWERS AUTHORITY
MINUTES
SPECIAL MEETING

5:00 PM July 18, 2017

PLEDGE OF ALLEGIANCE

The Pledge of Allegiance to the Flag was led by Chair James Wall.

1. CALL TO ORDER AND ROLL CALL

The meeting was called to order at **7:43 a.m.** by Chair James Wall in the Board Room at Las Virgenes Municipal Water District headquarters at 4232 Las Virgenes Road in Calabasas, California. Josie Guzman, Clerk of the Board, conducted the roll call.

Present: Directors: Caspary, Lewitt, Orkney, Pan, Paule, Peterson, Polan, Renger, and Wall
Absent: None

2. PUBLIC COMMENTS

None.

3. TRAVEL BY BUS FOR A TOUR OF THE LONG BEACH WATER RECLAMATION PLANT AND THE LEO J. VANDER LANS ADVANCED WATER TREATMENT FACILITY, LOCATED AT 7400 WILLOW STREET, LONG BEACH, CA 90815

The Board traveled by bus for a tour of the Long Beach Water Reclamation Plant and the Leo J. Vander Lans Advanced Water Treatment Facility. No action was taken.

4. TRAVEL BY BUS TO TGI FRIDAYS RESTAURANT LOCATED AT 7221 CARSON BOULEVARD, LONG BEACH, CA 90808

The Board traveled by bus to TGI Fridays Restaurant. No action was taken.

5. TRAVEL BY BUS TO LAS VIRGENES MUNICIPAL WATER DISTRICT, 4232 LAS VIRGENES ROAD, CALABASAS, CA 91302

The Board traveled by bus to return to Las Virgenes Municipal Water District Headquarters. No action was taken.

6. ADJOURNMENT

Seeing no further business to come before the Board, the meeting was duly adjourned at **2:56 p.m**.

James Wall, Chair

ATTEST:

Glen Peterson, Vice Chair

August 7, 2017 JPA Board Meeting

TO: JPA Board of Directors

FROM: Facilities & Operations

Subject : Digester No. 1 Rehabilitation Project: Construction Award

SUMMARY:

On November 7, 2016, the JPA Board authorized the Administering Agent/General Manager to execute a professional services agreement with Pacific Advanced Civil Engineering, Inc. (PACE), in the amount of $53,694, to prepare plans and specifications for the rehabilitation of Digester No. 1 at the Rancho Las Virgenes Composting Facility. The JPA Board authorized a Call for Bids for the Digester No. 1 Rehabilitation Project on June 5, 2017.

Three bids were submitted and publicly opened on July 19, 2017. Staff evaluated the bids and determined that the lowest responsive bid was submitted by Pacific Hydrotech Corporation, in the amount of $1,272,240, which is approximately 17% lower than the Engineer's Estimate of $1,536,920. Pacific Hydrotech has successfully completed a number of large projects for the JPA and LVMWD: construction of Digester No. 3, construction of the 5-Million-Gallon Torchwood Tank and upgrade of the Westlake Pump Station. Staff recommends award of the a construction contract, in the amount of $1,272,240, to Pacific Hydrotech Corporation.

RECOMMENDATION(S):

Appropriate an additional $709,788; award a construction contract to Pacific Hydrotech Corporation, in the amount of $1,272,240; and reject all remaining bids upon receipt of duly executed contract documents for the Digester No. 1 Rehabilitation Project.

FISCAL IMPACT:

Yes

ITEM BUDGETED:

Yes

FINANCIAL IMPACT:

The total project cost is estimated to be $1,789,494. Existing appropriations, through Fiscal Year 2017-18, provide funding in the amount of $1,079,706. An additional appropriation, in the

amount of $709,788, is required to award the construction contract, allow for a 10% contingency to cover potential change orders during construction, and fund the administrative costs of the project.

DISCUSSION:

The three digesters at the Rancho Las Virgenes Composting Facility process biosolids from the Tapia Water Reclamation Facility before dewatering and composting. Digester Nos. 1 and 2 were constructed in the early 1990s and have been in continuous operation since that time. In 2015, Digester No. 3 was constructed to provide redundancy and allow for the older Digesters Nos. 1 and 2 to be temporarily taken out of service (one at a time) for maintenance purposes. Staff recently took Digester No. 1 off-line to perform cleaning and allow for an interior inspection. After PACE performed an entry into the digester, a scope of work was developed based on current conditions and operational needs. The project scope includes:

- Removal and replacement of existing concrete construction joint seals.
- Removal and replacement of all interior mechanical piping systems.
- Modifications of existing level control instrumentation.
- Replacement of existing exterior valves and actuators (feed, circulation and gas systems).
- Removal of obsolete equipment (e.g. steam lances).
- Modifications to the existing gas withdrawal piping system.
- Rehabilitation of existing roof penetrations and viewports.
- Installation of valves and burying of the digester gas line.

Through the design, the JPA anticipates realizing a cost-savings of approximately $100,000 by reusing the existing HDPE sludge gas line, reutilizing the pipe penetrations through the concrete digester wall and modifying the design of the sludge gas line tie-in point in the roadway adjacent to the digester.

Following is a summary of the bids:

Bidder	Bid Total	Percentage Above/Below Estimate
Pacific Hydrotech Corp.	$1,272,240.00	-17%
Kiewit Infrastructure West	$1,384,490.00	-10%
PPC Construction, Inc.	$1,641,572.00	+7%

*Engineer's Estimate = $1,536,920

Following is a summary of the anticipated project costs and requested appropriation:

Description	Cost
Professional Services:	
Design & Construction Support	$53,694
Construction:	
Digester Cleaning Award	$196,952
Construction Award	$1,272,240
Construction Contingency (10%)	$127,224
Administrative	

District Labor (4%)	$50,890
G&A (7%)	$89,057
Total Project Cost	**$1,789,494**
FY 16-17 Funds Spent	$257,015
Existing Appropriation FY 17-18	$822,691
Additional Appropriation (Proposed)	$709,788

GOALS:

Construct, Manage and Maintain All Facilities and Provide Services to Assure System Reliability and Environmental Compatibility

Prepared by: Jared Q. Adams, P.E., Associate Engineer

August 7, 2017 JPA Board Meeting

TO: JPA Board of Directors

FROM: Facilities & Operations

Subject : Pure Water Project Las Virgenes-Triunfo: Adoption of Negative Declaration and Execution of Notice of Authority Acceptance for 30800 Agoura Road (APN 2061-001-025)

SUMMARY:

On April 18, 2017, the JPA Board authorized the Administering Agent/General Manager to prepare and submit an option to purchase the property at 30800 Agoura Road (APN 2061-001-025). Subsequently, the Board approved an Option to Purchase Agreement (Agreement) with a negotiated purchase price of $2,100,000 and a 270-day option term on May 1, 2017. The Board also authorized staff to proceed with due diligence, including an appraisal, site investigation, environmental review for compliance with the California Environmental Quality Act (CEQA) and discussions with the City of Agoura Hills for the potential purchase.

The appraisal resulted in a 9% higher value for the property than the negotiated purchase price. The due diligence, site investigation and discussions with City staff did not reveal any fatal flaws for the potential purchase and future use of the property for an advanced water treatment plant. Further, the environmental review was completed; a Negative Declaration was prepared and circulated; and no environmental impacts were identified for the purchase and continued maintenance of the property in its current condition.

In summary, the property is well suited for an advanced water treatment plant for the Pure Water Project Las Virgenes-Triunfo. Although other sites continue to be evaluated and considered, staff recommends that the Board adopt the Negative Declaration for the purchase and continued maintenance of 30800 Agoura Road, approve Policy Principles for Future Use of 30800 Agoura Road, and authorize the Administering Agent/General Manager to execute the Notice of Authority Acceptance for 30800 Agoura Road.

RECOMMENDATION(S):

Adopt the Negative Declaration for the purchase and continued maintenance of 30800 Agoura Road in its current condition; approve Policy Principles for Future Use of 30800 Agoura Road; and authorize the Administering Agent/General Manager to execute the Notice of Authority Acceptance for 30800 Agoura Road (APN 2061-001-025).

FISCAL IMPACT:

Yes

ITEM BUDGETED:

Yes

FINANCIAL IMPACT:

If the Board authorizes the Administering Agent/General Manager to execute the Notice of Authority Acceptance, and the JPA does not complete the purchase transaction for the property, the $100,000 Option Payment would not be refundable.

DISCUSSION:

Background:

The property located at 30800 Agoura Road consists of 7.1 acres of vacant, undeveloped land fronting Agoura Road in the City of Agoura Hills, near the westerly city boundary. The Conrad H. Hilton Foundation is located to the east and the Lexington Apartments are to the west. The property was one of nine potential sites identified in the Basis of Design Report for a future advanced water treatment plant required for the Pure Water Project Las Virgenes-Triunfo.

Option to Purchase Agreement:

On April 18, 2017, the Board authorized the Administering Agent/General Manager to prepare and submit an option to purchase the property at 30800 Agoura Road. Subsequently, the Board approved an Option to Purchase Agreement (Agreement) with a purchase price of $2,100,000 and a 270-day option term on May 1, 2017. An Initial Option Consideration Payment of $100 and an Option Payment of $100,000 were deposited into an escrow account shortly after the June 14, 2017 effective date of the Agreement. The Initial Option Consideration Payment is non-refundable. The Option Payment is fully refundable if the JPA chooses to terminate the Agreement prior to the 60th day following the effective date, or August 14, 2017.

Both the Initial Option Consideration Payment and the Option Payment would be credited toward the purchase price if the JPA chooses to exercise the purchase option prior to expiration of the option term on March 12, 2018. The Agreement includes a 60-day due diligence period, allowing the JPA to investigate the property and choose whether or not to accept its current condition. The due diligence period ends on August 14, 2017. If the JPA opts to execute a Notice of Authority Acceptance but does not exercise its purchase option, then the seller retains the Option Payment of $100,000.

Property Appraisal:

The JPA retained Hamner, Jewell & Associates to prepare an appraisal of the property. Six commercial properties, including five in Agoura Hills and one in Westlake Village, were used as comparables for the appraisal. The fair market value and sales comparison value for the property were $2,290,000, which is approximately 9% higher than the negotiated purchase price of $2,100,000. Attached for reference is a copy of the appraisal.

Due Diligence and Site Investigation:

Woodard & Curran was retained to conduct the due diligence and a site investigation for the property. In addition to a site visit and inspection, Woodard & Curran representatives reviewed various reports, studies and plans for the site, such as the City of Agoura Hills Ladyface Mountain Specific Plan, environmental and geotechnical reports for the previously-proposed development project and the preliminary title report for the property. The investigation concluded that there would be no fatal flaws for the property's future use for an advanced water treatment plant; however, additional investigations and studies would be necessary to develop the details for the design of such a facility and development of appropriate environmental mitigation measures. Attached is Technical Memorandum provides a summary of the due diligence work, which concluded the following:

- Based on a proposed advanced water treatment plant layout, potential impacts to oak trees could be minimized, a 23-foot-high soil nail wall would be needed, all setback requirements could be met and all easements could be avoided.

- The western portion of the property could be reserved for another public use/benefit.

- The site is not located within a fault zone, the soils are not prone to liquefaction, and the potential for landslides/slope instability is low. There is a potential for moderate to very highly expansive soils; however, expansive soils could be effectively mitigated with the appropriate construction techniques.

- There would likely be some impact to biological and cultural resources; however environmental mitigation measures could be proposed to ensure that any potential impacts would not be significant.

- The recorded parcel map granted the right to the City of Agoura Hills to restrict access to the property from Agoura Road. The City has not exercised this right, and City staff did not express a concern with access from Agoura Road. In addition, the City recently constructed a driveway apron to the property in conjunction with the widening of Agoura Road. The driveway provides access to the property and a City-owned easement for access to the adjacent parcel to the south, which is owned and maintained by the City. As a result, access to the property is not expected to pose a problem and is not considered a fatal flaw.

Policy Principles for Future Use of 30800 Agoura Road:

Although the potential use of the property for an advanced water treatment plant is up to 10 years away, staff prepared draft policy principles for the future use of the property to establish a broad guidance framework for staff in the planning process, assuming the purchase transaction is completed. On July 10, 2017, staff reviewed the draft policy principles with the Board. Attached is an update version, incorporating feedback provided by the Board.

Discussions with City of Agoura Hills Staff:

JPA staff has had several discussions with City staff regarding the purchase and potential future use of the property for an advanced water treatment plant. Staff reviewed the Policy Principles for Future Use of 30800 Agoura Road with City staff and received some verbal feedback. In addition, City staff requested the City the attached memo summarizing the

JPA's exemptions from City building and zoning ordinances pursuant to Government Code Section 53091(d) and (e). These statutes provide that the building and zoning ordinances "...*shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water*…" As a result, the JPA would not be subject to planning, zoning or building approvals by the City. However, JPA staff committed to working cooperatively with the City during the planning, design and construction of the necessary facilities.

Environmental Review (CEQA):

Envicom was retained to prepare an Initial Study and Environmental Checklist for the purchase and continued maintenance of the property, consisting of fuel modification and brush clearance required by the Los Angeles County Fire Department. Based on the Initial Study and Environmental Checklist, the proposed purchase and continued maintenance of the property would have no impact on the environment. Therefore, no mitigation measures are required, and a Negative Declaration was prepared. The Notice of Intent to Adopt the Negative Declaration was published in *The Acorn* on July 13, 2017, sent to the City of Agoura Hills, posted at the site and provided to the Los Angeles County Clerk for posting. The 20-day review period for the Negative Declaration ended on August 5, 2017. No comments were received on the Negative Declaration, which is attached for reference.

Conclusion:

The appraised value of the property was approximately 9% higher than the negotiated purchase price, and the due diligence, site investigation and discussions with the City did not identify any fatal flaws. An environmental review was completed, and it was determined that there are no environmental impacts associated with the purchase and continued maintenance of the property. The property is well suited for an advanced water treatment plant for the Pure Water Project Las Virgenes-Triunfo. Although other sites continue to be evaluated and considered, staff recommends that the Board adopt the Negative Declaration for the purchase and continued maintenance of 30800 Agoura Road, approve Policy Principles for Future Use of 30800 Agoura Road, and authorize the Administering Agent/General Manager to execute the Notice of Authority Acceptance for 30800 Agoura Road.

Prepared by: David R. Lippman, P.E., Director of Facilities and Operations

ATTACHMENTS:

Property Appraisal
Technical Memo on Due Diligence and Site Investigation
Policy Principles for Future Use of 30800 Agoura Road
Memo on JPA Exemptions from Building and Zoning Ordinances
Initial Study and Negative Declaration

APPRAISAL OF

VACANT COMMERCIAL LAND

LOCATED AT

30800 AGOURA ROAD,
AGOURA HILLS, CALIFORNIA 91301

AGOURA HILLS CENTER PROPERTIES, LLC OWNERSHIP

FOR

HAMNER, JEWELL & ASSOCIATES

AS OF

MAY 15, 2017

BY

RIGGS & RIGGS, INC.
4195 VALLEY FAIR STREET, SUITE 207
SIMI VALLEY, CALIFORNIA 93063

RIGGS & RIGGS, INC.

Real Estate Appraisers and Consultants

4195 Valley Fair Street, Suite 207, Simi Valley, CA 93063

Business: (805) 578-2400 ● Fax: (805) 526-6097

E-mail: appraisal@riggsandrigggsinc.com

May 30, 2017

Ms. Heather Johnson
Hamner, Jewell & Associates
4476 Market Street Suite 601
Ventura, California 93003

Our File No. 17-072

Re: 30800 Agoura Road, Agoura Hills, California 91301
Advance Water Treatment Plant Site Project
Agoura Hills Center Properties, LLC, a California Limited Liability Company Ownership

Dear Ms. Johnson:

In accordance with our contract, we have made an investigation and analysis of the above-referenced property for the purpose of expressing an opinion of the Fair Market Value of the fee simple interest in the subject property, as of May 15, 2017. The intended use of the report is for negotiations with the property owner for potential acquisition of the subject property for the Advance Water Treatment Plant Site Project. A legal description of the subject property is provided in this report.

This is an Appraisal Report which is intended to comply with the reporting requirements set forth under Standard Rule 2-2(a) of the Uniform Standards of Professional Appraisal Practice (USPAP). This report presents only summary discussions of the data, reasoning, and analyses that were used in the appraisal process to develop the opinion of value. Supporting documentation is retained in our file. The depth of discussion contained in this Appraisal Report is specific to the needs of the client.

This Appraisal Report has been prepared for the sole and exclusive use of representatives with Hamner, Jewell & Associates and the Las Virgenes Municipal Water District, and is not intended for any other user. We request that our written authorization be obtained before releasing this report to any other party. Any third party who relies on this report does so at their own risk. **The user of this Appraisal Report is directed to review the General Assumptions & Limiting Conditions, and Extraordinary Assumptions before making a decision on the subject. The Fair Market Value opinion is strictly contingent upon the General Assumptions & Limiting Conditions, Extraordinary Assumptions, and Hypothetical Condition.**

The attached summary and exhibits provide the basic details of the property and our analysis. Additional data has been retained in our files. This Appraisal Report is not based on a requested minimum or specified valuation.

The Fair Market Value of the Fee Simple Interest in the subject property, as of May 15, 2017, is:

TWO MILLION TWO HUNDRED NINETY THOUSAND DOLLARS .....

..... $2,290,000.

This letter of transmittal, including the General Assumptions & Limiting Conditions, Extraordinary Assumptions, Hypothetical Condition, and Certifications on the accompanying pages, must remain attached to this Appraisal Report, which contains 31 pages plus related exhibits, in order for the value opinions set forth to be considered valid. We hereby certify that we have no interest, present or prospective, in the property appraised and that our opinion is in no way contingent upon the basis of our employment.

Respectfully submitted,

RIGGS & RIGGS, INC.

Joyce L. Riggs, MAI, SR/WA
SCREA No. AG005451
Expires April 7, 2019

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EXECUTIVE SUMMARY

The subject property is an interior location on the south side of Agoura Road, 0.08 miles east of Flintlock Lane. The situs address is 30800 Agoura Road, in the City of Agoura Hills, County of Los Angeles and State of California. The U.S. Postal Zip Code is 91301.

The subject property is irregularly shaped with a gross site area of 309,712 square feet, or 7.11 acres and a net site area of 286,843 square feet, or 6.59 acres and of vacant land. **(Please refer to Extraordinary Assumption No. 22.)** The net site area is net of a flood control easement located in the northeastern corner of the subject property. The encumbered area is fenced, improved with a concrete debris basin and presumed to be for exclusive use. However, there are several other easements that encumber the site as well. The subject property is zoned SP, Ladyface Mountain Specific Plan with a General Plan Land use of Ladyface Mountain Specific Plan, Ladyface Mountain Specific Plan. The subject has rolling-to-sloping topography with a blue line stream that traverses the western portion of the subject. Visibility is considered average and accessibility is considered average. All utilities are available to the site, and site utility is considered fair.

The Las Virgenes Municipal Water District is considering acquiring the subject property for the Advance Water Treatment Plant Site Project. This will be transmitted in greater detail in the sections to follow.

SUMMARY OF SALIENT DATA

FAIR MARKET VALUE OPINIONS:

FAIR MARKET VALUE OF THE SUBJECT PROPERTY	$2,290,000
VALUE INDICATION BY COST APPROACH	N/A
VALUE INDICATION BY INCOME CAPITALIZATION APPROACH	N/A
VALUE INDICATION BY SALES COMPARISON APPROACH	$2,290,000

SUBJECT DATA

GROSS LAND AREA	309,712 SQUARE FEET, OR 7.11 ACRES
NET LAND AREA[1]	286,843 SQUARE FEET, OR 6.59 ACRES
PRESENT USE OF THE LAND	VACANT LAND
ZONING	CITY OF AGOURA HILLS, SP, (LADYFACE MOUNTAIN SPECIFIC PLAN)
GENERAL PLAN	CITY OF AGOURA HILLS, LADYFACE MOUNTAIN SPECIFIC PLAN (LADYFACE MOUNTAIN SPECIFIC PLAN)
HIGHEST AND BEST USE AS-VACANT	TO DEVELOP WITH A COMMERCIAL USE
OWNER OF RECORD	AGOURA HILLS CENTER PROPERTIES, LLC
DATE OF REPORT	MAY 30, 2017
DATES OF INSPECTION	MAY 15, 2017
DATE OF VALUE	MAY 15, 2017
PURPOSE OF THE APPRAISAL	FAIR MARKET VALUE
PROPERTY RIGHTS TO BE APPRAISED	FEE SIMPLE INTEREST

[1] Please refer to Extraordinary Assumption No. 22.

GENERAL ASSUMPTIONS & LIMITING CONDITIONS

This Appraisal Report has been made with the following general assumptions and limiting conditions:

1. No responsibility is assumed for the legal description provided or for matters pertaining to legal or title considerations. Title to the subject property is assumed to be good and marketable unless otherwise stated.

2. The subject property is appraised free and clear of any or all liens or encumbrances unless otherwise stated.

3. Responsible ownership and competent property management are assumed unless otherwise stated in this report.

4. The information furnished by others is believed to be reliable, but no warranty is given for its accuracy.

5. All engineering studies are assumed to be correct. The plot plans and illustrative materials in this report are included only to help the reader visualize the subject property.

6. It is assumed that there are no hidden or unapparent conditions of the subject property, subsoil, or structures that render it more or less valuable. No responsibility is assumed for such conditions or for obtaining the engineering studies that may be required to discover them.

7. It is assumed that the subject property is in full compliance with all applicable federal, state, and local environmental regulations and laws unless the lack of compliance is stated, described, and considered in the appraisal report.

8. It is assumed that the subject property conforms to all applicable zoning and use regulations and restrictions unless a non-conformity has been identified, described and considered in the appraisal report.

9. It is assumed that all required licenses, certificates of occupancy, consents, and other legislative or administrative authority from any local, state, or national government or private entity or organization have been or can be obtained or renewed for any use on which the opinion of value contained in this report is based.

10. Any sketch in this report may show approximate dimensions and is included to assist the reader in visualizing the subject property. Maps and exhibits found in this report are provided for reader reference purposes only. No guarantee as to accuracy is expressed or implied unless otherwise stated in this report. No survey has been made for the purpose of this report.

11. It is assumed that the use of the land and improvements is confined within the boundaries or property lines of the subject property described and that there is no encroachment or trespass unless noted in the report.

12. Any allocations of the total opinion of value in this report between the land and the improvements apply only under the stated program of utilization. The separate values allocated to the land and buildings must not be used in conjunction with any other appraisal and are invalid if so used.

13. The comparable properties utilized in this report were inspected and photographed where possible. Properties that could not be inspected, such as landlocked properties and properties in gated communities or remote locations, were analyzed based upon aerial imagery and information obtained from various sources. In some cases, historical imagery from CoStar/LoopNet, MLS, Google and/or Pictometry may be utilized, particularly if the property has been substantially renovated since sale or lease.

14. Possession of this report, or a copy thereof, does not carry with it the right of publication. It may not be used for any purposes by any person other than the party to whom it is addressed without the written consent of Riggs & Riggs, Inc., and in any event, only with properly written qualification and only in its entirety.

15. Riggs & Riggs, Inc., by reason of this appraisal, is not required to give further consultation or testimony or to be in attendance in court with reference to the subject property in question unless arrangements have been previously made.

16. Neither all nor any part of the contents of the appraisal report shall be disseminated to the public or any unauthorized third party through advertising, public relations, public meetings/hearings, news, sales, or other media without the prior written consent and approval of Riggs & Riggs, Inc. Riggs & Riggs, Inc., assumes no liability for the unauthorized release of this report.

17. An inspection of the subject property was made by Joyce L. Riggs, MAI, SR/WA. Ms. Riggs, assisted by Nicole B. Galvez, gathered the information, reviewed the data, and prepared the analyses in this report.

EXTRAORDINARY ASSUMPTIONS

An *Extraordinary Assumption* is defined in the 2016 - 2017 USPAP as: an assumption, directly related to a specific assignment, as of the effective date of the assignment results, which, if found to be false, could alter the appraiser's opinions or conclusions. This Appraisal Report is strictly contingent upon the following extraordinary assumptions affecting the subject property. The client is urged to review these extraordinary assumptions and conditions and to obtain experts in the field as needed.

18. This **Appraisal Report** is intended to comply with the reporting requirements set forth under Standard Rule 2-2(a) of the Uniform Standards of Professional Appraisal Practice. This report presents only summary discussions of the data, reasoning, and analyses that were used in the appraisal process to develop our opinion of value; supporting documentation is retained in our file. The information contained in this report is specific to the needs of the client and for the intended use as stated in this report. Riggs & Riggs, Inc., is not responsible for unauthorized use of this report.

19. According to the City or Maps provided on the California Geological Survey's website, the subject property is not located within an Alquist-Priolo Earthquake Fault Zone, although nearly all areas in Southern California are susceptible to intermittent earthquakes. The site appears adequate to support construction standards consistent with the highest and best use conclusion. Although requested, Riggs & Riggs, Inc., was not provided with a soils or geological report for review. For the purpose of this appraisal, it is assumed that the soil and geological conditions are not unfavorable. No responsibility is assumed for any such conditions or for any expertise or engineering knowledge required to discover any defects in the property. The client should retain experts in the field and make their own assessment of the physical condition of the subject before making a decision on the property. **Riggs & Riggs, Inc., reserves the right to amend the opinion of value if additional information is provided subsequent to the date of this report.**

20. Although requested, Riggs & Riggs, Inc., was not provided with a Phase I or II Environmental Site Assessment Report pertaining to the subject property. Unless otherwise stated in this report, the existence of any hazardous materials, which may or may not be present on the property, was not observed during the on-site inspection. Riggs & Riggs, Inc., however, is not qualified to detect such substances. The presence of substances such as contaminated soil, tainted groundwater or other potentially hazardous materials may affect the value of the property. **The opinion of value is predicated on the assumption that there is no such material on or in the property that would cause a loss in value. No responsibility is assumed for any such conditions or for any expertise or engineering knowledge required to discover them. The client is strongly urged to retain an expert in this field and consider the impact on value, if any. Riggs & Riggs, Inc., reserves the right to alter the opinion of value if said information becomes available.**

21. Riggs & Riggs, Inc., was provided with a Preliminary Title Report for the subject property, dated May 9, 2017 and prepared by First American title Insurance Company, Order No, NCS-851017-SA1. According to the Preliminary Title Report, as well as the Assessor's Plat Map, there is an existing flood control easement, private driveway easement, and a slope easement that encumber the subject property. However, neither an A.L.T.A nor an encumbrance map were provided to show the exact location of any other existing encumbrances. Additionally, upon inspection of the subject, it was noted that there is also a concrete storm drain in the northwest portion of the subject property, to the adjacent south of Agoura Road. These easements are considered to limit the development potential of the subject property. It is assumed that are no other existing encumbrances that adversely impact the subject property. **We make no legal opinion nor express any warranty about the title, properties rights, lines, encroachments, or easements affecting the subject property. Further, this Appraisal Report has been prepared assuming the property is free and clear of any liens or debt recorded against it. The user of this Appraisal Report should consult with Legal Counsel and review the Preliminary Title Report, all**

underlying documents, and consider the impact of any items that may have an effect on value before making a decision on the property. Riggs & Riggs, Inc., reserves the right to alter the opinion of value if provided with subsequent information to the date of this report.

22. The square footage of the subject property is based on the Los Angeles County Assessor's Plat Map. The Assessor's Plat Map identifies the subject property as having a gross site area of 309,712 square feet, or 7.105 acres with a net site area of 6.31 acres of land. The Assessor's Plat Map reflects a driveway easement that contains an area of 0.28 acres, a slope easement that contains an area of 0.57 acres, and a flood control easement that contains an area of 0.52 acres. The net site area on the Assessor's Plat Map of 6.31 acres does not appear to include the 0.57-acre slope easement. While all of easements identified on the Assessor's Plat Map are considered to limit the development potential of the subject property, the driveway easement and slope easement are not fenced, or physically separated from the subject property, while the flood control easement is fenced and appears to be for exclusive use. Therefore, for analysis purposes we have utilized a net site area of 286,843 square feet, or 6.59 acres, which is net of only the 0.52-acre flood control easement, but have analyzed and considered the other encumbrances in the overall subject site utility rating. Riggs & Riggs, Inc. has relied on public records dimensions and areas on the recorded plat map for analysis purposes. **Riggs & Riggs, Inc., reserves the right to alter the opinion of value if provided with a survey of the subject property site subsequent to the date of this report.**

23. This Appraisal Report has been prepared for the sole and exclusive use of representatives with Hamner, Jewell & Associates and the Las Virgenes Municipal Water District, and is not intended for any other user. We request that you seek our written authorization before releasing the report to any other party. Any third party who relies on this report does so at their own risk.

24. The liability of Riggs & Riggs, Inc., is limited to the terms of the contract. Riggs & Riggs, Inc., is not responsible for erroneous information provided by others.

25. Riggs & Riggs, Inc., is not a necessary party in any inquiry or judicial proceeding and will not be called to testify in any litigation or other proceeding arising out of their duties in this matter. If Riggs & Riggs, Inc., is compelled to incur court costs, attorney fees or other out-of-pocket expenses in connection with court proceedings, such costs or expenses together with the appraiser's usual hourly per diem of $350.00 per hour for professional services for study preparation, testimony or travel will be paid by the party (or parties) who acts to bring any suit requiring a judicial proceeding.

HYPOTHETICAL CONDITION

A *Hypothetical Condition* is defined in the 2016-2017 USPAP as: a condition, directly related to a specific assignment, which is contrary to what is known by the appraiser to exist on the effective date of the assignment results, but is used for the purpose of analysis. **Riggs & Riggs, Inc., has appraised the subject property under the respective Hypothetical Condition. It is considered reasonable and necessary for the purpose and intended use of this report.** This Appraisal Report has been made with the following hypothetical condition:

26. In accordance with this assignment, Code of Civil Procedure ("CCP") section 1263.330 requires the real estate appraiser to disregard any increase or decrease in the fair market value of the subject property for the project for which the property is taken, the eminent domain proceeding in which the property is taken and any preliminary actions of the plaintiff relating to the taking of the property by the acquiring agency or party. Therefore, the "Before Condition" of the subject property appraised is based on the assumption that these above conditions have had no effect on the fair market value as stated in this report. It should be noted, that this is in conflict with USPAP Standards Rule 1-4(f), which states, "When analyzing anticipated public or private improvements located on or off the site, an appraiser must analyze the effect on value, if any, of such anticipated improvements to the extent they are reflected in market actions". Therefore, this hypothetical condition acknowledges that USPAP Standards Rule 1-4(f) has been disregarded in the Before Condition, as it conflicts with CCP section 1263.330 in requiring exclusion of the anticipated public improvements in the manner as proposed by the project in the Before Condition resulting in departure from USPAP. The information contained in this report is specific to the needs of the client and for the intended use as stated in this report. **Riggs & Riggs, Inc., is not responsible for unauthorized use of this report and reserves the right to amend the opinion of value if additional or contrary information is provided subsequent to the date of this report.**

CERTIFICATION OF THE APPRAISER

I certify that, to the best of my knowledge and belief:

The statements of fact contained in this report are true and correct.

The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions and are my personal, impartial, and unbiased professional analyses, opinions, and conclusions.

I have no present or prospective interest in the property that is the subject of this report and no personal interest with respect to the parties involved.

I have not performed services, as an appraiser or in any other capacity, regarding the property that is the subject of this report within the three-year period immediately preceding acceptance of this assignment.

I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.

My engagement in this assignment was not contingent upon developing or reporting predetermined results.

My compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.

My analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the *Uniform Standards of Professional Appraisal Practice*.

I have made a personal on-site inspection of the property that is the subject of this report.

Nicole B. Galvez provided significant real property assistance to the persons signing this report.

The reported analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the Code of Professional Ethics and Standards of Professional Appraisal Practice of the Appraisal Institute.

The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.

As of the date of this report, I have completed the continuing education program for designated members of the Appraisal Institute. As of the date of this report, I have completed the requirements of the Continuing Education Program of the Bureau of Real Estate Appraisers and the International Right of Way Association.

Respectfully submitted,

RIGGS & RIGGS, INC.

Joyce L. Riggs, MAI, SR/WA
SCREA No. AG005451
Expires April 7, 2019

APPRAISAL REPORT

IDENTIFICATION OF THE PROPERTY

The subject property is located at 30800 Agoura Road, in the City of Agoura Hills, County of Los Angeles, and State of California. The United States Postal Zip Code is 91301. The subject property is also identified as Los Angeles County Assessor's Parcel Number ("APN") 2061-001-025. The U.S. Census Tract Number is 8003.26.

LEGAL DESCRIPTION

Riggs & Riggs, Inc., was provided with a Preliminary Title Report for the subject property, dated May 9, 2017 and prepared by First American title Insurance Company, Order No, NCS-851017-SA1. A copy of the Preliminary Title Report, which provides a complete legal description for the subject property, can be found in the Addenda to this report for reference. **(Please refer to Extraordinary Assumption No. 21.)**

PURPOSE OF THE APPRAISAL

The purpose of this appraisal is to develop an opinion of the Fair Market Value of the fee simple interest in the subject property, as of May 15, 2017.

INTENDED USE/USER OF THE APPRAISAL

The intended use of this Appraisal Report is for negotiations with the property owner for potential acquisition of the subject property for the Advance Water Treatment Plant Site Project. This appraisal has been prepared for the sole and exclusive use of representatives with Hamner, Jewell & Associates and the Las Virgenes Municipal Water District, and is not intended for any other user. Any third party who relies on this appraisal does so at their own risk. **(Please refer to Extraordinary Assumption Nos. 18, 23, 24 and 25.)**

PROPERTY RIGHTS APPRAISED

The property rights appraised are the fee simple interest in the subject property.

DATE OF REPORT

The date of report is May 30, 2017.

DATE OF VALUATION

The date of value is May 15, 2017.

DATE OF INSPECTION

The date of inspection was May 15, 2017.

OWNER OF RECORD

According to Preliminary Title Report No. NCS-851017-SA1 dated May 9, 2017, fee title to the subject property is vested in:

AGOURA HILLS CENTER PROPERTIES, LLC,
A CALIFORNIA LIMITED LIABILITY COMPANY

DEFINITIONS

Fair Market Value:

The Fair Market Value of the property taken is:

"(a) The highest price on the date of valuation that would be agreed to by a seller, being willing to sell but under no particular or urgent necessity for so doing, nor obliged to sell, and a buyer, being ready, willing and able to buy but under no particular necessity for so doing, each dealing with the other with full knowledge of all the uses and purposes for which the property is reasonably adaptable and available.

(b) The fair market value of property taken for which there is no relevant, comparable market is its value on the date of valuation as determined by any method that is just and equitable."[2]

Fee Simple Estate

"Absolute ownership unencumbered by any other interest or estate, subject only to the limitations imposed by the governmental powers of taxation, eminent domain, police power, and escheat."[3]

EXPOSURE TIME

Exposure time reflects the market appeal of the subject property, and represents a reasonable exposure period to affect a sale of the subject, if it were available for sale in the open market. USPAP 2016-2017, defines **Exposure Time** as the "*estimated length of time that the property interest being appraised would have been offered on the market prior to the hypothetical consummation of a sale at market value on the effective date of the appraisal"*.

The subject property is vacant commercial land. Our investigation revealed that a moderate level of demand exists for comparable properties in the market. Conversations with market participants in the course of our verifications indicated that the exposure times of the comparable sales ranged from approximately 9 to 85 months. Based upon this information and our analysis of the market, we conclude an exposure time for the subject property of approximately 12 to 15 months at the Market Value**. Exposure Time is not relevant to the Fair Market Value concluded in this appraisal, consistent with the Fair Market Value definition.**

SCOPE OF THE ASSIGNMENT

The scope of this Appraisal Report involved a thorough analysis of the subject property with respect to physical, legal, and economic factors in order to make reasonable opinion of value. An inspection of the subject property was made. Various services, such as MLS; Costar Group, Inc.; and Loopnet, provided information concerning land sales data, and industry experts and agents provided information concerning supply, demand, and market rates. Buyers, sellers, or their representatives were contacted to verify information when possible. This investigation also included discussions with city and county officials, as well as researching recent market trends.

Our employment has been to value the subject property on a fee simple basis using traditional approaches to value. Only the Sales Comparison Approach to value is applicable, since the subject is vacant land. In order to provide an opinion of the fair market value, the subject property was evaluated based on the Sale Price Per Square Foot Method utilizing the Sales Comparison Approach. Sales data for similar vacant properties were gathered, compared and analyzed. Data includes commercial land sales in the subject area and surrounding market which exhibited the greatest similarity to the subject. The results of this process provided the basis for a land value indicator. Then, the value indicator was applied to the subject property, and the fair market value of the subject property is concluded.

[2] Code of Civil Procedure, section 1263.320.

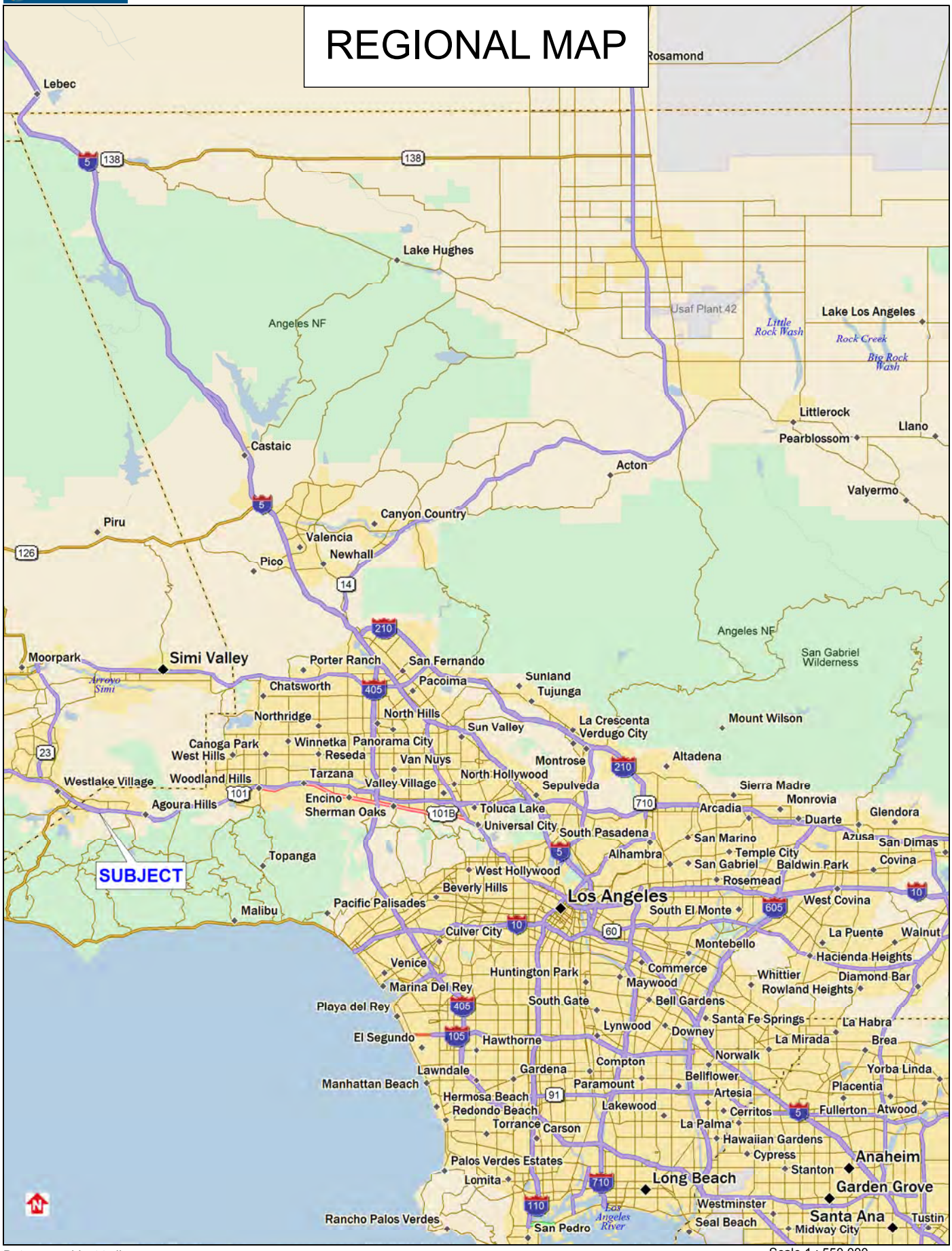
[3] *Dictionary of Real Estate Appraisal* (6th ed. 2015), Appraisal Institute, page 90.

PROPERTY HISTORY/OWNER INTERVIEW

According to the Preliminary Title Report, the current ownership is reported to be Agoura Hills Center Properties, LLC, a California Limited Liability Company. Per Grant Deed Document No. 2746240 dated November 14, 2002, the subject property was acquired from Oakcrest Park Properties, LLC for a total consideration of $445,000. According to Public Record, there were several inter-party transfers in March 2001 and an inter-party transfer on November 14, 2002. No transfers are known to have occurred within the last five years. The subject property is currently listed for sale with a list price of $2,200,000, or $7.67 per square foot of net area. It is our understanding from Charmaine Yambao, Associate Civil Engineer at the City of Agoura Hills, that the City was in the process of acquiring and/or transferring an easement from the City to the County of Los Angeles, which required signed documents from the property owner. However, one of the principals of the subject property ownership recently passed away and the transfer has remained unresolved. **(Please refer to Extraordinary Assumption No. 21.)**

On May 15, 2017, a certified letter was sent to the property owner inviting them to inspect the subject property with Riggs & Riggs, Inc. Riggs & Riggs, Inc. was contacted by Steve Rice on behalf of Agoura Hills, LLC on May 17, 2017. According to the California Secretary of State website, Mr. Rice is the registered agent for Agoura Hills, LLC. According to the telephone interview, Mr. Rice stated that he has been attempting to develop senior housing on the subject site for approximately 12 years, which would have required a zoning and land use change; however, the proposed plans were rejected by the City of Agoura Hills. Mr. Rice reportedly spent $600,000 in efforts to entitle the site for the proposed development, but stated that he has abandoned those efforts and instead has listed the property for sale for one to two months.

REGIONAL MAP



TN
MN (12.1°E)

Scale 1 : 550,000
1" = 8.68 mi

Data Zoom 8-5

REGIONAL DATA

The subject property is located within the County of Los Angeles. The following is a discussion of the environmental, governmental, social, and economic forces affecting the stability of the real estate market and the subject property. This section of the report will analyze the effect that these forces have on the economic base of the region and the subject's trade area.

Location and Physical Factors

The subject is located within the Los Angeles County Metropolitan Area (LAMA). The LAMA contains five counties: Los Angeles, Ventura, Orange, Riverside, and San Bernardino. San Diego County is not considered part of the LAMA, but is located within Southern California.

Los Angeles County contains 4,084 square miles, and is the largest county in the state in terms of population. The County is comprised of 88 cities and unincorporated areas. Los Angeles County is located in the southwestern part of California and borders the Pacific Ocean to the south and west. It is bounded by the following regions:

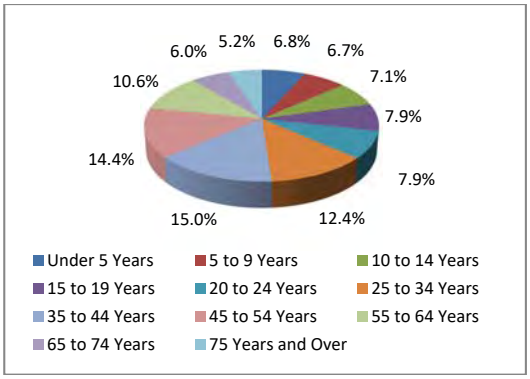
On the North .....Kern County
On the South .....Orange County
On the East.....San Bernardino County
On the West .....Ventura County

The terrain of the County varies from a broad coastal plain, known as the Los Angeles basin, to mountain ranges separated by interior valleys. Major mountain ranges include the San Gabriel Mountains, Santa Monica Mountains, Santa Susana Mountains, and Puente Hills. The interior valleys include the San Fernando Valley, San Gabriel Valley, Pomona Valley, and Antelope Valley. There are several minor fault lines located in Los Angeles, which connect to California's major fault line, the San Andreas Fault.

Los Angeles County experiences a Mediterranean-like climate, sunny and warm, with a mean annual temperature of 61.7 degrees Fahrenheit. Due to the mild climate, Los Angeles County has lower heating and air conditioning costs than most cities in the United States. The mean annual rainfall is 12.9 inches, and its mean annual humidity is 65%. A favorable climate has contributed greatly to the growth of the region. However, during the past several decades, the area has experienced increased air pollution due to smog. Governmental agencies at the state and local levels, through zoning and transportation regulations, have had moderate success in reducing this hazard.

Sociological Factors

According to U.S. Census 2010, the population estimate for Los Angeles County was 9,818,605, which accounted for 26.4 percent of the California population of 37,253,956. The population growth for the County has been relatively stable, increasing only approximately 3.1 percent since the 2000 Census population estimate of 9,519,338. The chart on the following page reflects the age distribution of Los Angeles County.



AGE DISTRIBUTION
(U.S. CENSUS BUREAU 2010 STATISTICS)

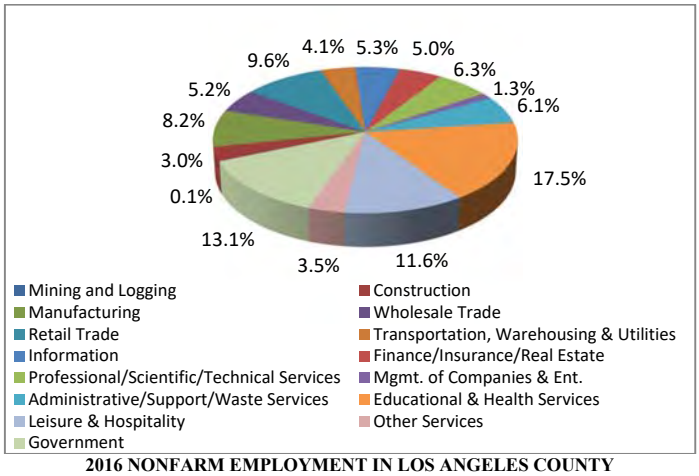
According to the U.S. Census 2010, Los Angeles County residents are predominantly under the age of 18 years old (24.5%). Los Angeles County has over 3.4 million housing units and an average household of 2.98 persons.

There are many social and cultural facilities that enhance the desirability of the County. Recreational amenities include beaches and harbors along the Pacific Ocean, marinas, golf courses, parks, theaters, and entertainment centers. Cultural facilities include numerous colleges and universities, libraries, and museums. Health care facilities, including hospitals and acute-care nursing homes, are well-represented in the County. Some points of interest within the County are: Los Angeles Civic Center, Chinatown, Dodger Stadium, Aquarium of the Pacific, J. Paul Getty Museum, Huntington Library, Griffith Park, Greek Theatre, Hollywood Bowl, Santa Anita Racetrack, TLC Chinese Theatre, Hollywood Walk of Fame, La Brea Tar Pits, Los Angeles County Museum of Art, the Museum of Contemporary Art, the California Science Center, Los Angeles Zoo, Los Angeles County Music Center, Norton Simon Museum, Queen Mary, USS Iowa, Rose Bowl, Six Flags Magic Mountain, and Universal Studios. These points of interest attract local residents and are also visited by millions of tourists worldwide.

Some new and major projects under construction or renovation in Los Angeles County include the 1.4 billion dollar Alameda Corridor East Project, Los Angeles/Long Beach Port Expansion, MetroRail line extensions, the expansion of Los Angeles International Airport, and "L.A. Live," a retail/entertainment/hotel complex in downtown Los Angeles.

Economic Factors

Los Angeles County is a major economic center for the city, state, and national level. The county has a very diverse economic base, as indicated in the following table.

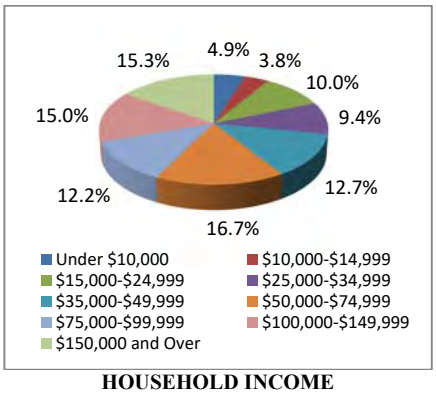


2016 NONFARM EMPLOYMENT IN LOS ANGELES COUNTY
(STATE OF CALIFORNIA EMPLOYMENT DEVELOPMENT DEPARTMENT MARCH 2016 BENCHMARK)

The economy is diverse with no single sector dominating the market. The majority of the county's employment sectors added jobs in 2016, with the largest private sector gains occurring in the health care and social assistance, leisure and hospitality, and retail trade sectors. Modest job losses were seen in the manufacturing, wholesale trade and natural resources sectors.

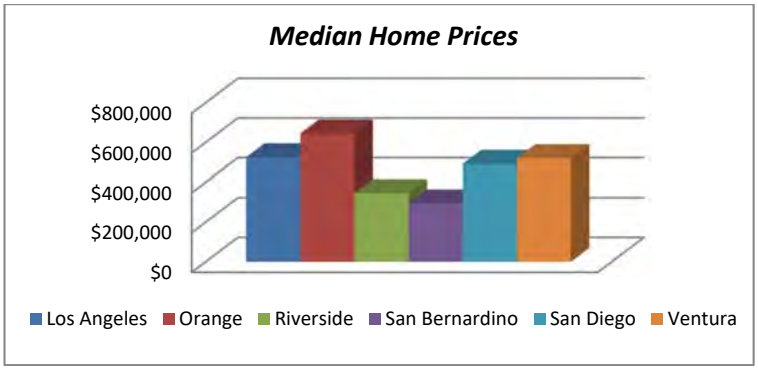
The excellent public and private services offered in Los Angeles County are major industries in their own right. A vast network of hospitals and health care facilities, educational institutions, entertainment productions, and sporting events are major building blocks that demonstrate the growth of Los Angeles County. The County has a number of local programs to successfully integrate students into the workplace. The area will continue to progress with its vast pool of skilled and unskilled workers and economic activity. Business, cultural, and geographic diversification of Los Angeles County will play a prominent role in the local, regional, and national economies.

The per capita income for Los Angeles County was $54,577 in 2016, up 2.0 percent from 2015, but slightly below the 2016 state average per capita income of $54,910. Total personal income for Los Angeles County is expected to grow 5.4 percent in 2017. According to the U.S. Census Bureau 2015 American Community Survey, Los Angeles County has a median household income of $56,196, and 14.3 percent of the people are considered to have an income below the poverty line. The following chart illustrates household income in Los Angeles County.



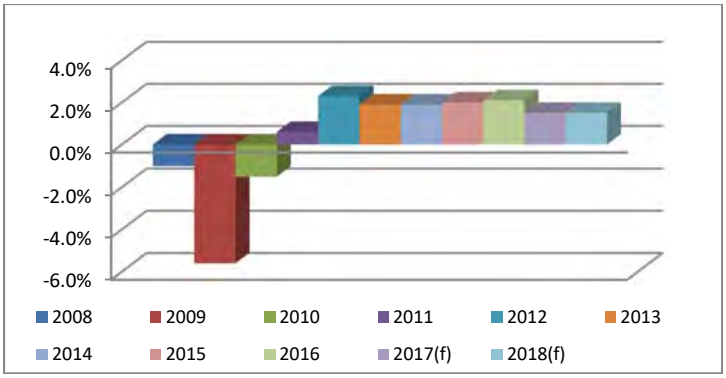
HOUSEHOLD INCOME
(U.S. CENSUS BUREAU 2015 STATISTICS

According to CoreLogic, Los Angeles County has the second highest housing cost in Southern California, while neighboring Orange County has the highest cost. The median Los Angeles County home price was $525,000 as of February 2017, up from $486,523 one year earlier. The chart below shows the median housing selling prices in Southern California as reported by CoreLogic in February 2017.



SOUTHERN CALIFORNIA MEDIAN SELLING PRICE
(CORELOGIC FEBRUARY 2017)

During the past decade, Los Angeles County's economy underwent major job restructuring due to the national recession. As presented below, the economy experienced by job losses between 2008 and 2010. Job growth returned in 2011, and current forecasts anticipate an annual gain of 1.5% in 2017 and 2018. Los Angeles County had an unemployment rate, not seasonally adjusted, of 4.3%, as of March 2017, down from 5.2% one year earlier. California had an unemployment rate, not seasonally adjusted, of 5.1% for the same period, down from 5.8% one year earlier.



LOS ANGELES COUNTY EMPLOYMENT TREND
(LAEDC 2017-2018 ECONOMIC FORECAST AND INDUSTRY OUTLOOK)

Historically, Los Angeles County has been the second largest business and post-industrial economic center in the United States, due to its diversity of people, cultures, scenery, climate, and physical environment. It has been a highly influential force in the Western United States and the Pacific Rim. Los Angeles County accounts for one-third of California's total economy and is the nation's leading manufacturing and aerospace center. Although the manufacturing, trade, and service sectors are predominant, the County is a major center for economically resilient industries such as telecommunication, motion pictures, computer and communications equipment, medical laboratories, television, and business services.

According to the Kyser Center for Economic Research 2017-2018 Economic Forecast & Industry Outlook, some of the factors that are expected to contribute to advancing economic conditions in Los Angeles County in 2017 include:

- Real GDP growth of 2.5% in 2017 and 2.6% in 2018;
- An expected 5.4% increase in personal income in 2017, followed by a 3.8% increase in 2018;
- A 16.0% increase in residential housing permits in 2017, followed by a 6.8 percent increase in 2018; and
- Job growth in most industries, led by Health Care and Social Assistance, Administrative & Support, Leisure & Hospitality, Retail Trade and Government.

Transportation Factors

Regional transportation in Los Angeles County includes highways, air, rail, and other means of travel. The heart of the County's vast transportation system is its advanced highway system. This mass transit system, consisting of hundreds of miles of highways and freeways, connects Los Angeles County to the rest of California and the United States. The freeway system that serves Los Angeles County includes, but is not limited to, U.S. Interstate 5, U.S. Interstate 10, U.S. Interstate 405, and Highway 101. Los Angeles County has the largest freeway system in the world and allows commuters to travel in any direction within the County.

Los Angeles County is situated near several major airports with relatively short driving distances. Los Angeles International Airport (LAX) is the primary international airport that services the region. It is the 3rd largest airport in the world and the key facility in Southern California airport network. Fueled by the growing volume of LAX activity, intensive development of commercial land is noticeable in the airport area. Bob Hope Airport (BUR) does not offer international service, but provides commuter air service to major national cities. This airport caters to 4.9 million travelers per year on six major carriers, with more than 70 flights daily. The Los Angeles County Metropolitan Area has three other metropolitan airports to serve the region: John Wayne

Airport (SNA), Ontario International Airport (ONT), and Long Beach Airport (LGB). This network of airports serves as a travel medium for residents and an economic portal for businesses.

Los Angeles County provides both public and commercial rail use. MetroRail commuter rail lines provide linkage to neighboring counties and are quickly becoming an alternate source of transportation. Long Beach and Los Angeles County Harbors are found in the heart of Los Angeles County. They are the second and third largest economic ports in the nation, respectively. They contain 9.2 square miles and as one entity rank as the 2nd largest economic port in terms of dollar value of exports and imports. Together, L.A. and Long Beach Harbors handle more than half of the United States Pacific Coast tonnage. This vast maritime center is an economic stimulus to the region, generating nearly 300,000 jobs and billions of dollars in annual revenue. Port Hueneme and San Diego Harbor are found west and south of Los Angeles County, respectively. National and international businesses use these ports as their gateway for trade with North and South America, Europe, and Asia.

Technological advancements in transportation and innovative changes in the workplace will continue to improve, including flexible work schedules, child care facilities for employees, and telecommunications systems for employees to work at home. Since 1975, air quality control programs have evidenced a 35 percent decline in emissions of reactive organic gases and nitrogen oxides. Carbon monoxides emissions have dropped by 45 percent during the last decade; smog alerts have declined 60 percent. With modern technology, transportation and air quality should continue to improve.

Governmental Factors

Los Angeles County consists of incorporated and unincorporated cities. The unincorporated portions of the County are governed by a five-member Board of Supervisors elected to four-year terms. The County provides key municipal services, such as fire and police protection, to many of its unincorporated cities. The larger incorporated cities provide their own municipal services. Los Angeles has an elected mayor who leads the administrative branch of the government. The legislative branch, represented by 15 City Council members, is elected by voters to 4-year terms to administrate over the City and its services.

Additionally, the State of California provides many services for residents through their employment services, state parks, regulatory agencies, and state highway system. The services provided by the City, County, and State agencies have been adequate, despite budget cuts resulting from the passage of Proposition 13 in 1978 and past recession. Given the continued stability of local government, along with adequate revenues, these municipal services are expected to continue.

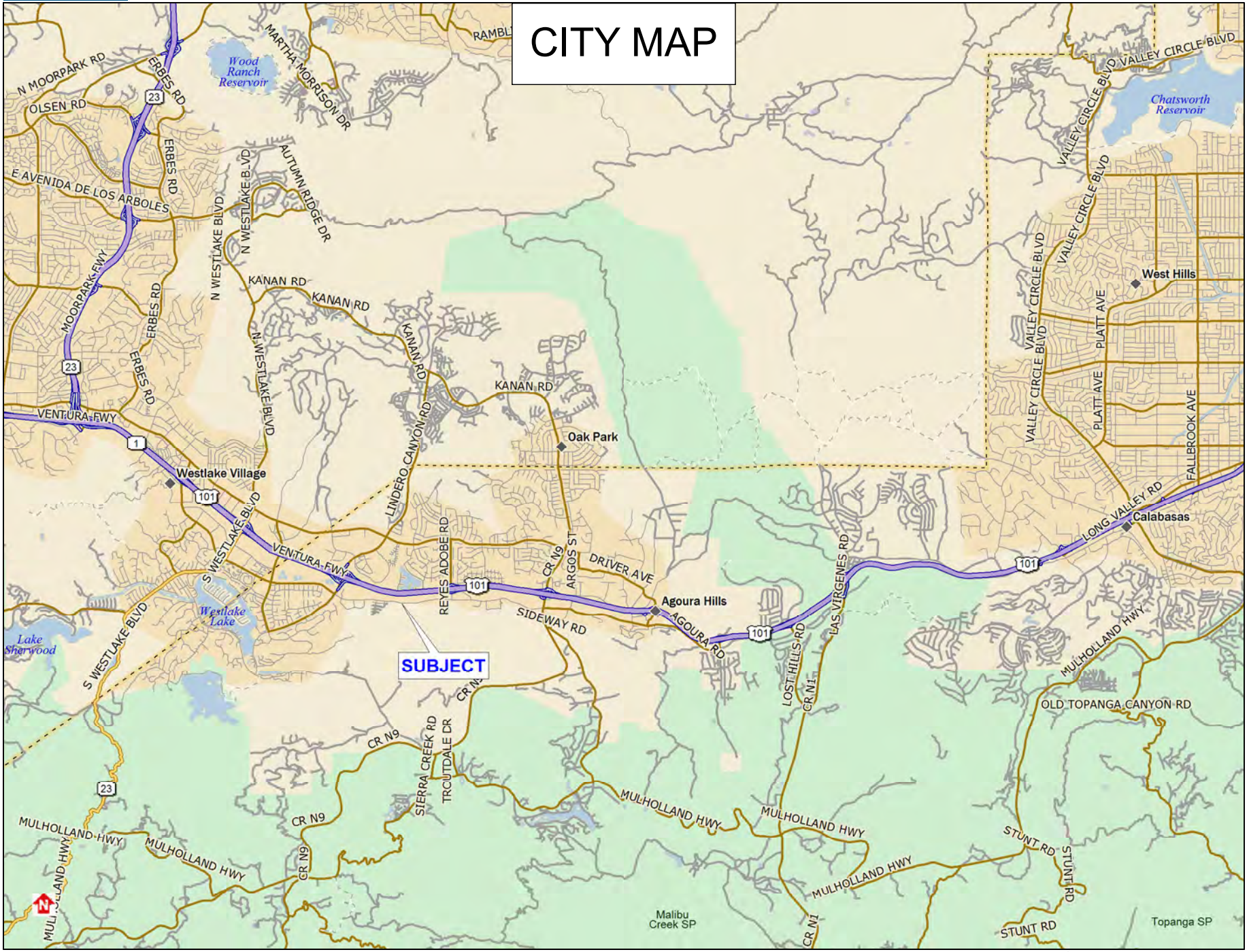
Future Outlook

The area's extraordinary expansion has created important challenges to its future growth (i.e., affordable housing, clean air, adequate water supply, and traffic congestion). Los Angeles County is a freeway county with many centers of economic activity. Distance is measured in terms of driving time, not miles. As traffic congestion increases, freeway and light rail access have become critical considerations for Los Angeles County and its commuters.

Despite the challenges that Los Angeles County faces, the region is expected to retain its premier position in the world for decades to come. This is supported by its strategic location, role among trading nations of the Pacific Rim and South America, vast transportation network, vital marketplace, skilled workforce, and climate. The region is expected to experience modest growth through 2017.

[The following articles and sources have been used in development of the Regional Analysis: "These include: "The Kyser Center for Economic Research 2017-2018 Economic Forecast & Industry Outlook," Los Angeles County Economic Development Corporation; various articles from the Los Angeles Times; 1994-2017 Labor Market Information, California Employment Development Department; www.factfinder.census.gov, U.S. Census Bureau website; www.bls.gov/lau, U.S. Department of Labor Bureau of Labor Statistics website; lacounty.info, Los Angeles County website; www.corelogic.com, CoreLogic website]

CITY MAP



TN
MN (12.2°E)

Scale 1 : 100,000

1" = 1.58 mi Data Zoom 11-0

CITY DATA

The subject property is located in the southern portion of the City of Agoura Hills. Agoura Hills is bounded by the City of Calabasas on the east, the City of Westlake Village on the west, Mulholland Highway on the south, and the Simi Valley Hills on the north. The City lies in the northwestern portion of Los Angeles County, within an area commonly known as the Conejo Valley.

The Ventura Freeway (U.S. Highway 101) traverses through the city in a general east/west direction. This major freeway connects the Los Angeles metropolitan area to the east, and the Ventura/Oxnard area to the west. The major east/west thoroughfares within the community include Thousand Oaks Boulevard, Canwood Street, and Agoura Road. Major north/south surface arterials servicing the community include Kanan, Reyes Adobe, Chesebro and Cornell Roads. The communities north of the Ventura Freeway are well served by a network of local residential streets

The City of Agoura Hills is characterized as an upper-middle class residential bedroom community with approximately 50 percent of all existing developed areas composed of single-family dwellings. The remaining developments are composed of research and development projects, office buildings, light industry, and supporting retail developments.

The majority of the retail businesses are clustered north and south sides of the Ventura Freeway, along Thousand Oaks Boulevard and Kanan Road, with office/industrial facilities clustered along the Ventura Freeway corridor, and primarily along Canwood Drive, Agoura Road, and Roadside Drive. Of interest is the fact that nearly all City-designated single-family residential land has been developed.

From an economic view, the future growth of the area is expected to be limited by the available housing, rather than by market demand. The remaining vacant land to be developed lie along the aforementioned Ventura Freeway corridor, primarily along Canwood Drive, Agoura Road, and Roadside Drive.

The City of Agoura Hills has experienced strong population growth since its incorporation in 1982, however, over the past few years, population growth has been stable. The population is estimated at 20,915, per United States Census Bureau, which reflects 2.9 percent growth from April 2010. According to CoreLogic, the median home price is $820,000 as of March 2017, compared to $645,000 one year prior, up 27.1 percent.

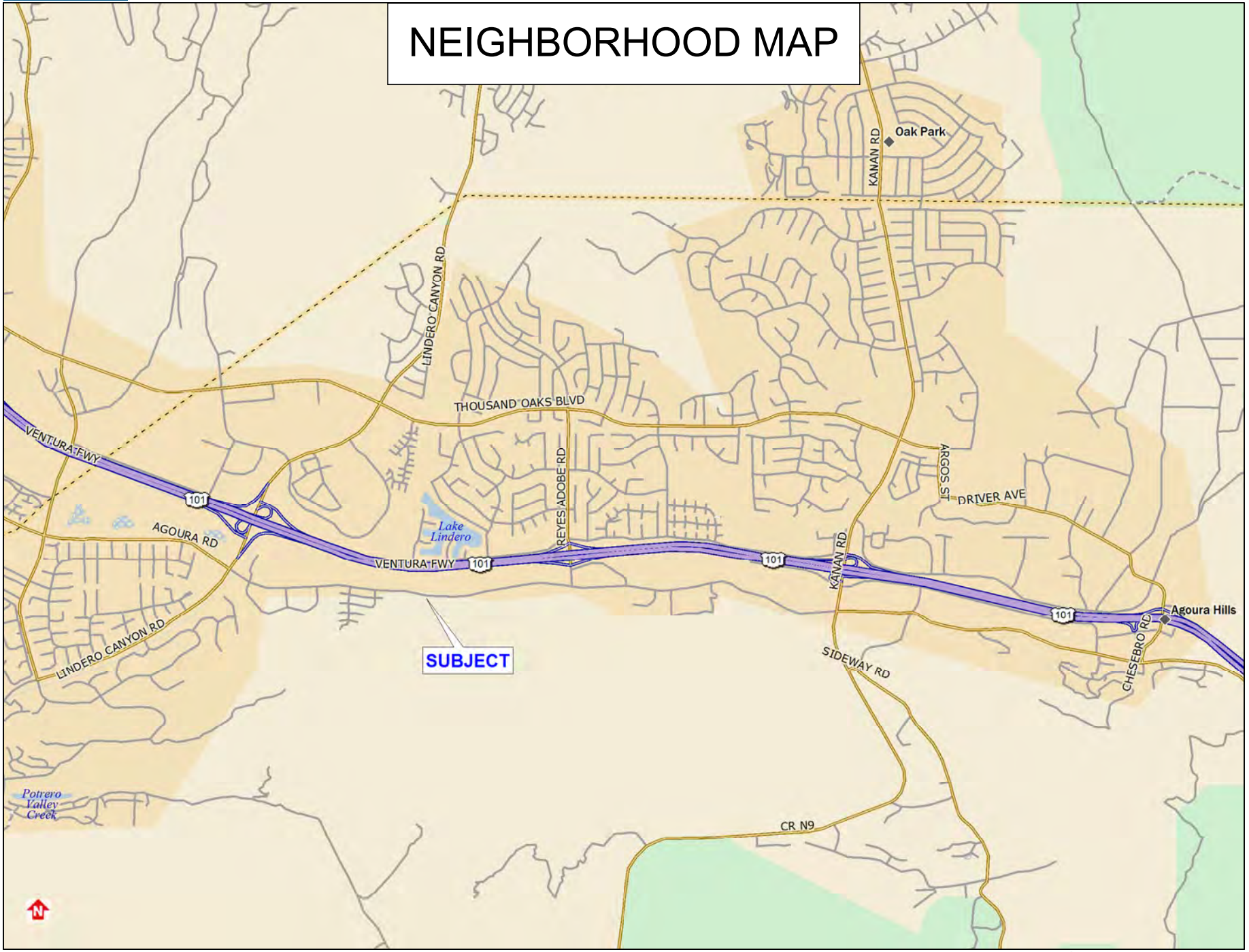
The employment base in the area is quite strong and includes manufacturing and non-manufacturing employers. There are over 130 manufacturers in the community area, with leading product lines being electrical components, aircraft components, defense systems, and plastics. Along with the local employment, many area residents commute to various employment centers in the San Fernando Valley, and west and central Los Angeles to the east, and the Oxnard plain to the west. The most prevalent employment categories for residents in this area are in the managerial, service and professional categories, providing household incomes well above state and national averages. Unemployment figures for the City of Agoura Hills based on a labor force of 11,700 was 3.6 percent as of March 2017, down from 4.3 percent in March 2016.

The City of Agoura Hills, incorporated December 8, 1982, operates under a council/manager form of government with an elected part-time council and a full-time city manager. The city operates its own building, planning, public works, and parks and recreation departments. Police protection is provided by the Los Angeles County Sheriff's Department on a contract basis. The Malibu Sheriff's Station, currently serves as the main station for the area with a satellite sheriff's station located at Lost Hills Road. Fire protection for the area is provided by three fire stations. The City of Agoura Hills is served by the Las Virgenes Unified School District, an 80-square mile district with a current enrollment of approximately 12,100 students. Emergency health facilities servicing the area include the Westlake Community Hospital, Agoura Hills Urgent Care Center, and the Los Robles Regional Medical Center.

The City provides several local parks, including Agoura Hills Park, Chumash Park, Reyes Adobe Park, Forest Cove Park, and Sumac Park. All, with the exception of the Reyes Adobe Park, include picnic areas and other recreational facilities. Within the region are eight state parks and several regional and county parks. Complimenting the park systems, are a number of bicycle, hiking, and equestrian trails traversing various portions of the Agoura Hills area. Overall, these forms of recreation contribute to the natural rural character of the city.

The City of Agoura Hills is a desirable California suburban district which provides attractive, well-planned residential neighborhoods, ample supporting commercial and retail facilities, a diverse employment base, excellent recreational amenities, and adequate community service. The city is expected to experience continued modest growth in 2017.

NEIGHBORHOOD MAP



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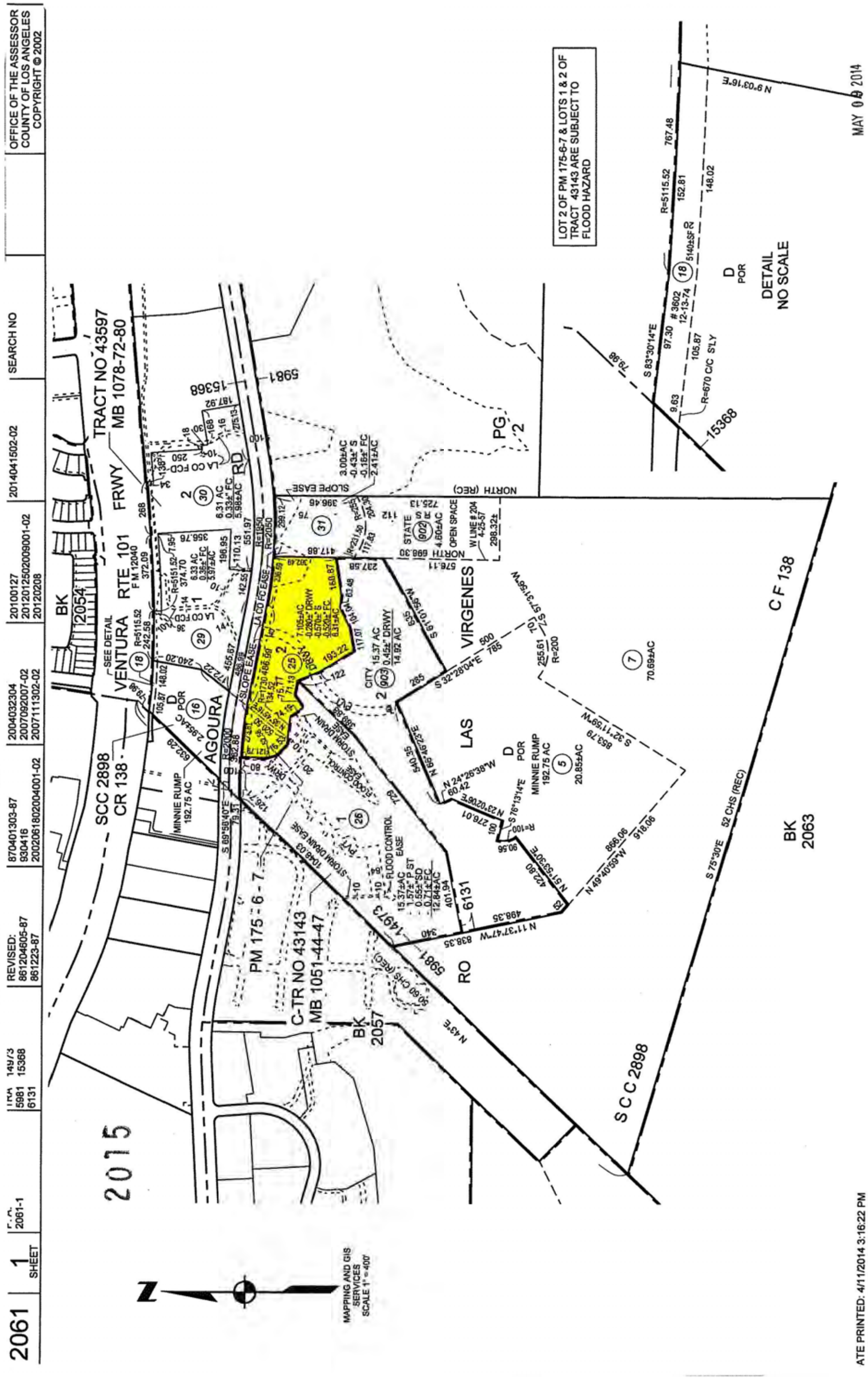
Scale 1 : 34,375
0 1000 2000 3000 4000 5000 ft
0 200 400 600 800 1000 m
1" = 2,864.6 ft Data Zoom 12-5

NEIGHBORHOOD DATA

The subject property is located in the southern portion of the City of Agoura Hills, and is defined by Lindero Canyon Road on the west, Chesebro Road on the east, Thousand Oaks Boulevard on the north mostly and the Santa Monica Mountains on the south.

Land uses in the neighborhood are mixed. The subject neighborhood is developed with mostly single family residences and vacant land with commercial, industrial, and office developments, along the Ventura (101) Freeway Corridor. Major north-south thoroughfares include Thousand Oaks Boulevard, Chesebro and Kanan Roads; and major east-west thoroughfares from north to south, include Canwood Street, Ventura (101) Freeway, Roadside Drive, and Agoura Road. Kanan Road, to the south, links Pacific Coast Highway, the Pacific Ocean and the City of Malibu with the City of Agoura Hills; and to the north, provides access to commercial, office, and residential areas. Canwood Street is a frontage road located just north of the Ventura Freeway, and extends from Chesebro Road on the east to Lake Crest Drive on the west. The subject property is in proximity to major thoroughfares, and regional transportation systems. These transportation systems provide linkage to rail, airport, and shipping facilities. Community facilities include libraries, parks, golf courses, schools, and hospitals, all located nearby.

In conclusion, the subject neighborhood is well located within the City of Agoura Hills. The neighborhood has stable-to-increasing economic conditions. The neighborhood is expected to experience modest growth.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COUNTY OF LOS ANGELES
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PLAT MAP

SITE DESCRIPTION

Location

The subject site is located on the south side of Agoura Road, 0.08 miles east of Flintlock Lane, in the City of Agoura Hills, County of Los Angeles, and State of California.

Size and Shape

The subject site is irregular in shape, with a gross site area of 309,712 square feet, or 7.11 acres and a net site area of 286,843 square feet, or 6.59 acres of land. **(Please refer to Extraordinary Assumption No. 22.)** The approximate dimensions of the site are:

Northern Boundary (Agoura Road)	997± Feet
Southern Boundary	1,066± Feet
Eastern Boundary	302± Feet
Western Boundary	122± Feet

Please refer to the Assessor's Plat Map on the accompanying page.

Topography/Drainage

Topography of the subject site is rolling-to-sloping land. The northeastern and middle portion of the site that is located to the adjacent south of Agoura Road slopes down from grade approximately 15 feet. The northeastern and middle portion of the site then slopes up toward the southern portion of the site approximately 35 feet. The northwestern portion of the site that is located to the adjacent south of Agoura Road slopes up from street grade approximately 10 feet and transitions to a generally level area. The site is zoned by FEMA's National Flood Insurance Program (NFIP) Map No. 06037C1243F, which is dated September 26, 2008 as primarily Flood Zone X. Zone X is defined as an area of minimal to moderate flood hazard. Flood hazard insurance is available, but not required by federal regulations. Although the subject is identified as Flood Zone X; according to the USGS Topographic Map, there is a blue line stream located in the northwestern portion of the subject site that traverses from the northern to southern boundary. No development can occur within a blue line stream unless a streambed realignment permit can be obtained from the U.S. Army Corps of Engineers.

Nuisances and Hazards

Although requested, Riggs & Riggs, Inc., was not provided a Phase I or II Environmental Assessment Report for the subject site. Riggs & Riggs, Inc. assumes there are no conditions that adversely affect the site. **(Please refer to Extraordinary Assumption No. 20.)**

Soils and Geology

Although requested, Riggs & Riggs, Inc., was not provided with a soils or geological report for review. While the subject property is not located within an Alquist-Priolo Earthquake Fault Zone according to the city or Maps provided by the city and California Geological Survey website, nearly all areas in Southern California are susceptible to intermittent earthquakes. The site appears adequate to support construction standards consistent with the highest and best use conclusion due to surrounding development. For the purpose of this appraisal, it is assumed that the soil and geological conditions are not unfavorable. **(Please refer to Extraordinary Assumption No. 19.)**

Utilities

The subject is located in a developed urban area. All utilities are available to the subject site. Agoura Road is paved with concrete curbs, gutters, and streetlights as well as concrete sidewalks adjacent to the subject property.

Accessibility and Visibility

The subject is an interior site that is located along the south side of Agoura Road. There is one curb cut located along the south side of Agoura Road. The site contains 997± feet of frontage along Agoura Road which is a paved minor arterial with two lanes of traffic in each direction and a raised and landscaped center median. The Ventura (101) Freeway is accessible from Reyes Adobe Road approximately 0.50 miles northeast of the subject site or from Lindero Canyon Road approximately 0.75 miles northwest of the subject site. Visibility is considered average and accessibility is considered average overall. Traffic was noted to be moderate along Agoura Road at the time of the field inspection, which was conducted during normal business hours. (**Please refer to Extraordinary Assumption No. 21**.)

Zoning

The subject site is governed by the Zoning and General Plan established and enforced by the City of Agoura Hills. The subject site is zoned SP, Ladyface Mountain Specific Plan within the Business Park subarea. Permitted uses within this zone are office, hotels/motels, restaurants, and retail uses that are incidental to office uses. Residential uses are not permitted. The following chart contains development standards for the SP zone:

THE LADYFACE MOUNTAIN SPECIFIC PLAN DEVELOPMENT STANDARDS		
SITE CONDITION	**REQUIRED BY CODE**	**PROVIDED BY SUBJECT**
Maximum Building Height	35 Feet	N/A
Maximum Building Coverage	Determined by slope	N/A
Minimum Lot Area	None	286,843 Square Feet
Minimum Lot Width	None	997± Feet
Minimum Lot Depth	None	120± Feet
Parking	Parking requirements vary by use with 1 space per 300 square feet of GFA for office uses and 15 spaces per 1,000 square feet of seating and waiting floor area for restaurant uses	N/A
Setbacks: Front Rear Side Yard	 Twice the height of any building Twice the height of any building Vary	N/A

General Plan

The subject's General Plan Land Use designation is Ladyface Mountain Specific Plan. The subject's zoning is in conformance with the General Plan Land Use designation.

Encumbrances

Riggs & Riggs, Inc. was provided with a Preliminary Title Report, as well as the underlying documents for the subject property. Noted in the Preliminary Title Report are assessments for the 2017-2018 tax year, an easement for drainage, ingress and egress, and utilities. According to Document No. 1546362 dated December 31, 1985 a private driveway easement was recorded in favor of Katell/Ahmanson Partnership, a California

Limited Partnership. This easement is reflected on the Assessor's Plat Map as being 40 feet wide and located near the middle of the subject property, extending from the northern to southern boundaries, and containing a total area of 12,197± square feet, or 0.28 acres. According to Document No. 3474 dated January 16, 1973, an easement for a storm drain and appurtenant structures was granted in favor of The County of Los Angeles. This easement is reflected on the Assessor's Plat Map as being located in the northeastern corner of the subject property and containing an area of 22,651± square feet, or 0.52 acres. Upon inspection, it was noted that the encumbered area identified on the Assessor's Plat Map is fenced and improved with a concrete basin and related flood control improvements. It is assumed to be an exclusive use easement. Upon inspection, it was also noted that there is a concrete storm drain in the northwestern portion of the subject property. Per Document No. 2309887 dated September 8, 2004, all drainage easements encumbering the subject property were transferred to Los Angeles County Flood Control District. According to Document Nos. 0112285 and 0112286 dated February 3, 2014, two slope easements were granted in favor of the City of Agoura Hills, a municipal corporation and contain a total area of 24,960 square feet, or 0.57 acres. The slope easements are also reflected on the Assessor's Plat Map and are located along northern boundary of subject property, adjacent to Agoura Road. It is assumed that are no other existing easements or encumbrances that are considered to adversely impact the subject property. **(Please refer to Extraordinary Assumption No. 21.)**

Site Utility

The subject site is irregular in shape, with a gross site area 309,712 square feet, or 7.11 acres and a net site area of 286,843 square feet, or 6.59 acres of vacant land. **(Please refer to Extraordinary Assumption No. 22.)** The subject site has rolling-to-sloping topography. The northeastern and middle portion of the site that is located to the adjacent south of Agoura Road slopes down from grade approximately 15 feet. The northeastern and middle portion of the site then slopes up toward the southern portion of the site approximately 35 feet. The northwestern portion of the site that is located to the adjacent south of Agoura Road slopes up from street grade approximately 10 feet and transitions to a generally level area. There is a blue line stream that traverses the western portion of the site from the northern to southern boundary. Visibility and accessibility are considered average overall. All utilities are available to the site. Off-site utilities including concrete curbs, gutters, sidewalks and streetlights are located along Agoura Road adjacent to the subject. Site utility is considered fair overall due to the slope topography and blue line stream, and numerous easements that encumber the subject site.

Real Estate Assessment Data

The subject site, identified as Los Angeles County Assessor's Parcel Number 2061-001-025 is located in Tax Rate Area 5981. The 2016-2017 tax rate is 1.11139 percent per $100 of assessed value.

Real estate taxes are limited to 1.00 percent of the fair market value of the property, as of a specified base year, plus a rate needed to pay interest and redemption charges for voter-approved indebtedness. The base year valuation is the 1975 Assessor's market value estimate, or the market value indicated by a sale, or market value based upon a new valuation, or reappraisal of the property brought about by new construction. A maximum 2 percent per year increase in the assessed values assigned to the land and improvements is allowed to compensate for inflation if there is no sale or new construction. Assessed values and real estate taxes due for 2016-2017 are shown on the following table.

SUBJECT TAX ASSESSMENT						
APN	Assessed Values			General Taxes	Special Assessments	Total Taxes Due
	Land	Improvements	Total			
2061-001-025	$544,439	$0	$544,439	$6,050.84	$457.15	$6,507.99

Improvements

The subject property is vacant land.

CONSTRUCTION IN THE MANNER PROPOSED

The following description of the proposed project is based on information obtained from the Las Virgenes Municipal Water District website. The project is known as the Advance Water Treatment Plant Site Project.

The Las Virgenes – Triunfo Joint Powers Authority ("JPA") was formed between the Las Virgenes Municipal Water district and the Triunfo Sanitation District in 1964 to construct, operate, and maintain a joint wastewater treatment system for their respective service areas, primarily within the Malibu Creek Watershed. The JPA facilities include the Tapia Water Reclamation Facility, the Rancho Las Virgenes Composting Facility, and approximately 60 miles of trunk sewers and extensive recycled water transmission and distribution system.

The majority of the recycled water is beneficially reused for irrigation of golf courses, green belts, parks, and schools. However, while the supply of recycled water generally remains constant, the demand fluctuates between the summer peak and winter seasons. The excess recycled water is discharged to the Malibu Creek. Increasingly stringent water quality requirements are making seasonal discharge to Malibu Creek very challenging and would trigger a significant investment in treatment at Tapia Water Reclamation Facility if the JPA were to continue discharge.

The JPA has proposed development of a new Advanced Water Treatment ("AWT") Plant which would produce purified water that would be discharged to Las Virgenes Reservoir for surface water augmentation. The resulting brine from the AWT would be discharged to the Calleguas Municipal Water District's Salinity Management Pipeline. The AWT Plant will likely contain a little over two acres in size and include process buildings, tanks, parking areas, and access roads.

Impacts to the Subject Property

As part of Advance Water Treatment Plant Site Project, a full fee acquisition of the subject property proposed to be acquired for the project.

HIGHEST AND BEST USE

Highest and best use is defined on Page 332 of The Appraisal of Real Estate, Appraisal Institute (14th Edition, 2013), as:

"The reasonably probable use of property that results in the highest value."

The concept of highest and best use represents the premise upon which value is based. In the context of the fair market value definition used in this report, other appropriate terms can also reflect the highest and best use concept. These are the most probable and most profitable use for the site, first "as if vacant" and then "as improved or proposed."

The determination of highest and best use is based not only on an analysis of the property in question, but also on an analysis of the overall community, its history and trends, zoning, market conditions, as well as the basic principles of land utilization.

There are four elements in highest and best use analysis that must be considered. The highest and best use of a property is that use, among alternate uses, that is legally permissible, physically possible, financially feasible, and maximally productive.

The following factors must be considered:

Legal Use: The use must be *legally permissible* (or it is reasonably probable to render it so).

Physical Use: The use must be *physically possible* (or it is reasonably probable to render it so).

Feasible Use: The use must be *financially feasible*.

Productive Use: The uses that meet the three criteria of reasonably probable uses are tested for economic *productivity*, and the reasonably probable use with the highest value is the highest and best use.

Factors controlling highest and best use include:

- Type of use;
- Duration of use;
- Location of use; and
- Degree of intensity of use-density.

The highest use of land is dictated by zoning and other government and/or private restrictions. The best use is constituted by that single use from the possible alternative types of improvements which will produce the greatest economic advantage.

The following are our conclusions of Highest and Best Use As-Vacant:

As-Vacant

The Highest and Best Use of the subject as vacant assumes that the property is vacant or could be rendered vacant by demolishing the existing improvements. Based on that assumption, possible uses for the property can be considered among those uses which are legally permissible, physically possible, financially feasible, and maximally productive.

Legal - The subject is governed by the Zoning and General Plan established and enforced by the City of Agoura Hills. The subject is zoned SP, Ladyface Mountain Specific Plan. Permitted uses in the SP zone include office, hotels/motels, restaurants, and retail uses that are incidental to office uses. Residential uses are not permitted. There is no required minimum lot size. According to the Preliminary Title Report, there is an existing flood control easement, two slope easements, and a private driveway easement that are considered to limit the development potential of the subject site. **(Please refer to Extraordinary Assumption No. 21.)** These are the legal uses of the land.

Physical - After identifying the legal uses of the site, the physical uses of a vacant site are considered. Development constraints imposed on a site vary by its configuration, size, and topography which are fixed in location. The subject site is irregular in shape, with a gross site area of 309,712 square feet, or 7.11 acres and a net site area of 286,843 square feet, or 6.59 acres of land and rolling-to-sloping topography. **(Please refer to Extraordinary Assumption No. 22.)** The northeastern and middle portion of the site that is located to the adjacent south of Agoura Road slopes down from grade approximately 15 feet. The northeastern and middle portion of the site then slopes up toward the southern portion of the site approximately 35 feet. The northwestern portion of the site that is located to the adjacent south of Agoura Road slopes up from street grade approximately 10 feet and transitions to a generally level area. Additionally, there is a blue line stream that traverses the western portion of the subject property from the northern to southern boundaries. Visibility and accessibility are considered average overall. Utility services are available to the site. Off-site utilities such are concrete curbs, gutter, sidewalk and streetlights are located along Agoura Road adjacent to the subject site. Site utility is considered fair overall, due to the rolling-to-sloping topography, the blue line stream, and the numerous recorded encumbrances. Taking these physical and legal factors into consideration, it appears that although there are constraints to potential development, the site is legally and physically suited for commercial uses consistent with the zoning and land use designation.

Economic - The best use is considered to be that single use from among all the physically possible uses legally-permitted by zoning which will produce the greatest economic advantage to a vacant site. This is due to the fact that real estate is fixed in location and return on land arises from the residual income remaining after all operational and financial expenses are deducted from the gross income.

Surrounding land uses include commercial to the east and north, multi-family residential to the west, and open space to the south. There are several business parks located along the north side of Agoura Road proximate to the subject property. Notably, Farmers Insurance and Teredyne, Inc. are located in the business park across the street from the subject property. Regional malls, restaurants, City Administrative Offices, hospitals, parks and schools are located in proximity to the subject, primarily to the west approximately 2 to 10 miles, along the Ventura (101) Freeway, and primarily in the neighboring cities of Westlake Village and Thousand Oaks. There was clear evidence of commercial development in the subject neighborhood and moderate growth is expected to continue.

Based on a review of the legal restrictions and physical constraints, it is our opinion that it is economically feasible to develop the site with a commercial use. The maximally productive use is considered to be that single use from among all the legally permissible and physically possible uses that will produce the greatest economic advantage to a vacant site. After review of the physical, legal, and economic factors mentioned relative to the subject, it is our opinion that the highest and best use of the site is to develop with a commercial use, consistent with the City of Agoura Hills zoning and General Plan designations.

APPROACHES TO VALUE

The valuation of any parcel of real estate is derived principally through the three basic approaches to market value: the Cost Approach; the Income Capitalization Approach; and the Sales Comparison Approach. The methodology used in the following sections of the appraisal includes:

Cost Approach - This approach to value is devoted to an analysis of the physical value of the property; that is, the current market value of the vacant land, to which is added the cost to construct the improvements. Any accrued depreciation is deducted for physical deterioration, functional obsolescence, and external obsolescence. Physical deterioration measures the physical wearing out of the property as observed during the field inspection. Functional obsolescence reflects a lack of desirability by reason of layout, style or design of the structure. External obsolescence denotes a loss in value from causes outside the property itself.

Income Capitalization Approach - Investment properties are normally valued in proportion to their ability to produce income. Hence, an analysis of the property in terms of its ability to provide a sufficient net annual return on invested capital is an important means of valuing an asset. An opinion of value by the Income Capitalization Approach is arrived at by capitalizing the net income at an interest rate or investment yield commensurate with the risk inherent in the fee ownership of the property. Such a conversion of income considers competitive returns offered by alternative investments. Commercial developments are considered to be desirable real estate investments.

Sales Comparison Approach - This approach to value is based upon the principle of substitution; that is, when a property is replaceable in the market, its value tends to be set at the cost of acquiring an equally desirable property, assuming no costly delay in making the substitution. As no property is identical to another, it is necessary to make adjustments for any differences.

The indications of value derived by the three approaches are not always possible or practical to use. The nature of the property being appraised, and the amount, quality, and type of market data available dictate the use or non-use of one or more of the approaches to value. In this appraisal, only the Sales Comparison Approach was utilized, since the subject property is vacant land.

SALES COMPARISON APPROACH

The application of the Sales Comparison Approach produces an opinion of value for the subject property by comparing it with similar or comparable properties which have recently sold. The comparison process is used to determine the degree of comparability between two properties. This process involves judgment. Similarity in value factors, such as property rights, buyer expenditures, financing, condition of sale, market conditions, location, and physical characteristics are considered meaningful for this analysis.

The sale prices of the properties deemed to be most comparable establish a range in which the value of the subject property should fall. Further consideration of the comparative data will result in a figure representing the value of the subject property -- the highest price at which it could be sold by a willing seller to a willing buyer as of the date of the value.

The technique is fairly straightforward in nature. Sales data of comparable properties are gathered, investigated, and verified. Data sources have been discussed, and each sale is confirmed with buyer, seller, or representative when possible. After verification, comparison is made between the comparable and the subject. Adjustments, if required, are made for any differences between sale and subject. The result is some unit or units of comparison which will be helpful in evaluating the subject property.

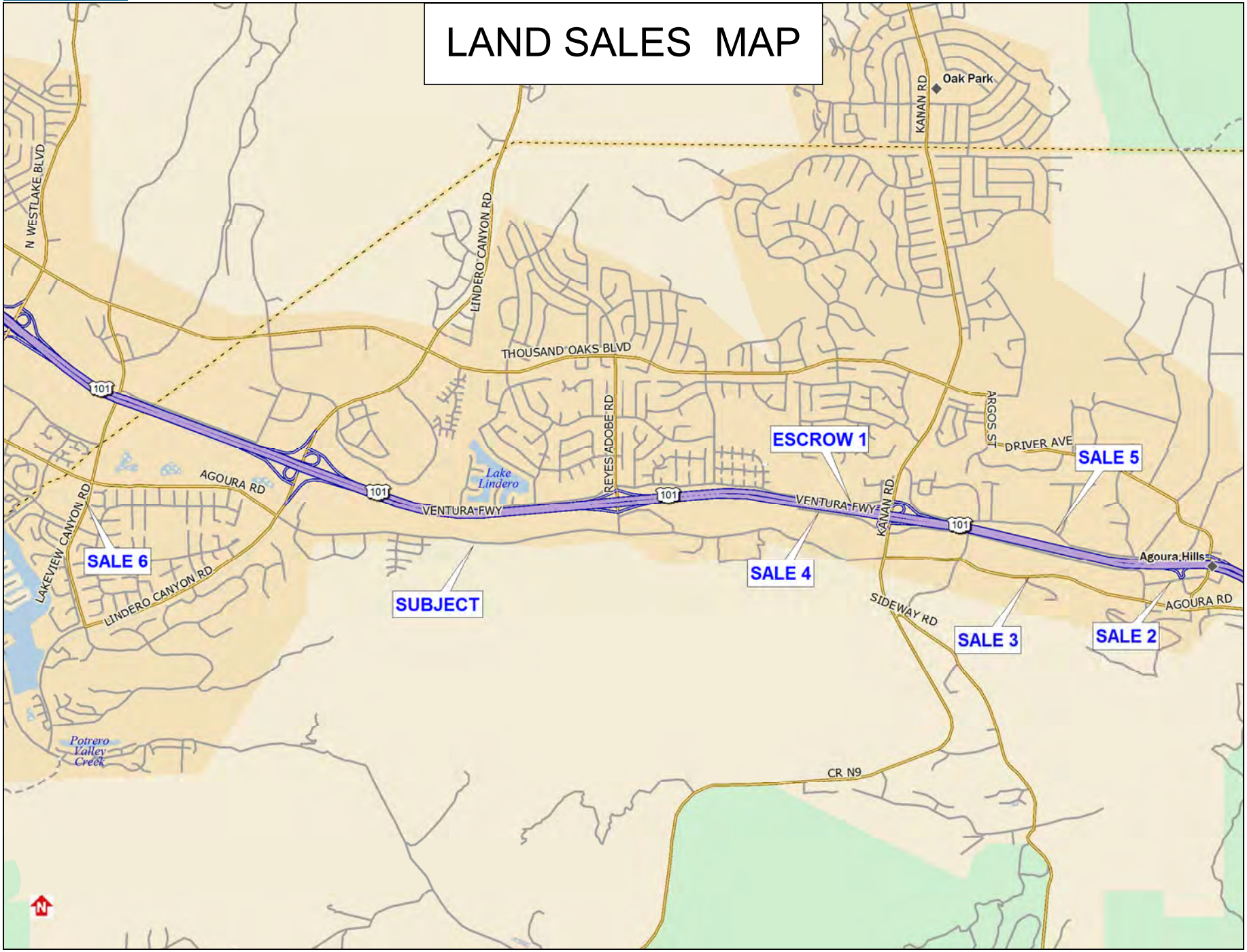
The Sales Comparison Approach is used to estimate the value of real estate, based on the theory that an informed and prudent buyer would not pay more for a property than the cost of acquiring another property with the same utility. It is, therefore, based upon the principle of substitution. This approach requires an active market and the availability of other properties from which a buyer can make a choice.

A search for sales similar to the subject in size and characteristics was conducted over the past three years in the market. Several recent, similarly zoned transfers were found and considered reasonably comparable to the subject and suitable for further analysis. Data items were narrowed to those sales which exhibited the greatest similarity to the subject. In order to determine an indicated value, the subject was evaluated based on the Sale Price Per Square Foot Method, consistent with the subject market.

Market Data Summary

The results of this process provide the basis for the opinion of value for the site as if vacant and available for development to its highest and best use. All of the sales were adjusted for quantitative factors, when applicable. The market data is summarized on the following summary chart, and is accompanied by a location map and detailed data sheets depicting each sale.

LAND SALES MAP

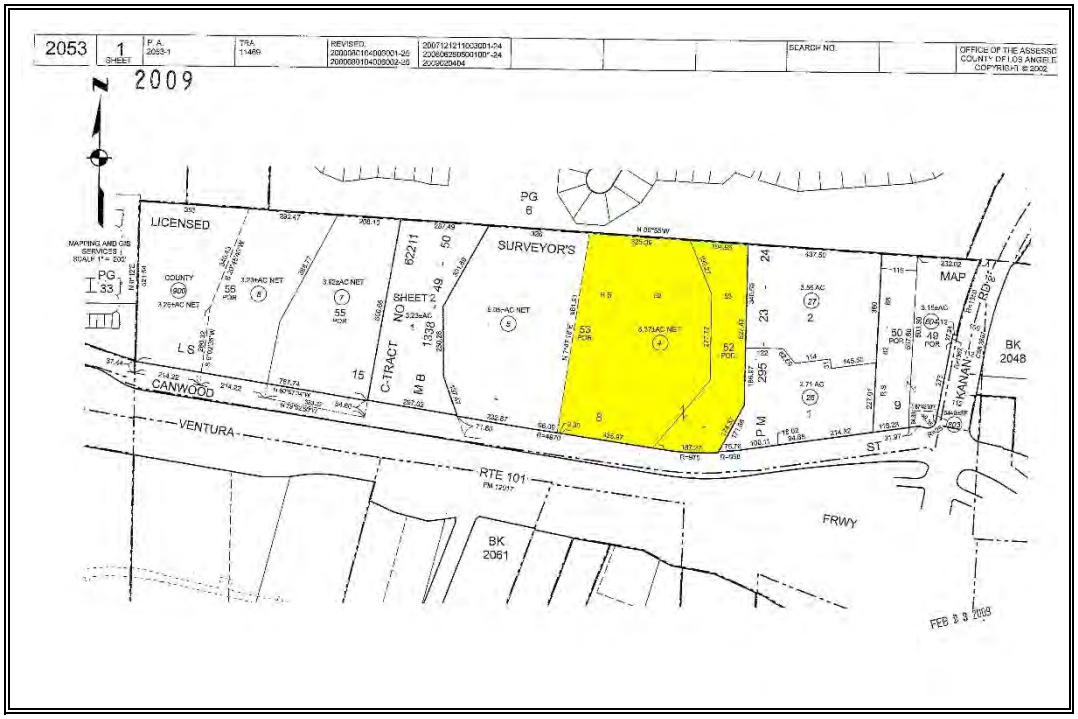


TN
MN (12.2°E)

Scale 1 : 34,375
1" = 2,864.6 ft
Data Zoom 12-5

LAND SALES SUMMARY				
Data No.	**Location**	**Sale Date**	**Land Area (SF)**	**Sale Price**
		Zoning	**Orientation**	**Sale Price/SF**
Escrow 1	29329 Canwood Street Agoura Hills	Escrow	364,597	$6,380,451
		BP-OR-FC	Interior	$17.50
2	28226 Dorothy Drive Agoura Hills	8/2/16	26,380	$550,000
		BP-OR-OA-FC/CRS	Interior	$20.85
3	28900 Agoura Road Agoura Hills	7/8/16	88,492	$500,000
		SP (Agoura Village)	Interior	$5.65
4	29508 Roadside Drive Agoura Hills	9/17/15	231,304	$6,500,000
		POM-FC	Interior	$28.10
5	28611 Canwood Street Agoura Hills	1/16/15	202,990	$2,350,000
		BP-M-FC	Interior	$11.58
6	4415 Lakeview Canyon Road Westlake Village	12/1/14	284,011	$7,300,000
		PI	Interior	$25.70
Subject	**30800 Agoura Road Agoura Hills**	**- -**	**286,843 (Net)**	**- -**
		SP (Ladyface Mountain)	**Interior**	**- -**

ESCROW NO. 1



Physical Description

Location:	29329 Canwood Street, Agoura Hills, CA 91301
Assessor Parcel Number:	2053-001-004

Land Description

Site Area:	364,597 square feet, or 8.37 acres
Shape:	Slightly irregular
Topography:	Rolling to gently sloping
Utilities:	All available to site
Zoning:	BP-OR-FC, City of Agoura Hills
General Plan:	BP-OR, City of Agoura Hills

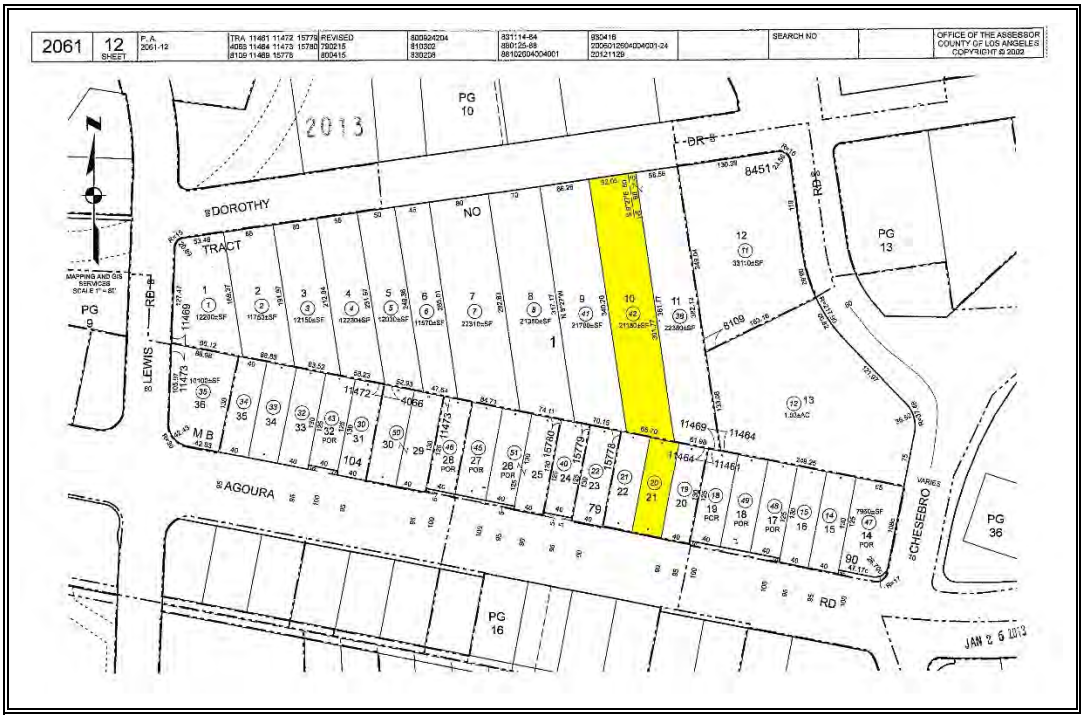
Sale Data

Interest Sold:	N/A
Date of Sale:	Pending Escrow
Deed Date:	N/A
Document No.:	N/A
List Price:	$6,380,451
Sale Price/SF:	$17.50
Grantor:	Sunbelt Enterprises, LLC
Grantee:	N/A
Financing:	N/A

Verification: Robert Griffith, Listing Broker

Comments: This vacant site is an interior location along the north side of Canwood Street, a freeway frontage road. The site is partially visible from the Ventura (101) Freeway. Canwood Drive is not improved with concrete curbs or gutters adjacent to the site. The property is currently in escrow. Although the listing broker would not report the sale price in escrow, he did indicate that it was lower than the asking price.

LAND SALE NO. 2



Physical Description

Location:	28226 Dorothy Drive, Agoura Hills, CA 91301
Assessor Parcel Numbers:	2061-012-020 and 2061-012-042

Land Description

Site Area:	26,380 square feet, or 0.61 acres
Shape:	Slightly irregular
Topography:	Generally level-to-gently rolling
Utilities:	All utilities available to site
Zoning:	BP-OR-OA-FC/CRS, City of Agoura Hills
General Plan:	CRS-BP, City of Agoura Hills

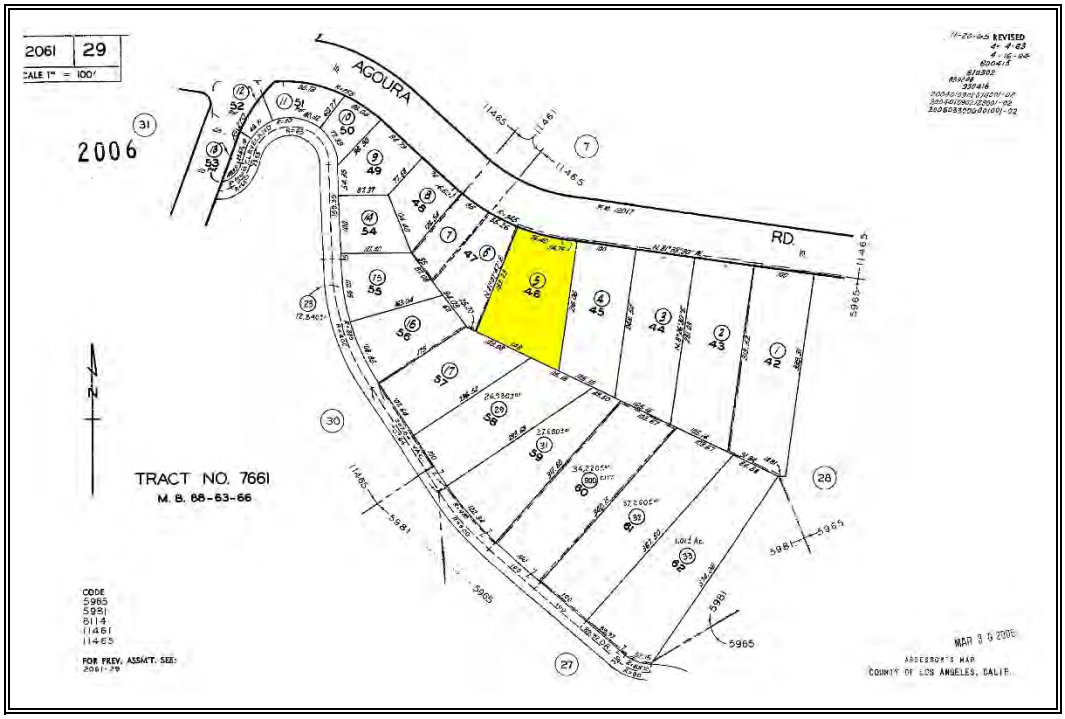
Sale Data

Interest Sold:	Fee Simple
Date of Sale:	August 2, 2016
Deed Date:	July 25, 2016
Document No.:	905763
Sale Price:	$550,000
Sale Price/SF:	$20.85
Grantor:	Coastal Satellite Inc., Retirement Plan Trust
Grantee:	28210/28216 Dorothy, LLC, etc.
Financing:	All cash transaction

Verification: Jim Connor, Listing Broker

Comments: This vacant site is an interior location with frontage along Dorothy Drive and Agoura Road which is a minor arterial. There are no curbs or gutters along Agoura Road adjacent to the site; however, there are concrete curbs, gutters, and sidewalk along Dorothy Drive. Zoning permits a variety of retail, office, and service commercial uses. Although, the site was purchased by the owner of the adjacent office building, it was listed on the open market for approximately seven years and no premium was paid for assemblage according to the listing broker. The buyer reportedly intends to use the site as a parking lot.

LAND SALE NO. 3



Physical Description

Location:	28900 Agoura Road, Agoura Hills CA 91301
Assessor Parcel Number:	2061-029-005

Land Description

Site Area:	88,492 square feet, or 2.03 acres
Shape:	Slightly irregular
Topography:	Sloping
Utilities:	All available to site
Zoning:	SP (Agoura Village), City of Agoura Hills
General Plan:	PD, City of Agoura Hills

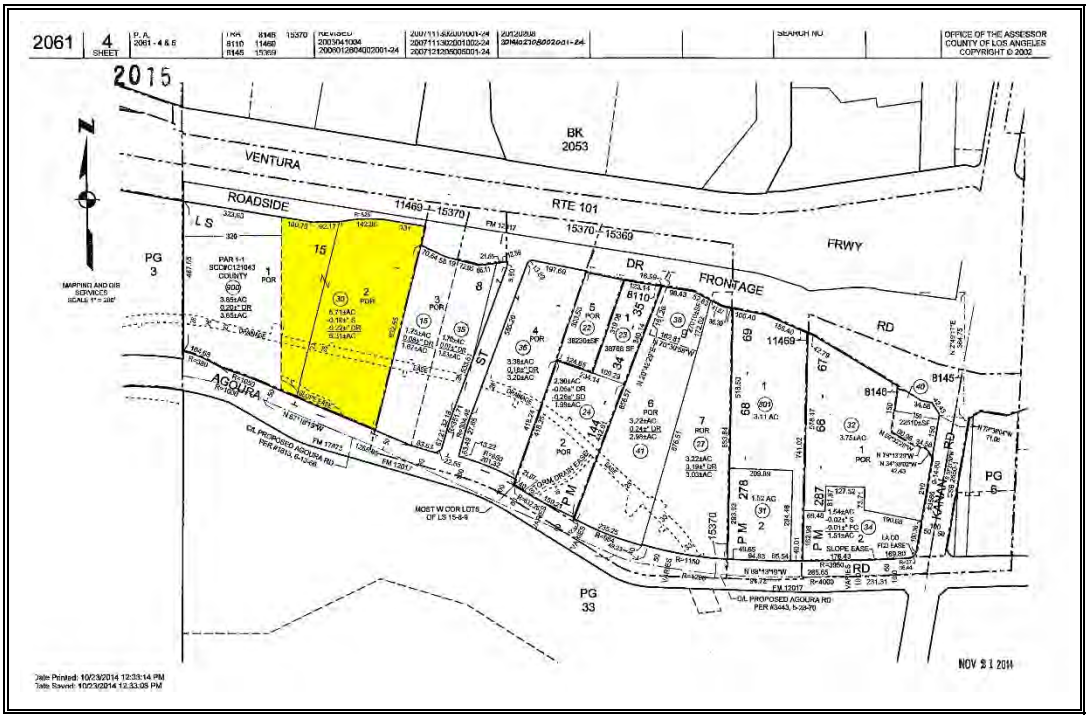
Sale Data

Interest Sold:	Fee Simple
Date of Sale:	July 8, 2016
Deed Date:	May 26, 2016
Document No.:	0798728
Sale Price:	$500,000
Sale Price/SF:	$5.65
Grantor:	Jeanette Linda Oghigian, etc.
Grantee:	An Investments, Inc., a California Corporation
Financing:	$250,000 (50%) cash down payment; $250,000 1st TD with a private lender at undisclosed market terms

Verification: Grant Deed and Realist.com

Comments: This vacant site is an interior location along the south side of a minor arterial. There are no curbs and gutters along Agoura Road adjacent to the site. This sale is located in Zone E of the Agoura Village Specific Plan. Uses permitted include office, restaurant, and mixed use residential/retail. According to Valerie Darbouze, Associate Planner with the City of Agoura Hills, there were no plans submitted for development as of the date of this report.

LAND SALE NO. 4



Physical Description

Location:	29508 Roadside Drive, Agoura Hills, CA 91301
Assessor Parcel Numbers:	2061-004-030

Land Description

Site Area:	231,304 square feet, or 5.31 acres net; 248,728 square feet, or 5.71 acres gross
Shape:	Irregular
Topography:	Rolling-to-sloping
Utilities:	All Available to site
Zoning:	POM-FC, City of Agoura Hills
General Plan:	PD, City of Agoura Hills

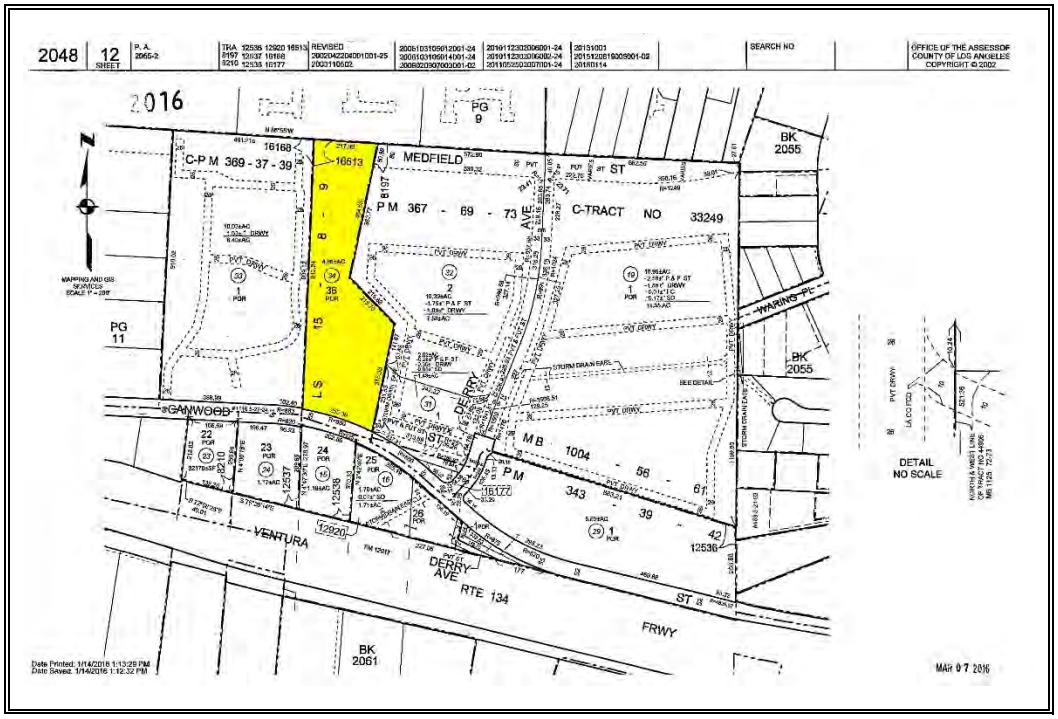
Sale Data

Interest Sold:	Fee Simple
Date of Sale:	September 17, 2015
Deed Date:	September 15, 2015
Document No:	1155748
Sale Price:	$6,500,000
Sale Price/SF:	$28.10
Grantor:	SDG Roadside Investments LLC, a California Limited Liability Company
Grantee:	Agoura Hills HHG Hotel Development, LP, a Delaware limited partnership
Financing:	All cash transaction

Verification: Mike Tingus, Listing Broker

Comments: This vacant site is an interior location along the north side of a minor arterial. The site abuts the Ventura (101) Freeway on the north, and is visible from the freeway. Agoura Road is improved with concrete curbs, gutter, and sidewalks adjacent to the site. According to Mr. Tingus, the buyer intends to develop two hotels on the site.

LAND SALE NO. 5



Physical Description

Location:	28611 Canwood Street, Agoura Hills, CA 91301
Assessor Parcel Number:	2048-012-034 (previously 2048-012-901)

Land Description

Site Area:	202,900 square feet, or 4.66 acres
Shape:	Irregular
Topography:	Sloping with generally level pad
Utilities:	All available to site
Zoning:	BP-M-FC, City of Agoura Hills
General Plan:	BP-M, City of Agoura Hills

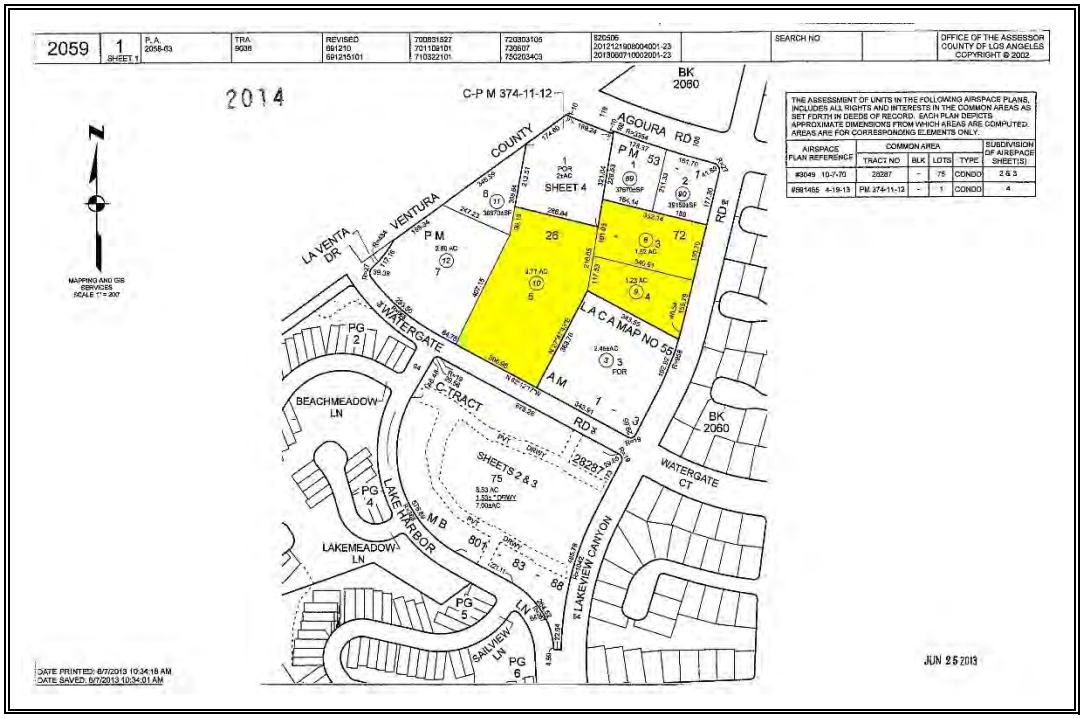
Sale Data

Interest Sold:	Fee Simple
Date of Sale:	January 16, 2015
Deed Date:	October 6, 2014
Document No.:	058046
Sale Price:	$2,350,000
Sale Price/SF:	$11.58
Grantor:	Successor Agency to the Agoura Hills Redevelopment Agency, a public body
Grantee:	Agoura Business Center, LLC a California Limited Liability Company
Financing:	All cash transaction

Verification: Nathan Hamburger; Assistant City Manager for the City of Agoura Hills (Seller)

Comments: This vacant site is located along the north side of a primary street. Canwood Street is improved with concrete curbs, gutters, and sidewalks adjacent to the site. The BP-M zone is intended for smaller planned developments and light manufacturing uses. Retail uses are not permitted. According to Mr. Hamburger, the buyer was the adjacent property owner; however, no premium was paid for assemblage. A light manufacturing development is currently under construction.

LAND SALE NO. 6



Physical Description

Location:	4415 Lakeview Canyon Road, Westlake Village, CA 91361
Assessor Parcel Numbers:	2059-001-008, 009, and 010

Land Description

Site Area:	284,011 square feet, or 6.52 acres
Shape:	Irregular
Topography:	Generally level
Utilities:	All available to site
Zoning:	PI, City of Westlake Village
General Plan:	Institutional, City of Westlake Village

Sale Data

Interest Sold:	Fee Simple
Date of Sale:	December 1, 2014
Deed Date:	November 20, 2014
Document No.:	1286532
Sale Price:	$7,300,000
Sale Price/SF:	$25.70
Grantor:	C/HCA Development, Inc., a Corporation organized under the laws of the State of South Carolina
Grantee:	North Ranch Lakeview Canyon Properties, LLC, A California Limited Liability Company
Financing:	All cash transaction

Verification:

Comments: This vacant site consist of three contiguous parcels that have frontage along Lakeview Canyon Road, a minor arterial and Watergate Road, a secondary street. The site is zoned Public Institutional, which permits a variety of public uses such as a fire station or church. According to the John Novi Associate Planner with City of Westlake Village Planning Department, special needs housing is permitted with a Conditional Use Permit. No plans for development were submitted to the City of Westlake Village as of the date of this report.

Discussion of Adjustments

All of the land sales have been adjusted relative to the subject property for property rights, buyer expenditures, financing, conditions of sale, market conditions (time), location and physical factors as applicable. These adjustments are defined below:

Property Rights at Sale

This category adjusts for property rights conveyed and takes into account differences in legal estate between the subject and each comparable property. Generally, property rights are either fee simple interest or leased fee interest.

Buyer Expenditures

This category adjusts for additional costs incurred by the buyer which are required to make the property ready for development and/or use. This includes expenditures for demolition costs and other expenses paid by the buyer in addition to the purchase price.

Financing

This category adjusts the sale price of each comparable into its cash equivalent or modifies the price to current market financing. Favorable financing often leads to a higher selling price and unfavorable financing may reflect a lower selling price.

Condition of Sale

This category adjusts for atypical conditions of sale and reflects any difference between the actual sale price of a comparable and its probable sale price if it had been sold in an arm's length transaction.

Market Conditions (Time)

This category adjusts for market conditions and reflects changes in the prices paid due to changes in market conditions over time. In reviewing the market, we found the land sales ranged from December 2014 through August 2016 and one current escrow. These were the most recent commercial land sales in the market. Our analysis of available market information, supported by discussions with market participants in the course of our verifications, indicates prices for commercial land in the subject neighborhood have and increased at an annual rate of 3 percent from December 2014 through December 2015, and stable from January 2016 to the present. Market condition adjustments have therefore been applied as applicable from date of sale to date of value.

Location and Physical Conditions

These categories consider differences between the subject and each comparable property for location and physical conditions. We considered differences in location, zoning, size, site utility, visibility and accessibility. Each is defined below:

Location - This category adjusts the sales for differences in location for linkages, area, and other factors relative to the subject site.

Zoning - This category adjusts for differences in zoning relative to the subject site.

Size - This category adjusts for differences in the size of each comparable relative to the subject site. Typically, smaller properties require downward adjustment, as they tend to reflect higher unit prices than larger sites. Larger properties require upward adjustment, as they tend to reflect lower unit prices than smaller sites.

Site Utility - This category adjusts for differences in the utility of each sale relative to the subject, and takes into consideration the topography, proximity of utilities, and configuration and usability of each site.

Visibility - This category adjusts for differences in the visibility of each sale relative to the subject site.

Accessibility - This category adjusts for differences in the accessibility of each sale relative to the subject site.

The adjustment grid on the following page summarizes the adjustments for each of the comparable sales relative to the subject property. Adjustments for differences between the subject and each comparable property are expressed in percentages for property rights, buyer expenditures, financing, condition of sale, and market conditions based on our analysis of the market, as applicable. Qualitative adjustments have been applied for the location and other physical characteristics of each sale compared with the subject. A superior rating indicates the market data item is being adjusted downward to the subject. An inferior rating indicates the market data item is being adjusted upward to the subject. Each physical characteristic may not be weighted equally. Then, an overall rating is assigned to each sale as it compares with the subject.

LAND SALES ADJUSTMENT GRID							
Adjustment Factors	**Subject**	**Escrow 1**	**Sale 2**	**Sale 3**	**Sale 4**	**Sale 5**	**Sale 6**
Unadjusted $/SF		**$17.50**	**$20.85**	**$5.65**	**$28.10**	**$11.58**	**$25.70**
Property Rights	Fee Simple	Fee Simple	Fee Simple	Fee Simple	Fee Simple	Fee Simple	Fee Simple
Adjusted $/SF		**$17.50**	**$20.85**	**$5.65**	**$28.10**	**$11.58**	**$25.70**
Buyer Expenditures	- -	None	None	None	None	None	None
Adjusted $/SF		**$17.50**	**$20.85**	**$5.65**	**$28.10**	**$11.58**	**$25.70**
Financing	- -	N/A	Cash	Private/Market	Cash	Cash	Cash
Adjusted $/SF		**$17.50**	**$20.85**	**$5.65**	**$28.10**	**$11.58**	**$25.70**
Condition of Sale	- -	Downward/Arm's Length	Arm's Length	Arm's Length	Arm's Length	Arm's Length	Arm's Length
Adjusted $/SF		**$17.50**	**$20.85**	**$5.65**	**$28.10**	**$11.58**	**$25.70**
Market Conditions	- -	0.00%	0.00%	0.00%	0.87%	2.88%	3.26%
Adjusted $/SF		**$17.50**	**$20.85**	**$5.65**	**$28.35**	**$11.91**	**$26.54**
Physical Conditions							
Location	Good	Average - Good	Average	Average	Average - Good	Average - Good	Good - Excellent
Adjustment		*Sl. Inferior +*	*Inferior +*	*Inferior +*	*Sl. Inferior +*	*Sl. Inferior +*	*Sl. Superior -*
Zoning	SP (Ladyface Mountain)	BP-OR-FC	BP-OR-OA-FC/CRS	SP (Agoura Village)	POM-FC	BP-M-FC	PI
Adjustment		*Similar*	*Similar*	*Similar*	*Sl. Superior -*	*Similar*	*Inferior +*
Size	286,846 SF (Net)	364,597 SF	26,380 SF	88,492 SF	231,304 SF	202,990 SF	284,011 SF
Adjustment		*Sl. Larger +*	*Smaller -*	*Smaller -*	*Similar*	*Sl. Smaller -*	*Similar*
Site Utility	Fair	Average - Good	Average - Good	Fair	Average - Good	Fair -Average	Good
Adjustment		*Superior -*	*Superior -*	*Similar*	*Superior -*	*Sl. Superior -*	*Superior - -*
Visibility	Average	Average - Good	Average	Fair - Average	Good	Average	Average - Good
Adjustment		*Sl. Superior -*	*Similar*	*Sl. Inferior +*	*Superior -*	*Similar*	*Sl. Superior -*
Accessibility	Average	Average	Average - Good	Average	Average	Average	Average - Good
Adjustment		*Similar*	*Sl. Superior -*	*Similar*	*Similar*	*Similar*	*Sl. Superior -*
Overall Rating		**Superior**	**Superior**	**Inferior**	**Superior**	**Superior**	**Superior**

Analysis and Conclusions

The adjusted sales range from $5.65 to $28.35 per square foot, before adjusting for physical characteristics. Based on our analysis of the land sales, the overall ratings of the adjusted sales compared to the subject property are as follows:

Inferior (Sale No. 3)	$5.65 per square foot
Similar	N/A
Superior (Escrow No. 1 and Sale Nos. 2, 4, 5, and 6)	$11.91 to $28.35 per square foot

Based on our analysis, an expected value indicator for the subject should fall between $5.65 to $11.91 per square foot. Sale No. 3 was considered inferior to the subject overall at $5.65 per square foot, and set the lower range of value for the subject property. Escrow No. 1 and Sale Nos. 2, 4, 5, and 6 were considered superior to the subject overall at $11.91 to $28.35 per square foot, and set the upper range of value for the subject property.

After considering adjustments for differences in property rights, buyer expenditures, financing, conditions of sale, and market conditions, location and physical characteristics, as well as the current listing of the subject property at an asking price of $2,200,000, it is our opinion that an appropriate value indicator for the subject property is $8.00 per square foot, consistent with the definition of fair market value. Shown below is our calculation of the fair market value for the subject property:

LAND MARKET VALUE

Net Site Area		$/SF		Indicated Value
286,843 Square Feet	x	$8.00	=	$2,294,744
Indicated Value of the Subject Property by the Sales Comparison Approach		**Rounded To:**		**$2,290,000**

RECONCILIATION AND FINAL OPINION OF VALUE

The final step in the appraisal process is the correlation of the three indications of value derived by the Cost, Income Capitalization, and Sales Comparison Approaches. In correlating these three approaches into a final opinion of value, the appraiser has taken into account the purpose of the appraisal, the type of property, and the adequacy of the data processed in each of the three approaches. Most important is which approach most nearly reflects the actions of buyers and sellers in the market. Since the subject property is vacant land, the Cost and Income Capitalization Approaches to value were not relevant.

The Sales Comparison Approach was considered most appropriate in valuing vacant land. There was adequate information regarding similar land sales in the market. The indicated value was based on the analysis of the most recent vacant commercial land sales available in the market. We utilized the Sale Price Per Square Foot Method. Sales were reviewed, inspected, and verified to ensure reliability of the data used in this approach. All adjustments made were judged to be reasonable and given adequate support through the use of market-derived analysis.

Conclusion

The final conclusion or opinion has resulted from the application of the Sales Comparison Approach. In summary, this approach provides a value indicator for vacant land and is most commonly used by market participants. The Sales Comparison Approach is considered to be the primary approach to value. Based on the data presented, analysis, and reconciliation, the Fair Market Value of the Fee Simple Interest in the subject property as of May 15, 2017 is:

TWO MILLION TWO HUNDRED NINETY THOUSAND DOLLARS .....

..... $2,290,000.

A D D E N D A

SUBJECT PHOTOGRAPHS

VIEW OF SUBJECT PROPERTY FROM AGOURA ROAD LOOKING SOUTHEAST

VIEW OF SUBJECT PROPERTY FROM AGOURA ROAD LOOKING SOUTHWEST

STREET SCENE OF AGOURA ROAD LOOKING EAST WITH
SUBJECT PROPERTY TO THE RIGHT OF PHOTOGRAPH

STREET SCENE OF AGOURA ROAD LOOKING WEST
WITH SUBJECT PROPERTY TO THE LEFT OF PHOTOGRAPH

RIGGS & RIGGS, INC.

Real Estate Appraisers and Consultants

4195 Valley Fair Street, Suite 207, Simi Valley, CA 93063

Business: (805) 578-2400 • Fax: (805) 526-6097

E-Mail: appraisal@riggsandriggsinc.com

May 15, 2017

CERTIFIED MAIL
RETURN RECEIPT REQUESTED:

Agoura Hills Center Properties, LLC
4737 Galendo Street
Woodland Hills, California 91364

Re: Notice of Decision to Appraise
30800 Agoura Road
Agoura Hills, CA 91301
APN: 2062-001-025
Agoura Hills Center Properties, LLC Ownership

To whom it may concern:

As you may be aware, Las Virgenes Municipal Water District may need to acquire your property referenced above for an advanced water treatment plant site. Our firm has been retained by Hamner, Jewell & Associates, on behalf of the Las Virgenes Municipal Water District, to appraise your property potentially needed for the project. The purpose of this letter is to invite you and/or your representative to inspect your property with us, if you wish.

If you would like to meet with us to inspect your property, please call me as soon as possible at 805-578-2400, extension 102, to schedule a mutually convenient time to meet at your property. At the time of inspection, we may have questions in regard to your property in order to complete an appraisal. I will be happy to answer any questions you may have relating to the appraisal assignment. We look forward to meeting with you.

Very truly yours,

RIGGS & RIGGS, INC.

Joyce L. Riggs, MAI, SR/WA

JLR:jag

First American Title Insurance Company
National Commercial Services

18500 Von Karman Ave, Suite 600
Irvine, CA 92612

May 18, 2017

Joaquin Vasquez
OLIVAREZ MADRUGA LEMIEUX O'NEILL, LLP
500 South Grand Avenue, Floor 12
Los Angeles, CA 90071
Phone: (213)744-0099
Fax: (213)744-0093

Customer Reference: 30800 Agoura Road

Title Officer:	Jeffery Paschal	Title Assistant:	Ryan Achterberg
Phone:	(949)885-2481	Phone:	
Email:	JPaschal@firstam.com	Email:	rachterberg@firstam.com

Order Number: NCS-851017-SA1

Property: 30800 Agoura Road, Agoura Hills, CA

Attached please find the following item(s):

Commitment

Thank You for your confidence and support. We at First American Title Insurance Company maintain the fundamental principle:

Customer First!

First American Title Insurance Company

INFORMATION

The Title Insurance Commitment is a legal contract between you and the company. It is issued to show the basis on which we will issue a Title Insurance Policy to you. The Policy will insure you against certain risks to the land title, subject to the limitations shown in the policy.

The Company will give you a sample of the Policy form, if you ask.

The Commitment is based on the land title as of the Commitment Date. Any changes in the land title or the transaction may affect the Commitment and the Policy.

The Commitment is subject to its Requirements, Exceptions and Conditions.

This information is not part of the title insurance commitment.

TABLE OF CONTENTS

YOU SHOULD READ THE COMMITMENT VERY CAREFULLY.
If you have any questions about the Commitment,
please contact the issuing office.

COMMITMENT FOR TITLE INSURANCE

Issued by

First American Title Insurance Company

Agreement to Issue Policy

We agree to issue a policy to you according to the terms of this Commitment.

When we show the policy amount and your name as the proposed insured in Schedule A, this Commitment becomes effective as of the Commitment Date shown in Schedule A.

If the Requirements shown in this Commitment have not been met within six months after the Commitment Date, our obligation under this Commitment will end. Also, our obligation under this Commitment will end when the Policy is issued and then our obligation to you will be under the Policy.

Our obligation under this Commitment is limited by the following:

The Provisions in Schedule A.

The Requirements in Schedule B-1.

The Exceptions in Schedule B-2.

The Conditions.

This Commitment is not valid without Schedule A and Sections 1 and 2 of Schedule B.

SCHEDULE A

1. Commitment Date: May 09, 2017 at 7:30 A.M.

2. Policy or Policies to be issued: Amount

(A) ALTA Owner's Policy $To Be Determined
ALTA Standard Owner Policy

Proposed Insured:

To Be Determined

(B) ALTA Loan Policy $To Be Determined
To Be Determined

Proposed Insured:

To Be Determined

3. (A) The estate or interest in the land described in this Commitment is:

FEE

(B) Title to said estate or interest at the date hereof is vested in:

AGOURA HILLS CENTER PROPERTIES, LLC, A CALIFORNIA LIMITED LIABILITY COMPANY

4. The land referred to in this Commitment is situated in the City of Agoura Hills, County of Los Angeles, State of California, and is described as follows:

PARCEL 2 OF PARCEL MAP 15762, IN THE CITY OF AGOURA HILLS, AS PER MAP FILED IN BOOK 175 PAGES 6 AND 7 OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT THEREFROM AN UNDIVIDED ONE-HALF INTEREST IN ALL OIL, GAS, MINERALS AND OTHER HYDROCARBON SUBSTANCES LYING BELOW THE SURFACE OF SAID LAND; BUT WITH NO RIGHT OF SURFACE ENTRY THERETO, AS PROVIDED IN THE DEED RECORDED DECEMBER 29, 1960 AS INSTRUMENT NO. 1450 IN BOOK D1076 PAGE 565, OFFICIAL RECORDS.

ALSO EXCEPT THEREFROM AN UNDIVIDED ONE-HALF INTEREST IN ALL OIL, GAS, MINERALS AND OTHER HYDROCARBON SUBSTANCES LYING BELOW THE SURFACE OF SAID LAND; BUT WITH NO RIGHT OF SURFACE ENTRY THERETO, AS PROVIDED IN THE DEED RECORDED DECEMBER 29, 1960 AS INSTRUMENT NO. 1452 IN BOOK D1076 PAGE 568, OFFICIAL RECORDS.

ALSO EXCEPT THEREFROM AN UNDIVIDED ONE-HALF INTEREST IN ALL OIL, GAS, MINERALS AND OTHER HYDROCARBON SUBSTANCES LYING BELOW THE SURFACE OF SAID LAND; BUT WITH NO RIGHT OF SURFACE ENTRY THERETO, AS PROVIDED IN THE DEED RECORDED MARCH 4, 1983 AS INSTRUMENT NO. 83-248390.

APN: 2061-001-025

SCHEDULE B

SECTION ONE

REQUIREMENTS

The following requirements must be met:

(A) Pay the agreed amounts for the interest in the land and/or the mortgage to be insured.

(B) Pay us the premiums, fees and charges for the policy.

(C) Documents satisfactory to us creating the interest in the land and/or the mortgage to be insured must be signed, delivered and recorded.

(D) You must tell us in writing the name of anyone not referred to in this Commitment who will get an interest in the land or who will make a loan on the land. We may then make additional requirements or exceptions.

(E) Releases(s) or Reconveyance(s) of Item(s): None

(F) Other: None

(G) You must give us the following information:
1. Any off record leases, surveys, etc.
2. Statement(s) of Identity, all parties.
3. Other: None

The following additional requirements, as indicated by "X", must be met:

[X] (H) Provide information regarding any off-record matters, which may include, but are not limited to: leases, recent works of improvement, or commitment statements in effect under the Environmental Responsibility Acceptance Act, Civil Code Section 850, et seq.

The Company's Owner's Affidavit form (as provided by company) must be completed and submitted prior to close in order to satisfy this requirement. This Commitment will then be subject to such further exceptions and/or requirements as may be deemed necessary.

[] (I) An ALTA/NSPS survey of recent date, which complies with the current minimum standard detail requirements for ALTA/NSPS land title surveys, must be submitted to the Company for review. This Commitment will then be subject to such further exceptions and/or requirements as may be deemed necessary.

[X] (J) The following LLC documentation is required:
(i) a copy of the Articles of Organization
(ii) a copy of the Operating Agreement, if applicable
(iii) a Certificate of Good Standing and/or other evidence of current Authority to Conduct Business within the State
(iv) express Company Consent to the current transaction

[] (K) The following partnership documentation is required **:**
(i) a copy of the partnership agreement, including all applicable amendments thereto
(ii) a Certificate of Good Standing and/or other evidence of current Authority to Conduct Business within the State
(iii) express Partnership Consent to the current transaction

[] (L) The following corporation documentation is required:
(i) a copy of the Articles of Incorporation
(ii) a copy of the Bylaws, including all applicable Amendments thereto
(iii) a Certificate of Good Standing and/or other evidence of current Authority to Conduct Business within the State
(iv) express Corporate Resolution consenting to the current transaction

[**X**] (M) Based upon the Company's review of that certain partnership/operating agreement dated **Not disclosed** for the proposed insured herein, the following requirements must be met:

Any further amendments to said agreement must be submitted to the Company, together with an affidavit from one of the general partners or members stating that it is a true copy, that said partnership or limited liability company is in full force and effect, and that there have been no further amendments to the agreement. This Commitment will then be subject to such further requirements as may be deemed necessary.

[] (N) A copy of the complete lease, as referenced in Schedule A, #3 herein, together with any amendments and/or assignments thereto, must be submitted to the Company for review, along with an affidavit executed by the present lessee stating that it is a true copy, that the lease is in full force and effect, and that there have been no further amendments to the lease. This Commitment will then be subject to such further requirements as may be deemed necessary.

[X] (O) Approval from the Company's Underwriting Department must be obtained for issuance of the policy contemplated herein and any endorsements requested thereunder. This Commitment will then be subject to such further requirements as may be required to obtain such approval.

[] (P) Potential additional requirements, if ALTA Extended coverage is contemplated hereunder, and work on the land has commenced prior to close, some or all of the following requirements, and any other requirements which may be deemed necessary, may need to be met:

[] (Q) The Company's "Indemnity Agreement I" must be executed by the appropriate parties.

[] (R) Financial statements from the appropriate parties must be submitted to the Company for review.

[] (S) A copy of the construction contract must be submitted to the Company for review.

[] (T) An inspection of the land must be performed by the Company for verification of the phase of construction.

[] (U) The Company's "Mechanic's Lien Risk Addendum" form must be completed by a Company employee, based upon information furnished by the appropriate parties involved.

SCHEDULE B

SECTION TWO

EXCEPTIONS

Any policy we issue will have the following exceptions unless they are taken care of to our satisfaction. The printed exceptions and exclusions from the coverage of the policy or policies are set forth in Exhibit A attached. Copies of the policy forms should be read. They are available from the office which issued this Commitment.

1. General and special taxes and assessments for the fiscal year 2017-2018, a lien not yet due or payable.

2. The lien of supplemental taxes, if any, assessed pursuant to Chapter 3.5 commencing with Section 75 of the California Revenue and Taxation Code.

3. An easement for drainage, ingress and egress and utilities and incidental purposes in the document recorded January 16, 1973 as Instrument No. 3474 of Official Records.

4. An easement for drainage, ingress and egress and public utilities and incidental purposes in the document recorded January 08, 1985 as Instrument No. 85-24105 of Official Records.

5. An easement shown or dedicated on the map of Parcel Map No. 15762 recorded January 11, 1985 and on file in Book 175, Page 6-7, of Parcel Maps.
For: Natural drainage course and incidental purposes.

6. Abutter's rights of ingress and egress to or from Agoura road, have been dedicated or relinquished on the map of Parcel Map No. 15762 on file in book 175, page 6-7, of Parcel Maps.

7. An easement for private driveway and incidental purposes in the document recorded December 31, 1985 as Instrument No. 85-1546362 of Official Records.

8. An easement for further described in Quitclaim Deed recorded November 12, 2002 as Instrument No. 02-2703646 of Official Records for public utilities and incidental purposes, recorded July 16, 1986 as Instrument No. 86-893413 of Official Records.
In Favor of: Katell/Ahmanson Partnership, a California Limited Partnership
Affects: as described therein

   A document recorded May 22, 2003 as Instrument No. 2003-1462619 of Official Records provides that the interest of the easement holder was transferred to Los Angeles County Flood Control District, a body corporate and politic.

9. The terms and provisions contained in the document entitled Main Extension Refund Agreement: Facilities Constructed by Applicant recorded July 23, 1990 as Instrument No. 90-1277437 of Official Records.

10. The terms and provisions contained in the document entitled Resolution of the Board of Supervisors Relating to the Revision of Fees for the Ventura Freeway/Parkway Calabasas Interchange Construction Fee District recorded March 15, 1991 as Instrument No. 91-371416 of Official Records.

11. An easement for debris basin, ingress and egress and incidental purposes in the document recorded February 25, 1994 as Instrument No. 94-391146 of Official Records.

12. The terms and provisions contained in the document entitled Resolution No. 03-1279: Transfer & Conveyance of Storm Drain Improvements MTD No. 1127 recorded October 23, 2003 as Instrument No. 03-3177797 of Official Records.

13. The terms and provisions contained in the document entitled Resolution No. 03-1279: Transfer & Conveyance of Storm Drain Improvements MTD No. 1127 recorded September 08, 2004 as Instrument No. 04-2309887 of Official Records.

14. An easement for Permanent slope and incidental purposes, recorded February 03, 2014 as Instrument No. 2014-0112285 of Official Records.

In Favor of:	City of Agoura Hills, a municipal corporation
Affects:	as described therein

15. An easement for Permanent slope and incidental purposes, recorded February 03, 2014 as Instrument No. 2014-0112286 of Official Records.

In Favor of:	City of Agoura Hills, a municipal corporation
Affects:	as described therein

16. The lack of a right of access to and from the land.

    Notice: Paragraph 4 of the insuring provisions on the face page of the policy will be deleted from the policy to be issued.

17. Water rights, claims or title to water, whether or not shown by the public records.

18. Rights of parties in possession.

INFORMATIONAL NOTES

NOTE to proposed insured lender only: No Private transfer fee covenant, as defined in Federal Housing Finance Agency Final Rule 12 CFR Part 1228, that was created and first appears in the Public Records on or after February 8, 2011, encumbers the Title except as follows: None

1. Taxes for proration purposes only for the fiscal year 2016-2017.

First Installment:	$3,254.00, PAID
Second Installment:	$3,253.99, PAID
Tax Rate Area:	05981
APN:	2061-001-025

2. The property covered by this report is vacant land.

3. According to the public records, there has been no conveyance of the land within a period of twenty-four months prior to the date of this report, except as follows:

   None

4. This preliminary report/commitment was prepared based upon an application for a policy of title insurance that identified land by street address or assessor's parcel number only. It is the responsibility of the applicant to determine whether the land referred to herein is in fact the land that is to be described in the policy or policies to be issued.

The map attached, if any, may or may not be a survey of the land depicted hereon. First American Title Insurance Company expressly disclaims any liability for loss or damage which may result from reliance on this map except to the extent coverage for such loss or damage is expressly provided by the terms and provisions of the title insurance policy, if any, to which this map is attached.

*****To obtain wire instructions for deposit of funds to your escrow file please contact your Escrow Officer.******

CONDITIONS

1. **DEFINITIONS**
(a)"Mortgage" means mortgage, deed of trust or other security instrument.
(b)"Public Records" means title records that give constructive notice of matters affecting the title according to the state law where the land is located.

2. **LATER DEFECTS**
The Exceptions in Schedule B - Section Two may be amended to show any defects, liens or encumbrances that appear for the first time in the public records or are created or attached between the Commitment Date and the date on which all of the Requirements (a) and (c) of Schedule B - Section One are met. We shall have no liability to you because of this amendment.

3. **EXISTING DEFECTS**
If any defects, liens or encumbrances existing at Commitment Date are not shown in Schedule B, we may amend Schedule B to show them. If we do amend Schedule B to show these defects, liens or encumbrances, we shall be liable to you according to Paragraph 4 below unless you knew of this information and did not tell us about it in writing.

4. **LIMITATION OF OUR LIABILITY**
Our only obligation is to issue to you the Policy referred to in this Commitment, when you have met its Requirements. If we have any liability to you for any loss you incur because of an error in this Commitment, our liability will be limited to your actual loss caused by your relying on this Commitment when you acted in good faith to:

comply with the Requirements shown in Schedule B - Section One
or
eliminate with our written consent any Exceptions shown in Schedule B - Section Two.

We shall not be liable for more than the Policy Amount shown in Schedule A of this Commitment and our liability is subject to the terms of the Policy form to be issued to you.

5. **CLAIMS MUST BE BASED ON THIS COMMITMENT**
Any claim, whether or not based on negligence, which you may have against us concerning the title to the land must be based on this commitment and is subject to its terms.

Privacy Information

We Are Committed to Safeguarding Customer Information

In order to better serve your needs now and in the future, we may ask you to provide us with certain information. We understand that you may be concerned about what we will do with such information - particularly any personal or financial information. We agree that you have a right to know how we will utilize the personal information you provide to us. Therefore, together with our subsidiaries we have adopted this Privacy Policy to govern the use and handling of your personal information.

Applicability

This Privacy Policy governs our use of the information that you provide to us. It does not govern the manner in which we may use information we have obtained from any other source, such as information obtained from a public record or from another person or entity. First American has also adopted broader guidelines that govern our use of personal information regardless of its source. First American calls these guidelines its Fair Information Values.

Types of Information

Depending upon which of our services you are utilizing, the types of nonpublic personal information that we may collect include:

- Information we receive from you on applications, forms and in other communications to us, whether in writing, in person, by telephone or any other means;
- Information about your transactions with us, our affiliated companies, or others; and
- Information we receive from a consumer reporting agency.

Use of Information

We request information from you for our own legitimate business purposes and not for the benefit of any nonaffiliated party. Therefore, we will not release your information to nonaffiliated parties except: (1) as necessary for us to provide the product or service you have requested of us; or (2) as permitted by law. We may, however, store such information indefinitely, including the period after which any customer relationship has ceased. Such information may be used for any internal purpose, such as quality control efforts or customer analysis. We may also provide all of the types of nonpublic personal information listed above to one or more of our affiliated companies. Such affiliated companies include financial service providers, such as title insurers, property and casualty insurers, and trust and investment advisory companies, or companies involved in real estate services, such as appraisal companies, home warranty companies and escrow companies. Furthermore, we may also provide all the information we collect, as described above, to companies that perform marketing services on our behalf, on behalf of our affiliated companies or to other financial institutions with whom we or our affiliated companies have joint marketing agreements.

Former Customers

Even if you are no longer our customer, our Privacy Policy will continue to apply to you.

Confidentiality and Security

We will use our best efforts to ensure that no unauthorized parties have access to any of your information. We restrict access to nonpublic personal information about you to those individuals and entities who need to know that information to provide products or services to you. We will use our best efforts to train and oversee our employees and agents to ensure that your information will be handled responsibly and in accordance with this Privacy Policy and First American's Fair Information Values. We currently maintain physical, electronic, and procedural safeguards that comply with federal regulations to guard your nonpublic personal information.

Information Obtained Through Our Web Site

First American Financial Corporation is sensitive to privacy issues on the Internet. We believe it is important you know how we treat the information about you we receive on the Internet.

In general, you can visit First American or its affiliates' Web sites on the World Wide Web without telling us who you are or revealing any information about yourself. Our Web servers collect the domain names, not the e-mail addresses, of visitors. This information is aggregated to measure the number of visits, average time spent on the site, pages viewed and similar information. First American uses this information to measure the use of our site and to develop ideas to improve the content of our site.

There are times, however, when we may need information from you, such as your name and email address. When information is needed, we will use our best efforts to let you know at the time of collection how we will use the personal information. Usually, the personal information we collect is used only by us to respond to your inquiry, process an order or allow you to access specific account/profile information. If you choose to share any personal information with us, we will only use it in accordance with the policies outlined above.

Business Relationships

First American Financial Corporation's site and its affiliates' sites may contain links to other Web sites. While we try to link only to sites that share our high standards and respect for privacy, we are not responsible for the content or the privacy practices employed by other sites.

Cookies

Some of First American's Web sites may make use of "cookie" technology to measure site activity and to customize information to your personal tastes. A cookie is an element of data that a Web site can send to your browser, which may then store the cookie on your hard drive.

FirstAm.com uses stored cookies. The goal of this technology is to better serve you when visiting our site, save you time when you are here and to provide you with a more meaningful and productive Web site experience.

Fair Information Values

Fairness We consider consumer expectations about their privacy in all our businesses. We only offer products and services that assure a favorable balance between consumer benefits and consumer privacy.

Public Record We believe that an open public record creates significant value for society, enhances consumer choice and creates consumer opportunity. We actively support an open public record and emphasize its importance and contribution to our economy.

Use We believe we should behave responsibly when we use information about a consumer in our business. We will obey the laws governing the collection, use and dissemination of data.

Accuracy We will take reasonable steps to help assure the accuracy of the data we collect, use and disseminate. Where possible, we will take reasonable steps to correct inaccurate information. When, as with the public record, we cannot correct inaccurate information, we will take all reasonable steps to assist consumers in identifying the source of the erroneous data so that the consumer can secure the required corrections.

Education We endeavor to educate the users of our products and services, our employees and others in our industry about the importance of consumer privacy. We will instruct our employees on our fair information values and on the responsible collection and use of data. We will encourage others in our industry to collect and use information in a responsible manner.

Security We will maintain appropriate facilities and systems to protect against unauthorized access to and corruption of the data we maintain.

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EXHIBIT A
LIST OF PRINTED EXCEPTIONS AND EXCLUSIONS (BY POLICY TYPE)

1. CALIFORNIA LAND TITLE ASSOCIATION STANDARD COVERAGE POLICY - 1990
SCHEDULE B

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records. Proceedings by a public agency which may result in taxes or assessments, or notice of such proceedings, whether or not shown by the records of such agency or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.
3. Easements, liens or encumbrances, or claims thereof, which are not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the public records.

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims or other matters:
   (a) whether or not recorded in the public records at Date of Policy, but created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy; or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the insured mortgage or for the estate or interest insured by this policy.
4. Unenforceability of the lien of the insured mortgage because of the inability or failure of the insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with applicable "doing business" laws of the state in which the land is situated.
5. Invalidity or unenforceability of the lien of the insured mortgage, or claim thereof, which arises out of the transaction evidenced by the insured mortgage and is based upon usury or any consumer credit protection or truth in lending law.
6. Any claim, which arises out of the transaction vesting in the insured the estate or interest insured by their policy or the transaction creating the interest of the insured lender, by reason of the operation of federal bankruptcy, state insolvency or similar creditors' rights laws.

2. AMERICAN LAND TITLE ASSOCIATION OWNER'S POLICY FORM B - 1970
SCHEDULE OF EXCLUSIONS FROM COVERAGE

1. Any law, ordinance or governmental regulation (including but not limited to building and zoning ordinances) restricting or regulating or prohibiting the occupancy, use or enjoyment of the land, or regulating the character, dimensions or location of any improvement now or hereafter erected on the land, or prohibiting a separation in ownership or a reduction in the dimensions of area of the land, or the effect of any violation of any such law, ordinance or governmental regulation.
2. Rights of eminent domain or governmental rights of police power unless notice of the exercise of such rights appears in the public records at Date of Policy.
3. Defects, liens, encumbrances, adverse claims, or other matters (a) created, suffered, assumed or agreed to by the insured claimant; (b) not known to the Company and not shown by the public records but known to the insured claimant either at Date of Policy or at the date such claimant acquired an estate or interest insured by this policy and not disclosed in writing by the insured claimant to the Company prior to the date such insured claimant became an insured hereunder; (c) resulting in no loss or damage to the insured claimant; (d) attaching or created subsequent to Date of Policy; or (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the estate or interest insured by this policy.

3. AMERICAN LAND TITLE ASSOCIATION OWNER'S POLICY FORM B - 1970
WITH REGIONAL EXCEPTIONS

When the American Land Title Association policy is used as a Standard Coverage Policy and not as an Extended Coverage Policy the exclusions set forth in paragraph 2 above are used and the following exceptions to coverage appear in the policy.

SCHEDULE B

This policy does not insure against loss or damage by reason of the matters shown in parts one and two following:
Part One

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession thereof.
3. Easements, claims of easement or encumbrances which are not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by public records.
5. Unpatented mining claims; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.
6. Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the public records.

4. AMERICAN LAND TITLE ASSOCIATION LOAN POLICY - 1970
WITH A.L.T.A. ENDORSEMENT FORM 1 COVERAGE
SCHEDULE OF EXCLUSIONS FROM COVERAGE

1. Any law, ordinance or governmental regulation (including but not limited to building and zoning ordinances) restricting or regulating or prohibiting the occupancy, use or enjoyment of the land, or regulating the character, dimensions or location of any improvement now or hereafter erected on the land, or prohibiting a separation in ownership or a reduction in the dimensions or area of the land, or the effect of any violation of any such law ordinance or governmental regulation.
2. Rights of eminent domain or governmental rights of police power unless notice of the exercise of such rights appears in the public records at Date of Policy.
3. Defects, liens, encumbrances, adverse claims, or other matters (a) created, suffered, assumed or agreed to by the insured claimant, (b) not known to the Company and not shown by the public records but known to the insured claimant either at Date of Policy or at the date such claimant acquired an estate or interest insured by this policy or acquired the insured mortgage and not disclosed in writing by the insured claimant to the Company prior to the date such insured claimant became an insured hereunder, (c) resulting in no loss or damage to the insured claimant; (d) attaching or created subsequent to Date of Policy (except to the extent insurance is afforded herein as to any statutory lien for labor or material or to the extent insurance is afforded herein as to assessments for street improvements under construction or completed at Date of Policy).
4. Unenforceability of the lien of the insured mortgage because of failure of the insured at Date of Policy or of any subsequent owner of the indebtedness to comply with applicable "doing business" laws of the state in which the land is situated.

5. AMERICAN LAND TITLE ASSOCIATION LOAN POLICY - 1970
WITH REGIONAL EXCEPTIONS

When the American Land Title Association Lenders Policy is used as a Standard Coverage Policy and not as an Extended Coverage Policy, the exclusions set forth in paragraph 4 above are used and the following exceptions to coverage appear in the policy.

SCHEDULE B

This policy does not insure against loss or damage by reason of the matters shown in parts one and two following:
Part One

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession thereof.
3. Easements, claims of easement or encumbrances which are not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by public records.
5. Unpatented mining claims; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.
6. Any lien, or right to a lien, for services, labor or material theretofore or hereafter furnished, imposed by law and not shown by the public records.

6. AMERICAN LAND TITLE ASSOCIATION LOAN POLICY - 1992
WITH A.L.T.A. ENDORSEMENT FORM 1 COVERAGE
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy;
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.

2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims, or other matters:
(a) whether or not recorded in the public records at Date of Policy, but created, suffered, assumed or agreed to by the insured claimant;
(b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
(c) resulting in no loss or damage to the insured claimant;
(d) attaching or created subsequent to Date of Policy (except to the extent that this policy insures the priority of the lien of the insured mortgage over any statutory lien for services, labor or material or the extent insurance is afforded herein as to assessments for street improvements under construction or completed at date of policy); or
(e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the insured mortgage.
4. Unenforceability of the lien of the insured mortgage because of the inability or failure of the insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with the applicable "doing business" laws of the state in which the land is situated.
5. Invalidity or unenforceability of the lien of the insured mortgage, or claim thereof, which arises out of the transaction evidenced by the insured mortgage and is based upon usury or any consumer credit protection or truth in lending law.
6. Any statutory lien for services, labor or materials (or the claim of priority of any statutory lien for services, labor or materials over the lien of the insured mortgage) arising from an improvement or work related to the land which is contracted for and commenced subsequent to Date of Policy and is not financed in whole or in part by proceeds of the indebtedness secured by the insured mortgage which at Date of Policy the insured has advanced or is obligated to advance.
7. Any claim, which arises out of the transaction creating the interest of the mortgagee insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
(i) the transaction creating the interest of the insured mortgagee being deemed a fraudulent conveyance or fraudulent transfer; or
(ii) the subordination of the interest of the insured mortgagee as a result of the application of the doctrine of equitable subordination; or
(iii) the transaction creating the interest of the insured mortgagee being deemed a preferential transfer except where the preferential transfer results from the failure:
(a) to timely record the instrument of transfer; or
(b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

7. AMERICAN LAND TITLE ASSOCIATION LOAN POLICY - 1992 WITH REGIONAL EXCEPTIONS

When the American Land Title Association policy is used as a Standard Coverage Policy and not as an Extended Coverage Policy the exclusions set forth in paragraph 6 above are used and the following exceptions to coverage appear in the policy.

SCHEDULE B

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession thereof.
3. Easements, claims of easement or encumbrances which are not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by public records.
5. Unpatented mining claims; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.
6. Any lien, or right to a lien, for services, labor or material theretofore or hereafter furnished, imposed by law and not shown by the public records.

8. AMERICAN LAND TITLE ASSOCIATION OWNER'S POLICY - 1992 EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
(b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims, or other matters:
(a) created, suffered, assumed or agreed to by the insured claimant;
(b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
(c) resulting in no loss or damage to the insured claimant;
(d) attaching or created subsequent to Date of Policy; or

(e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the estate or interest insured by this policy.

4. Any claim, which arises out of the transaction vesting in the insured the estate or interest insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
(i) the transaction creating the estate or interest insured by this policy being deemed a fraudulent conveyance or fraudulent transfer; or
(ii) the transaction creating the estate or interest insured by this policy being deemed a preferential transfer except where the preferential transfer results from the failure:
(a) to timely record the instrument of transfer; or
(b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

9. AMERICAN LAND TITLE ASSOCIATION OWNER'S POLICY - 1992
WITH REGIONAL EXCEPTIONS

When the American Land Title Association policy is used as a Standard Coverage Policy and not as an Extended Coverage Policy the exclusions set forth in paragraph 8 above are used and the following exceptions to coverage appear in the policy.

SCHEDULE B

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:
Part One:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession thereof.
3. Easements, claims of easement or encumbrances which are not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by public records.
5. Unpatented mining claims; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.
6. Any lien, or right to a lien, for services, labor or material theretofore or hereafter furnished, imposed by law and not shown by the public records.

ALTA RESIDENTIAL TITLE INSURANCE POLICY (6-1-87)
EXCLUSIONS

In addition to the Exceptions in Schedule B, you are not insured against loss, costs, attorneys' fees, and expenses resulting from:

1. Governmental police power, and the existence or violation of any law or government regulation. This includes building and zoning ordinances and also laws and regulations concerning:
   (a) and use
   (b) improvements on the land
   (c) and division
   (d) environmental protection

   This exclusion does not apply to violations or the enforcement of these matters which appear in the public records at Policy Date.
   This exclusion does not limit the zoning coverage described in Items 12 and 13 of Covered Title Risks.
2. The right to take the land by condemning it, unless:
   (a) a notice of exercising the right appears in the public records on the Policy Date
   (b) the taking happened prior to the Policy Date and is binding on you if you bought the land without knowing of the taking
3. Title Risks:
   (a) that are created, allowed, or agreed to by you
   (b) that are known to you, but not to us, on the Policy Date -- unless they appeared in the public records
   (c) that result in no loss to you
   (d) that first affect your title after the Policy Date -- this does not limit the labor and material lien coverage in Item 8 of Covered Title Risks
4. Failure to pay value for your title.
5. Lack of a right:
   (a) to any land outside the area specifically described and referred to in Item 3 of Schedule A OR
   (b) in streets, alleys, or waterways that touch your land
   This exclusion does not limit the access coverage in Item 5 of Covered Title Risks.

11. EAGLE PROTECTION OWNER'S POLICY

CLTA HOMEOWNER'S POLICY OF TITLE INSURANCE - 1998
ALTA HOMEOWNER'S POLICY OF TITLE INSURANCE - 1998

Covered Risks 14 (Subdivision Law Violation). 15 (Building Permit). 16 (Zoning) and 18 (Encroachment of boundary walls or fences) are subject to Deductible Amounts and Maximum Dollar Limits of Liability

EXCLUSIONS

In addition to the Exceptions in Schedule B, you are not insured against loss, costs, attorneys' fees, and expenses resulting from:

1. Governmental police power, and the existence or violation of any law or government regulation. This includes ordinances, laws and regulations concerning:
   a. building
   b. zoning
   c. land use
   d. improvements on the land
   e. land division
   f. environmental protection

   This exclusion does not apply to violations or the enforcement of these matters if notice of the violation or enforcement appears in the Public Records at the Policy Date.
   This exclusion does not limit the coverage described in Covered Risk 14, 15, 16, 17 or 24.
2. The failure of Your existing structures, or any part of them, to be constructed in accordance with applicable building codes. This Exclusion does not apply to violations of building codes if notice of the violation appears in the Public Records at the Policy Date.
3. The right to take the Land by condemning it, unless:
   a. a notice of exercising the right appears in the Public Records at the Policy Date; or
   b. the taking happened before the Policy Date and is binding on You if You bought the Land without Knowing of the taking.
4. Risks:
   a. that are created, allowed, or agreed to by You, whether or not they appear in the Public Records;
   b. that are Known to You at the Policy Date, but not to Us, unless they appear in the Public Records at the Policy Date;
   c. that result in no loss to You; or
   d. that first occur after the Policy Date - this does not limit the coverage described in Covered Risk 7, 8.d, 22, 23, 24 or 25.
5. Failure to pay value for Your Title.
6. Lack of a right:
   a. to any Land outside the area specifically described and referred to in paragraph 3 of Schedule A; and
   b. in streets, alleys, or waterways that touch the Land.
   This exclusion does not limit the coverage described in Covered Risk 11 or 18.

12. THIRD GENERATION EAGLE LOAN POLICY AMERICAN LAND TITLE ASSOCIATION EXPANDED COVERAGE RESIDENTIAL LOAN POLICY (1/01/08)

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to (i) the occupancy, use, or enjoyment of the Land; (ii) the character, dimensions, or location of any improvement erected on the Land; (iii) the subdivision of land; or(iv) environmental protection; or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5, 6, 13(c), 13(d), 14 or 16.
   (b)Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 5, 6, 13(c), 13(d), 14 or 16.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters
   (a) created, suffered, assumed or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 16, 17, 18, 19, 20, 21, 22, 23, 24, 27 or 28); or
   (e) resulting in loss or damage which would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.
4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing business laws of the state where the Land is situated.
5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury, or any consumer credit protection or truth-in-lending law. This Exclusion does not modify or limit the coverage provided in Covered Risk 26.
6. Any claim of invalidity, unenforceability or lack of priority of the lien of the Insured Mortgage as to Advances or modifications made after the Insured has Knowledge that the vestee shown in Schedule A is no longer the owner of the estate or interest covered by this policy. This Exclusion does not modify or limit the coverage provided in Covered Risk 11.
7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching subsequent to Date of Policy. This Exclusion does not modify or limit the coverage provided in Covered Risk 11(b) or 25.
8. The failure of the residential structure, or any portion of it, to have been constructed before, on or after Date of Policy in accordance with applicable building codes. This Exclusion does not modify or limit the coverage provided in Covered Risk 5 or 6.

13. AMERICAN LAND TITLE ASSOCIATION LOAN POLICY - 2006
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or

expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to

   (i) the occupancy, use, or enjoyment of the Land;

   (ii) the character, dimensions, or location of any improvement erected on the Land;

   (iii) the subdivision of land; or

   (iv) environmental protection;

   or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.

   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.

2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.

3. Defects, liens, encumbrances, adverse claims, or other matters

   (a) created, suffered, assumed, or agreed to by the Insured Claimant;

   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;

   (c) resulting in no loss or damage to the Insured Claimant;

   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 13, or 14); or

   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.

4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing-business laws of the state where the Land is situated.

5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury or any consumer credit protection or truth-in-lending law.

6. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction creating the lien of the Insured Mortgage, is

   (a) a fraudulent conveyance or fraudulent transfer, or

   (b) a preferential transfer for any reason not stated in Covered Risk 13(b) of this policy.

7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the Insured Mortgage in the Public Records. This Exclusion does not modify or limit the coverage provided under Covered Risk 11(b).

14. AMERICAN LAND TITLE ASSOCIATION LOAN POLICY - 2006 WITH REGIONAL EXCEPTIONS

When the American Land Title Association policy is used as a Standard Coverage Policy and not as an Extended Coverage Policy the exclusions set forth in paragraph 13 above are used and the following exceptions to coverage appear in the policy.

SCHEDULE B

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.
3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.
4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.

15. AMERICAN LAND TITLE ASSOCIATION OWNER'S POLICY - 2006 EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to

   (i) the occupancy, use, or enjoyment of the Land;

   (ii) the character, dimensions, or location of any improvement erected on the Land;

   (iii) the subdivision of land; or

   (iv) environmental protection;or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.

(b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.

2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.

3. Defects, liens, encumbrances, adverse claims, or other matters

(a) created, suffered, assumed, or agreed to by the Insured Claimant;

(b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;

(c) resulting in no loss or damage to the Insured Claimant;

(d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risks 9 and 10); or

(e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.

4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors rights laws, that the transaction vesting the Title as shown in Schedule A, is

(a) a fraudulent conveyance or fraudulent transfer; or

(b) a preferential transfer for any reason not stated in Covered Risk 9 of this policy.

5. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

16. AMERICAN LAND TITLE ASSOCIATION OWNER'S POLICY - 2006 WITH REGIONAL EXCEPTIONS

When the American Land Title Association policy is used as a Standard Coverage Policy and not as an Extended Coverage Policy the exclusions set forth in paragraph 15 above are used and the following exceptions to coverage appear in the policy.

SCHEDULE B

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.
3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.
4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.

APPRAISER QUALIFICATIONS

JOYCE L. RIGGS, MAI, SR/WA

APPRAISAL EXPERIENCE

Entered the appraisal profession in **1988** as an appraisal assistant with B.G.R. Appraisals in Simi Valley, California. Services rendered involved appraisal report preparation for a variety of property types including: commercial/retail and office; industrial; bulk acreage; and multi-family residential.

In **1991**, I accepted a position as a Real Estate Representative for The Metropolitan Water District of Southern California ("MWDSC"). Services rendered involved appraisal report preparation, review, mass appraisal cost studies for budget purposes, and evaluation of full and partial takings of property for capital projects and surplus portfolio properties; coordination between Legal, Right-of Way, Engineering, Planning, and Environmental Divisions relative to appraisal issues as appraisal project manager of the Diamond Valley Reservoir Project, a capital project.

From **1993** to **2001**, I was associated with the appraisal firm of Mason & Mason in Montrose, California. Services rendered involved appraisal review, and full and partial take appraisal report preparation of retail, office, industrial, agricultural, and residential uses, including determination of severance damages and/or benefits for condemnation acquisitions, redevelopment acquisitions, property tax appeals, deficiency judgments, financial decisions, and planning purposes throughout Southern California.

Since **2001**, I joined Riggs & Riggs, Inc., an appraisal and consulting firm in Simi Valley, California, and serve as Vice President of the corporation. Services rendered include expert witness testimony, appraisal review, appraisal report preparation for full and partial take of fee, permanent easement, or temporary easement right of way assignments, and appraisal report preparation for private and lending assignments. Property types include retail, office, industrial, agricultural, mobile home parks, and residential uses, including determination of severance damages and/or benefits for condemnation acquisitions, redevelopment acquisitions, property tax appeals, deficiency judgments, financial decisions, and planning purposes. Appraisal assignments have been undertaken in the Fresno, Kern, Kings, Los Angeles, Madera, Ventura, Orange, Riverside, San Bernardino San Diego, and Santa Barbara County regions.

Experience includes completion or major contributions to the following:

- Litigation appraisals for the widening and realignment of Lewis Road and U.S. Highway 101, Highway 395 and Phelan Road, and realignment and widening projects along the 405, 210, 5, 10, 15, 134, 138, 215, 91/215/60 Interchange, and 395, freeways and State Routes in Los Angeles, San Bernardino, Ventura, Orange, and Riverside Counties
- Appraisals of partial fee, easement, and temporary construction easement acquisitions for the several rail/grade separation projects in Los Angeles and Orange Counties for ACE, OCTA, and Cities of Fullerton, La Mirada, and Santa Fe Springs
- Litigation appraisals and appraisals for acquisition for the California High-Speed Rail Project of partial fee, easement, and temporary construction easement acquisitions in Fresno, Kern, Madera, and Kings Counties
- Consulting Valuation Cost Study prepared for budgeting purposes relative to the projects in Riverside and Orange Counties for The Metropolitan Water District of Southern California, Riverside County Flood Control & Water Conservation District, and a Grade Separation Project for OCTA and HDR Pharos
- Appraisal for Partial Acquisition for Valley Ivy Glen Transmission Project in Riverside County, and Distribution Projects in Ventura and Orange Counties, for Southern California Edison, Los Angeles County
- Appraisals of partial fee, permanent, & temporary construction easement acquisitions for Murrieta Creek Project Phases 1 & 2, Prado Dam, and Eagle Canyon Dam, for Riverside County Flood Control and Water Conservation District, Temecula, Palm Springs, and Cathedral City
- Appraisals of property for conservation easement purposes for the City of Temecula, The Land Conservancy, LVUSD, and County of Riverside

- Litigation appraisals for inverse condemnation cases proximate to Ontario Airport, Santa Monica Airport, and 210 Freeway extension through San Bernardino County, to determine diminution in value freeway effects, if any, and airport noise and vibrations, in the City of Ontario, San Bernardino County and in the West Los Angeles area; and other inverse condemnation cases in Malibu and West Los Angeles

The following is a partial list of government agencies, attorneys, and private clients:

Adorno, Yoss, Alvarado & Smith
Best, Best & Krieger
California Department of Transportation
City of Agoura Hills
City of Los Angeles - General Services
City of Los Angeles - Department of Airports
City of Palm Springs
City of Pasadena
City of Riverside
City of Santa Clarita
City of Yucaipa
County of Orange
County of Riverside
County of San Bernardino
County of Ventura
Demetriou, Del Guercio, Springer & Francis
Eastern Municipal Water District
Epic Land Solutions, Inc.
Mitchell Silberberg & Knupp
Glendale Community College
HDR Engineering, Inc.
Los Angeles County Metropolitan Transportation Authority
The Metropolitan Water District of So. California
Metrolink
McCormick, Kidman & Behrens
Mullen & Henzel
Murphy & Evertz
Nevers, Palazzo, Maddux & Packard, PLC
Nossaman, Guthner, Knox & Elliott, LLP
Orange County Transportation Authority
Port of Long Beach
Paragon Partners, Ltd.
Richards, Watson & Gershon
Riverside County Flood Control & Water Conservation District
Riverside County Transportation Commission
Sempra Energy/Southern California Gas Co.
Southern California Edison
State of California, Department of Justice
Stradling, Yocca, Carlson, & Rauth
University of California, Riverside
Western Municipal Water District
Woodruff, Spradling & Smart
United States Army Corps of Engineers
Yaspan & Thau

PROFESSIONAL AFFILIATIONS, ACTIVITIES, TRAINING & CERTIFICATION

Elected to MAI designated membership in the Appraisal Institute, October 1995, Member No. 10852; certified through 2020, under Appraisal Institute's Voluntary Continuing Educational Program
Certified General Real Estate Appraiser, State of California; recertified to April 7, 2019, No. AG005451
Senior Right of Way Member, International Right of Way Association, Member No. 4495; certified through 2019
Qualified as an expert witness in Ventura, Los Angeles, Orange, San Bernardino, and Riverside Superior Courts

SPECIALIZED APPRAISAL COURSES

Appraisal Institute Courses

Real Estate Appraisal Principles
Basic Valuation Procedures
Capitalization Theory and Techniques Part A
Capitalization Theory and Techniques Part B
7 Hour USPAP Update
Report Writing and Valuation Analysis
Advanced Applications
OREA Update Workshop
Business Practices & Ethics

American Society of Farm Managers & Rural Appraisers

Best Practices in Rural Property Appraisals

International Right of Way Association

Principles of Real Estate Acquisition
Engineering, Course 101
Business Practices & Ethics Professionals, Course 103
Bargaining Negotiations, Course 205
Presentation Skills, Course 206
Appraisal of Partial Acquisitions, Course 401
Easement Valuation, Course 402
Integrating Appraisal Standards, Course 409
Introduction to Property Management, Course 700
Legal Aspects of Easements, Course 802
Eminent Domain Law Basics for R/W, Course 803
Skills of Expert Testimony, Course 804
Engineering Plan Development and Application, Course 901

Attended numerous workshops and seminars presented by the Appraisal Institute and International Right of Way Association.

POSITIONS HELD

Appraisal Institute

Region VII

1996-1998	General Guidance Committee Chairperson

Southern California Chapter

2006-2007	Director of Central Coast Branch, Litigation Seminar Chairperson
2004	Immediate Past President, Nominating and Litigation Seminar Chairperson
2003	President
2002	Vice President and Region VII Representative
2001	Treasurer
1999 - 2000	Director
1998	Secretary
1997	General Guidance Committee Chairperson
1996 - 1998	Experience Review Committee
1997, 2006, 2012	Litigation Seminar Chairperson
1995 - 1997	Installation Committee Chairperson
1994 - 1995	Candidate Liaison and Chairperson Candidate Leadership Committee

International Right of Way Association (IRWA) Chapter 1 Activities

2005	Secretary and Nominations/Awards Chair
2005 to Present	PDC Member
2001	Immediate Past President, Nominating and Awards Chairperson
2000	President
1999	President Elect and International Director
1998	Vice President
1997	Treasurer
1996, 2001, 2006-7	Fall Seminar Committee Chairperson and/or Committee Member

1996-97, 1999, 2005-2007, 2009-2011 Valuation Conference Committee Member

TEACHING EXPERIENCE

1999 Instructor, Real Estate Principles at Glendale Community College
1998 Instructor, Real Estate Appraisal at Glendale Community College

EDUCATIONAL BACKGROUND

California State University, Northridge (1990)
Bachelor of Science Degree in Business Administration with dual emphasis in Real Estate and Finance

AWARDS

Professional Services Award – Presented by International Right of Way Association, Chapter 1, 2007
Volunteer of Distinction – Presented by the Appraisal Institute, 2012

Technical Memorandum

Pure Water Project - AWTP Preliminary Siting Study

Subject:	**Preliminary Evaluation of 30800 Agoura Road Site**
Prepared For:	David Lippman, Las Virgenes Municipal Water District John Zhao, Las Virgenes Municipal Water District
Prepared By:	Brian Dietrick, P.E., Woodard & Curran Rosalyn Prickett, Woodard & Curran Lori Prentice, Oakridge Geoscience Bruz Meade, Associated Right of Way Services
Reviewed by:	Rich Bichette, P.E., Woodard & Curran Tom Richardson, P.E., Woodard & Curran
Date:	July 26, 2017
Reference:	0254-004

1 Background and Purpose

This technical memorandum (TM) presents a preliminary evaluation of the suitability of a specific parcel of land being considered by the Las Virgenes – Triunfo Joint Powers Authority (JPA) for the construction of an Advanced Water Treatment Plant (AWTP). It is part of a more comprehensive AWTP Siting Study being conducted as part of the Pure Water Program for Las Virgenes – Triunfo JPA. The parcel in question, located at 30800 Agoura Road in Agoura Hills (APN-2061-001-025), was previously identified as a potential site in the 2016 Basis of Design Report (2016 BODR) and was listed for sale on the open market in April 2017. Las Virgenes Municipal Water District (LVMWD) secured an option to purchase and is now conducting a due diligence investigation of the site's feasibility.

The objectives of this TM are to (1) summarize information obtained from available documents and a field visit on June 20th to the property address; (2) identify potential fatal flaws related to the use of the site for an AWTP; and (3) identify other potential issues and cost concerns that should be considered. The documents reviewed contain information related to site conditions, environmental resources, title, land use, and geotechnical studies; they are listed in **Appendix A**.

This TM also includes a preliminary site layout and list of facilities/equipment for an AWTP (**Appendix B**). The overall objective of the TM is to inform the decision by the JPA Board related to exercising the purchase option.

2 JPA Policy Principles

The JPA has developed the following policy principles to be applied to the 30800 Agoura Road property, and potentially to other properties that may be considered for an AWTP.

1. Involve the City and the Community in the development and design of facilities.
2. Preserve the natural beauty of the site.
3. Reserve a portion of the property for public benefit in coordination with the City of Agoura Hills.

4. Minimize the impact to oak trees and other natural resources on the property.
5. Design the facilities with architecture compatible with the surrounding area.
6. Minimize the overall footprint of the facility.
7. Provide for the on-site treatment and/or capture of stormwater.
8. Keep the community and recreational users informed of any project-related activities that may affect them.
9. Minimize the potential for noise or light to emanate from the site.
10. Utilize renewable energy sources to offset demands at the site.

To the extent possible, these principles were observed in the preliminary site layout (Appendix B).

3 Summary of Key Findings

The analyses conducted for this TM did not identify any fatal flaws. Based on the information obtained thus far, the site is feasible for the construction and operation of an AWTP.

The primary findings from the analysis are summarized as follows. Additional detail is provided in **Table 1**. Detailed descriptions of the Title/Land Use, geotechnical, and environmental analyses are provided as **Appendices C, D,** and **E**, respectively.

- **An example AWTP layout was developed, and the footprint fits on the site while supporting relevant Policy Principles.** The layout assumes an AWTP facility with a capacity of 6.0 mgd of product water that operates during the off-peak season from October through May. The site layout does not utilize the western area of the property and assumes that area will be reserved for public benefit, per Policy Principle No. 3. In addition, the flood control easements and riparian areas are avoided. The layout also makes use of multi-level placement of wet wells and other facilities to minimize the overall footprint, per Policy Principle No. 6; and it assumes soil nail wall construction to minimize the affected area during construction. The layout observes all setback requirements. It is configured such that six oak trees over 6 inches in diameter (LA County threshold) will be impacted (reduced from 38 trees impacted by the proposed senior center development) and a retaining wall with a maximum height of 23 feet will be required (reduced from 27 feet). Space is allocated for on-site capture of stormwater from the site per Policy Principle No. 7, though infiltration may not be feasible per the geotechnical reports. It is assumed that the retaining wall will be constructed with a natural-appearing facade and that an architectural style compatible with the surrounding community will be utilized for the buildings that house AWTP facilities; these measures will support Policy Principle No. 2. The fact that buildings will be used to house all equipment and treatment facilities will support Policy Principle No. 9.
- **Seller must provide satisfactory evidence of legal access** to the subject property for the title company to clear Title Report Exception #6 and Exception #16, accompanied by written confirmation from the City of Agoura Hills.
- **Mitigation measures for six potential resource topics and 27 potential special status species may be required**. Additional technical studies will be needed to address these six potential resource topics.

Table 1: Preliminary Analysis of 30800 Agoura Road Site

Topic	Documents Reviewed	Fatal Flaws	Key Preliminary Findings	Implications/Action Items
Site Layout	*Recycled Water Seasonal Storage Basis of Design Report* *Process Flow Diagram, Las Virgenes Municipal Water District Pure Water Project Las Virgenes-Triunfo Demonstration Project, Draft Preliminary Design Report*	None	• AWTP can be constructed on reduced footprint using multi-level configuration • Multiple buildings are used to house AWTP facilities • Driveway fire access provided • Western area preserved for public benefit • LACFCD easements can be avoided • Jurisdictional wetland areas can be avoided • Setback requirements are observed • Extra space allocated for influent/effluent equalization storage, if needed • Space allocated for stormwater capture/infiltration facilities • Soil nail wall construction may be used to minimize footprint during construction • Oak tree impacts minimized - six oak trees over 6-inch diameter are affected • Retaining wall height minimized - maximum height 23 feet	• Confirm treatment train • Confirm influent and effluent storage needs • Confirm City preferences for retaining wall appearance • Confirm City preferences for building architectural style
Site Grading/ Topography	*Oak Tree Report Agoura Hills Senior Center Housing* *Preliminary Hydrology & Hydraulics Report* *Std. Urban Stormwater Mitigation Plan*	None	• Grading plan from Agoura Hills Senior Center was used as basis for preliminary AWTP grading • Site area includes 5.9 acres of drainage • 16.6% of site is impervious • Bioswales and retention basin assumed for stormwater capture of approximately 0.40 cfs	• Develop detailed grading plan • Develop detailed stormwater capture plan (infiltration limited due to soils)

Topic	Documents Reviewed	Fatal Flaws	Key Preliminary Findings	Implications/Action Items
Title/Land Use	*Ladyface Specific Plan* *Ladyface Specific Plan EIR* *Agoura Hills General Plan* *Agoura Hills General Plan 2035 EIR* *Preliminary Title Report, 30800 Agoura Road*	None	• Parcel zoning is for business park/office retail • Maximum building pad area = 2.42 acres • Conditional Use Permit is not required • Preservation of oak trees is a goal of the Ladyface Specific Plan; mitigation plan required • Sensitivity to natural features preferred • Preliminary Title Report indicates two exceptions: o #6 – indicates "abutter's rights of ingress and egress to or from Agoura Road have been dedicated or relinquished on the map of Parcel Map No. 15762" o #16 – indicates "the lack of a right of access to and from the land"	• Work with seller and City of Agoura Hills to clear the title exceptions #6 and #16 • Minimize impacts to oak trees > 6" diameter; develop mitigation plan in conformance with City Oak Tree Preservation Guidelines and Regulations (Section 9650.700).
Geotechnical	*2000 Results of Preliminary Geotechnical Investigation* *2003 Geotechnical Update Study – Park at Ladyface* *2007 Geotechnical Update Study – Senior Housing Community* *2014 Geotechnical Site Evaluate Update Report* *2014 Geotechnical Response to City of Agoura Hills Review Sheets*	None	• Cut and fill grading OK; 2H:1V slopes OK • Site not located within fault zone • No active or potentially active faults cross or trend toward site • Soils not prone to liquefaction • Potential for seismic settlement is low • Potential for landslide/slope instability is low • GW within 10' of surface in northern portion near Agoura Rd. (County LID requires minimum 10') • Infiltration test pit indicated 0.09 inches per hour (less than 0.3 in/hr req. by County LID manual) • Potential for expansive soils moderate to very high • Rippability – typical construction equipment should be acceptable • Soil nail wall feasible	• Site likely not suitable for stormwater infiltration • Final design will need to consider mitigations for expansive soils • Confirm acceptability of soil nail wall • Additional subsurface exploration is needed to confirm geotechnical conditions

Topic	Documents Reviewed	Fatal Flaws	Key Preliminary Findings	Implications/Action Items
Environmental	*Oak Tree Report* *Biological Resources Inventory* *Agoura Hills General Plan 2035 EIR* *Ladyface Specific Plan EIR* *Spring 2014 Rare Plant Survey* *Phase 1 Environmental Site Assessment*	None	• Initial Study identified six potential resource topics o Biological Resources o Greenhouse Gas Emissions o Cultural Resources o Air Quality o Hydrology and Water Quality o Mandatory Findings of Significance • Mitigation measures will likely be required • Site includes jurisdictional features: three natural drainages, one artificial drainage, and one artificial seasonal wetland • Air Quality – emissions from construction and operations must be compared to SCAQMD significance thresholds • Biological Resources – 27 special status species may occur within proximity (13 plants, 14 animals) • Cultural – no existing historic structures; Phase I and Phase II surveys already conducted with no remains discovered; but archeological resources were discovered in proximity of project	Technical Studies should be included in subsequent CEQA efforts: • Air Quality Analysis • Biological Resources Assessment • Cultural Resources Assessment • Hydrogeological Assessment (at reservoir location) Other implications: • Consult with CDFW, USACE, RWQCB • Configure site layouts to avoid jurisdictional wetlands

Appendix A – List of References/Documents

Agoura Hills Senior Housing: Oak Tree Report

Biological Resources Inventory and Impact Analysis

City of Agoura Hills, General Plan 2035 EIR

City of Agoura Hills, Ladyface Mountain Specific Plan

City of Agoura Hills, Ladyface Mountain Specific Plan EIR

First American Title Insurance Company – Preliminary Title Report dated May 9, 2017, Commitment No. NCS-951017-SA1; 30800 Agoura Road; APN: 2061-001-025.

Geotechnical Response to City of Agoura Hills Review Sheet Dated April. 18, 2014, Senior Housing Community, Vesting Tentative Tract Number 71742 (APN# 2061-001-025, 30800 Agoura Road, Agoura Hills, California

Geotechnical Update Study – The Park at Ladyface Mountain, Senior Housing Community, APN# 2061-001-025, 30800 Agoura Road, Agoura Hills, California

Geotechnical Update Study, Senior Housing Community, APN# 2061-001-025, 30800 Agoura Road, Agoura Hills, California

Las Virgenes Municipal Water District Pure Water Project Las Virgenes-Triunfo Demonstration Project, Draft Preliminary Design Report, CDM Smith, May 2017.

Las Virgenes-Triunfo Joint Powers Authority Recycled Water Seasonal Storage Basis of Design Report, MWH/Stantec, September 2016.

Phase I Environmental Site Assessment, APN# 2061-001-025 and 30800 Block of Agoura Road, Agoura Hills, California

Preliminary Hydrology & Hydraulics Report for Parcel 2 of Parcel map No. 15762
Results of Preliminary Geotechnical Investigation, Agoura Hills Project

Spring 2014 Rare Plant Survey: The Park at Ladyface Project Site

Standard Urban Stormwater Mitigation Plan (SUSMP) for Tentative Tract Map No. 71742

Appendix B – Preliminary AWTP Site Layout

An example AWTP layout was developed for this analysis; the footprint fits on the site while supporting relevant Policy Principles. The layout assumes an AWTP facility with a capacity of 6.0 mgd of product water that operates during the off-peak season from October through May. The site layout does not utilize the western area of the property and assumes that area will be reserved for public benefit, per Policy Principle No. 3. In addition, the flood control easements and riparian areas are avoided. The layout also makes use of multi-level placement of wet wells and other facilities to minimize the overall footprint, per Policy Principle No. 6; and it assumes soil nail wall construction to minimize the affected area during construction. The layout observes all setback requirements. It is configured such that six oak trees over 6 inches in diameter (i.e., the LA County threshold) will be impacted (reduced from 38 trees impacted by the proposed senior center development) and a retaining wall with a maximum height of 23 feet will be required (reduced from 27 feet). Space is allocated for on-site capture of stormwater from the site per Policy Principle No. 7, though infiltration may not be feasible per the geotechnical reports. It is assumed that the retaining wall will be constructed with a natural-appearing facade and that an architectural style acceptable to the City will be utilized for the buildings that house AWTP facilities; these measures will support Policy Principle No. 2.

The following list of assumptions were developed for the AWTP conceptual site layout. These assumptions are based on information obtained from:

- *Recycled Water Seasonal Storage Basis of Design Report, MWH/Stantec, September 2016*
- *Process Flow Diagram, Recycled Water Seasonal Storage Demonstration Project, CDM Smith, May 2017*

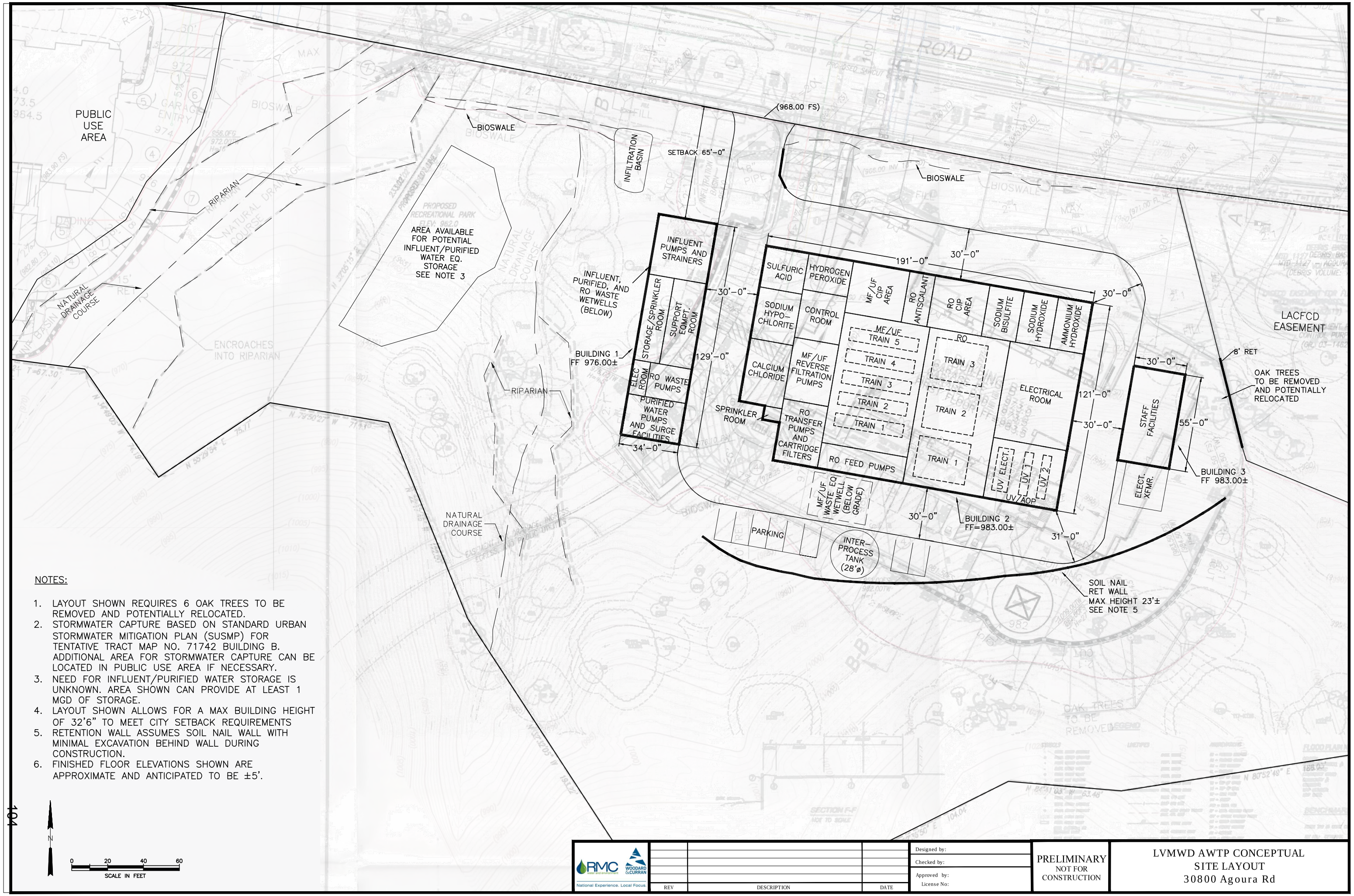
AWTP Site Layout Facility Assumptions	
General Facility Information	• Operates during irrigation off-peak season (Oct. – May) • Production capacity of 6 mgd (influent flow of 7.4 mgd)
Influent Feed	• Delivered on demand from tertiary distribution system; tertiary system storage would provide buffering against diurnal flow availability • Influent flow repumped to UF units from a clearwell with minimal storage capacity • Metering included • Strainers included
Chemical storage	• 30-day chemical storage (i.e. deliveries once per month)
Water Conditioning	• Chemical conditioned (no decarbonator tower) • Chemicals added for remineralization of purified water
Ultrafiltration (UF)	• Footprint sized per MWH BODR • 5 trains
Reverse Osmosis (RO)	• Footprint sized per MWH BODR • 3-stage
UV-Advanced Oxidation Process (AOP)	• Footprint sized per MWH BODR • 2 trains
Purified Water	• Collected in a clearwell with minimal storage capacity • Pumped to reservoir on demand (as water is produced)

	• Surge tank included to protect distribution system
Waste Disposal – RO Concentrate	• Collected in a wet well with 6-hr holding capacity • RO concentrate pump included
Waste Disposal – Other wastes (e.g. UF backwash, strainer backwash, etc)	• Collected in a wet well with 6-hr holding capacity • Gravity flow to street sewer for disposal; gate controlled to cease flow if needed (e.g. during a large storm event)
Staffing	• Facility staffed full time (2-3 staff per shift) • On-site control room • On-site staff accommodations (locker room, break room, parking)

Stormwater Mitigation

- Site area includes a total of 5.9 acres, resulting in 16.6% of site as impervious area
- Total treatment flow 0.40 cfs resulting in treatment volume of 2,420 cubic feet
- Assumed infiltration basins or bioswales will be installed in public use area in western portion of parcel

Reference: SUSMP for Tentative Tract Map No. 71742 (Hardy Engineering)



NOTES:

1. LAYOUT SHOWN REQUIRES 6 OAK TREES TO BE REMOVED AND POTENTIALLY RELOCATED.
2. STORMWATER CAPTURE BASED ON STANDARD URBAN STORMWATER MITIGATION PLAN (SUSMP) FOR TENTATIVE TRACT MAP NO. 71742 BUILDING B. ADDITIONAL AREA FOR STORMWATER CAPTURE CAN BE LOCATED IN PUBLIC USE AREA IF NECESSARY.
3. NEED FOR INFLUENT/PURIFIED WATER STORAGE IS UNKNOWN. AREA SHOWN CAN PROVIDE AT LEAST 1 MGD OF STORAGE.
4. LAYOUT SHOWN ALLOWS FOR A MAX BUILDING HEIGHT OF 32'6" TO MEET CITY SETBACK REQUIREMENTS
5. RETENTION WALL ASSUMES SOIL NAIL WALL WITH MINIMAL EXCAVATION BEHIND WALL DURING CONSTRUCTION.
6. FINISHED FLOOR ELEVATIONS SHOWN ARE APPROXIMATE AND ANTICIPATED TO BE ±5'.

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RMC Water and Environment
WOODARD & CURRAN
National Experience. Local Focus

REV	DESCRIPTION	DATE

Designed by:
Checked by:
Approved by:
License No:

PRELIMINARY
NOT FOR CONSTRUCTION

LVMWD AWTP CONCEPTUAL SITE LAYOUT
30800 Agoura Rd

Appendix C – Land Use/Title Due Diligence Summary

Las Virgenes Municipal Water District – Due Diligence Summary

30800 Agoura Road – Parcel No. 2061-1-25

Report: Final Ladyface Mountain Specific Plan (September 1991)

Summary: Subject's Zoning = BP-OR (Business Park/Office Retail)

Maximum Building Area under Scenario 1-A = 24,000 s.f.
Total Developable Pad Area = 2.42 acres

Maximum Building Area under Scenario 2-A = 34,000 s.f.
Total Developable Pad Area = 2.42 acres

Report: Ladyface Mountain Specific Plan – Environmental Impact Report (February 1990)

Summary: Limit development below 1,100' elevation.
Limit development to approximately 65 acres of 747 total acres.
Preservation of Ladyface Mountain as a natural landmark and open space resource.
Sensitivity to natural features, archaeological deposits, geologic hazards, oak trees, and natural drainage courses.
Avoid Oak trees >6" diameter – protected by L.A. County law.

Report: City of Agoura Hills General Plan 2035 – March 2010

Summary: Goal LU-18 – Public and Quasi-Public Uses Supporting Resident Needs. Governmental, utility…

Goal LU-23 - Planned Development District – Ladyface Mountain Specific Plan – Development to be managed in accordance with the design guidelines, development regulations and requirements, and implementation processes specified by the Ladyface Mountain Specific Plan (Imp LU-15).

Goal U-1.2 – Water Treatment Capacity and Infrastructure - Work with the Las Virgenes Municipal Water District and other applicable agencies to develop sufficient water-treatment capacity and infrastructure to meet projected water demands. Also (U-1, U-2, U-5)

Report: City of Agoura Hills General Plan 2035 – Environmental Impact Report (February 2010)

Summary: Goal LU-18 - Public and Quasi-Public Uses Supporting Resident Needs. Governmental, utility…

Goal LU-23 – Planned Development District – Ladyface Mountain Specific Plan – Development to be managed in accordance with the design guidelines, development regulations and requirements, and implementation processes specified by the Ladyface Mountain Specific Plan (Imp LU-15).

Goal U-1.2 - Water Treatment Capacity and Infrastructure - Work with the Las Virgenes Municipal Water District and other applicable agencies to develop sufficient water-treatment capacity and infrastructure to meet projected water demands.

Report: First American Title Insurance Company – Preliminary Title Report dated May 9, 2017 Commitment No. NCS-951017-SA1; 30800 Agoura Road; APN: 2061-001-025

Summary: Title Report Schedule B, Section Two; Exception #6 indicates that 'Abutter's rights of ingress and egress to or from Agoura Road have been dedicated or relinquished on the map of Parcel Map No. 15762'; Exception #16 indicates 'The lack of a right of access to and from the land'. **IN ORDER TO CLEAR THESE TITLE EXCEPTIONS, THE SELLER MUST PROVIDE SATISFACTORY EVIDENCE OF LEGAL ACCESS RIGHTS TO THE SUBJECT PARCEL WITH WRITTEN CONFIRMATION FROM THE CITY OF AGOURA HILLS.**

Overall summary:

A proposed water treatment plant appears to be a compatible use based on a review of the respective General and Specific Plans referenced above. Generally, a proposed use not specifically listed as a permitted use under the current zoning must be granted through issuance of a Conditional Use Permit by the City of Agoura Hills. However, according to a legal opinion provided by Lemieux & O'Neill dated June 22, 2017, the Las Virgenes Municipal Water District's proposed advanced water treatment plant would be exempt from a Conditional Use Permit requirement under Gov. Code 53091 (d) and (e). It is imperative that the seller provide satisfactory evidence of legal access to the subject property in a format acceptable to the title company in order to clear the title exceptions specified above.

Reviewed by Bruz Meade AR/WS

Appendix D – Preliminary Geotechnical Desktop Study for Due Diligence Review

PO Box 2540, Camarillo, California 93011
www.Oakridgegeo.com
805-368-7765

June 30, 2017
Project No. 041.001

RMC Water
888 South Figueroa Street, Suite 1700
Los Angeles, California 90017

Attention: Mr. Brian Dietrick

Subject: Preliminary Geotechnical Desktop Study for the Due Diligence Review, 30800 Agoura Road, Agoura Hills, Pure Water Project Advanced Water Treatment Plant Siting Study, Las Virgenes-Triunfo Joint Powers Authority

Dear Mr. Dietrick:

INTRODUCTION

Oakridge Geoscience, Inc. (OGI) is pleased to provide this preliminary geotechnical desktop study as part of the due diligence review of a potential site being considered by the Las Virgenes-Triunfo Joint Powers Authority (LVTJPA) for the Pure Water Project Advanced Water Treatment Plant (AWTP) site. The potential site is located at 30800 Agoura Road in Agoura Hills, California.

PURPOSE

The purpose of the study is to provide a summary of anticipated conditions that may exist based on review of existing data provided to us and a site reconnaissance. Subsurface exploration to confirm our opinions relative to potential subsurface/geotechnical conditions was not included in this scope of work but will be required for project design if the Agoura Road site is selected and the structure locations are finalized.

WORK PERFORMED

This desktop study for the Agoura Road site was performed in general accordance with our email dated May 5, 2017. Our understanding of the project was based on discussions with you, review of the existing data provided to us, and our experience in the project area. The scope of services for the due diligence geotechnical desktop study included a site reconnaissance with the project team, data review, and preparation of this letter report summarizing our findings.

SITE RECONNAISSANCE

An engineering geologist from OGI attended a site reconnaissance at the Agoura Road site with the RMC project team on June 20, 2017. The purpose of the site reconnaissance was to observe the existing conditions at the potential AWTP site and to discuss the project approach, schedule, and site conditions with the team.

DATA REVIEW

We reviewed readily available published data available in our files including geologic maps and reports, earthquake hazard zone maps, seismic hazard maps, and site-specific geotechnical reports provided to us by Las Virgenes Municipal Water District/RMC as input into our understanding of site conditions that may exist at the potential project site.

REPORTING

This letter-report summarizes our opinions relative to potential geotechnical and subsurface conditions that may exist at the potential AWTP site on Agoura Road based on the site reconnaissance and data review.

FINDINGS

EXISTING GEOTECHNICAL DATA

Gorian and Associates (Gorian) have previously performed site-specific geotechnical studies for various proposed commercial and residential developments on the project site. Project developments evaluated by Gorian have included one and two buildings onsite with associated parking (including at-grade and subterranean) and driveways accessed from Agoura Road. The developments were proposed to be constructed using cut and fill grading, 2 horizontal to 1 vertical (2h:1v) cut and fill slopes, and retaining and soil nail walls with maximum heights to about 27 feet.

For preliminary planning purposes, we understand RMC is considering a building footprint location similar to the “Building B” configuration and location considered by Gorian (2014a) with retaining walls or soil nail walls near the southeastern limits (uphill) of the building lay out. The site layout and exploration location map by Gorian (2014a) is appended as Plate 1 for reference.

Existing site-specific field exploration by Gorian includes drill holes, seismic refraction surveys, test pits, and infiltration testing near the locations shown on Plate 1. Five 24-inch-diameter bucket-auger drill holes were advanced to depths ranging from 16 to 46 feet to evaluate subsurface materials and geologic conditions near the proposed Building B, three shallow seismic refraction surveys were performed in the areas of possible retaining wall excavations to the southeast of Building B to evaluate rock hardness and rippability, four backhoe test pits were advanced west of the central north-south trending ridge near the vicinity of “Building A” to evaluate the near surface soil materials in that area, and an infiltration test was performed in a proposed infiltration basin location northwest of Building B.

SITE CONDITIONS

The potential AWTP site is a hillside site located south of Agoura Road along the north base of Ladyface ridge in the Santa Monica Mountains. In the project vicinity, Agoura Road is constructed on artificial fill about 10 feet above the northern property grade. Elevations within the site range from about 955 to about 1,020 feet above sea level based on the topography shown on Plate 1. Slopes reportedly range from about 5h:1v in the northern portion of the site and steepen to about 3h:1v to about 1.5h:1v or steeper toward the southern property limits. Drainage is toward the north via drainages at the eastern, western, and central portions of the site.

REGIONAL GEOLOGY

The project site is located within the Santa Monica Mountains within the Transverse Ranges geologic/geomorphic province of California. The province is characterized by generally east-west-trending mountain ranges composed of sedimentary and volcanic bedrock units ranging in age from Cretaceous to Recent. Major east-west trending folds, reverse faults, and left-lateral strike-slip faults reflect regional north-south compression and are characteristic of the province.

LOCAL GEOLOGY AND EARTH MATERIALS

Based on work by Gorian (2000, 2014a), the site is underlain by artificial fill materials, colluvium, alluvial deposits, older alluvial deposits, and bedrock of the Calabasas Formation and Conejo Volcanics as indicated on Plate 1.

Artificial Fill. The fill materials identified by Gorian are associated with construction of Agoura Road to the north, a previous residence in the western portion of the site, graded access roads, and grading for weed abatement. The ascending fill slope of Agoura Road is oriented about 2h:1v, is about 10 feet high, and boarders the northern property limits. Additionally, a stormwater detention basin is located near the northeastern corner of the property limits.

Colluvium and Alluvium. Gorian reports the low gradient areas of the northern portion of the site are mantled by about two-and-a-half to seven feet of hard sandy clay to silt colluvial soil materials with gravel- to cobble-size volcanic materials at the locations explored. The younger alluvial sediments are located primarily within the northerly-trending valley areas and adjacent to Agoura Road and reportedly consist of unconsolidated sand, silt, and clay with scattered to abundant gravel- to cobble-size volcanic materials.

Older Alluvium. Older alluvial materials underlie the surficial colluvial soils over the majority of the site. Gorian reports the older alluvial soils encountered by their drill holes were six to 35 feet thick and consisted of hard silty clay interbedded with dense silty sand and clayey sand. The basal contact was noted to be abrupt, undulatory to planar, and consist of fine to coarse sand with gravel and cobbles of volcanic origin.

Calabasas Formation. The Calabasas Formation is not exposed at the ground surface at the project site, however, it was encountered by Gorian's drill holes below the older alluvial materials at depths ranging from about 10 to 42.5 feet. Gorian reports the Calabasas Formation materials encountered by their explorations consisted of silty claystone to claystone with occasional clayey siltstone and fine sandstone beds. The bedrock materials were reportedly hard, with massive to poorly defined bedding, tightly fractured, complexly folded with varying bedding dips ranging from 10 to 12 degrees to the northwest, 37 degrees to the southeast, and 24 to 88 degrees to the southwest and near vertical at depth.

Conejo Volcanics. Andesitic bedrock of the Conejo Volcanics is exposed near the southern property limits. The bedrock outcrop forms the steep terrain that ascends to Ladyface Ridge. The Conejo Volcanics were not encountered by Gorian in any of their drill holes to the depths explored and thus are not anticipated to be encountered in excavations similar to those proposed on the attached plan. Gorian reports the Conejo Volcanics are indurated and considered stable.

SEISMICITY AND FAULTING

The potential AWTP site is located in a seismically active area of southern California and likely will experience strong ground shaking during the design life. The site is not located within a State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zone) and no known active or potentially active faults cross or trend toward the site. However, there are numerous faults considered active and potentially active by the USGS within an about 20-mile radius of the site. Additionally, Weber (1984) maps a potential fault trending toward the northwestern portion of the site near Building A (Plate 1), however, the fault is not considered active or potentially active.

On the basis of the data reviewed for this study, the potential for fault rupture to affect the site is considered low.

LIQUEFACTION AND SEISMICALLY INDUCED SETTLEMENT

The majority of the site is underlain by bedrock materials and older alluvial deposits that are not considered prone to liquefaction or seismically induced settlement. Based on review of Gorian (2014a) and CDMG (2000), the young alluvial sediments may be prone to liquefaction.

Seismically induced settlement can occur in loose to medium dense unsaturated granular soil materials in response to ground shaking. Portions of the site underlain by alluvial materials may be prone to seismically induced settlement. The potential for seismic settlement to affect areas underlain by older alluvial deposits and/or bedrock materials is considered low.

Evaluation of liquefaction and seismically induced settlement and mitigation design will be required as part of final design if project elements are located in areas underlain by alluvial sediments.

LANDSLIDING AND SLOPE INSTABILITY

We did not observe evidence of landsliding at the project site during our site reconnaissance or in data reviewed for this desktop study. On that basis, the potential for slope instability to affect the site is considered low.

GROUNDWATER

Review of the CDMG (2000) indicates historic high groundwater has been within about 10 feet of the ground surface near the northern portion of the site near Agoura Road. Gorian (2014a) reports groundwater was encountered at about 24 feet in older alluvial sediments in drill hole B-1 advanced near the northern nose of the central ridgeline west of Building B. They also reported encountering seeps within drill hole B-3 upslope and southwest of Building B near the bedrock contact at depths of about 15 to 17 feet. Variations in groundwater levels, perched water conditions, and soil moisture conditions can occur as a result of rainfall, irrigation, runoff, and other factors.

INFILTRATION

Gorian (2014a) excavated a shallow infiltration test pit (IP-1) in the proposed basin area in the southwest corner of Agoura Road and the proposed driveway to Building B as shown on Plate 1. Gorian reportedly performed stormwater infiltration testing in general accordance with the County of Los Angeles Guidelines for Design, Investigation, and Reporting Low Impact Development Stormwater Infiltration (LID). The results of their infiltration testing suggested an

infiltration rate of 0.09 inches per hour, which is less than the 0.3 inches per hour minimum requirement in the County's LID manual. Additionally, Gorian indicates the historical depth to groundwater (within 10 feet of the ground surface near Agoura Road in the proposed infiltration basin) does not provide for the bottom of the infiltration zone to be a minimum of 10 feet above the historic high groundwater level. Based on their test results and the lack of sufficient separation, Gorian concluded stormwater infiltration does not appear to be feasible on-site.

EXPANSIVE SOILS

Gorian (2014a) reported expansion index (EI) test results on samples of near surface and bedrock materials ranging from 80 to 177, suggesting the tested onsite materials have expansion potentials ranging from moderate to very high. Final project design will need to consider mitigations for the expansive nature of the onsite materials. Mitigations could consist of replacing the expansive materials with select fill or chemical stabilization, etc.

RIPPABILITY AND ROCK HARDNESS

Gorian (2014a) performed three shallow seismic surveys in the vicinity of the excavations for retaining walls proposed as part of that project design (see Plate 1). The seismic surveys can provide data for evaluation of primary (p) p-wave velocities and rock hardness. The estimated velocities are correlated with rippability charts developed by Caterpillar.

Based on their work and published rippability charts by Caterpillar, in Gorian's opinion, the materials in the proposed excavation area for the retaining wall near the southeastern portion of Building B are easily rippable to about 5 feet below the ground surface (bgs) and moderately rippable from about 5 feet to about 32 feet bgs using heavy-duty construction equipment in good working order (such as a single shank Caterpillar D9R or equivalent). Gorian indicated blasting should not be required in those anticipated excavation depths.

RETAINING WALLS AND SOIL-NAIL WALLS

Retaining wall design provided in Gorian (2014a) includes an about two- to three-foot-wide zone behind the retaining wall to key-in the fill materials and a 1h:1v backcut for the height of the wall for placement of artificial fill behind the wall. Alternatively, to reduce the limits of the disturbance upslope of the wall, based on review of Gorian's data, it appears feasible to construct the standard retaining wall as a soil-nail wall. Soil nail-walls do not require the fill key width or 1h:1v backcut for artificial fill behind the wall. Soil-nail walls are constructed from the top down in a near-vertical fashion as the rows for the soil-nails are excavated and the soil-nails installed.

As indicated on Plate 2, Gorian interprets the geologic conditions exposed by excavation of the retaining/soil-nail wall southeast of Building B to consist of colluvial soils at the ground surface underlain by older alluvial deposits which are in-turn underlain by bedrock of the Calabasas Formation. As discussed above, Gorian anticipates the earth materials will be easily rippable to about 5 feet bgs and moderately rippable from about 5 feet to about 32 feet bgs (using a single shank Caterpillar D9R or equivalent in good working order) and that blasting will not be required for the wall height and location evaluated.

Geotechnical design criteria for retaining or soil-nail walls will need to be developed during final design based on site specific wall location/configurations. It is likely additional

subsurface data will need to be collected to develop the geotechnical design parameters for the final wall design.

We note GeoDynamics, Inc. (2014a) indicates the City of Agoura Hills limits retaining wall heights to six feet or less and that variances for retaining wall heights in excess of six feet may be required for project approval.

CLOSURE

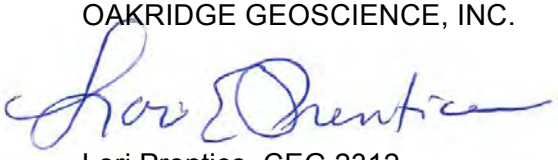
Oakridge Geoscience, Inc. prepared this desktop study in accordance with the generally accepted geotechnical principles and practices at this time and in this location. This desktop study was prepared for exclusive use of RMC Water and the LVTJPA. It is not intended as a design-level study and should not be used for project design or construction. Further, this desktop study is not intended to address issues or conditions pertinent to other parties, projects, or for other uses.

The scope of services did not include any environmental assessments for presence or absence of mold, hazardous, or toxic materials in the soil, surface- or groundwater, or in the atmosphere.

Thank you for the opportunity to provide geotechnical services to RMC Water for the LVTJPA Pure Water Project Advanced Water Treatment Plant due diligence desktop study. Please contact us if you have any questions on the information presented herein.

Sincerely,

OAKRIDGE GEOSCIENCE, INC.



Lori Prentice, CEG 2312
President

Attachments: PLATE 1 – GEOTECHNICAL MAP (GORIAN, 2014)
PLATE 2 - NORTHERN PORTION OF CROSS-SECTION A-A' (GORIAN, 2014)

Copies Submitted: (1 pdf via email)

REFERENCES

California Department of Conservation, Division of Mines and Geology (CDMG, 2000), Seismic Hazard Zone Report for the Thousand Oaks 7.5-Minute Quadrangle, Ventura and Los Angeles Counties, California, Seismic Hazard Zone Report 042.

Dibblee, Thomas W. Jr., (1992), Geologic Map of the Calabasas Quadrangle, Los Angeles and Ventura Counties. Dibblee Geological Foundation Map #DF-37

GeoDynamics, Inc. (2014a), City of Agoura Hills - Geotechnical Review Sheet. GDI #11.00103.0183, dated April 14.

_____ (2014b), City of Agoura Hills - Geotechnical Review Sheet. GDI #11.00103.0183, dated September 9.

Gorian and Associates, Inc. (2000), Results of Preliminary Geotechnical Investigation, Agoura Hills Project, APN#2061-001-025 and 30800 Block of Agoura Road, Agoura Hills, California, dated October 12.

_____ (2003), Geotechnical Update Study – The Park at Ladyface Mountain, Senior Housing Community, APN# 2061-001-025 and 30800 Block of Agoura Road, dated February 21.

_____ (2007), Geotechnical Update Study, Senior Housing Community, APN# 2061-001-025 30800 Agoura Road, dated September 7.

_____ (2014a), Geotechnical Site Evaluation Update Report and Response to City of Agoura Hills Review Sheet, Senior Housing Community, Vesting Tentative Tract Number 71742 APN# 2061-001-025 30800 Agoura Road, Agoura Hills, California, dated January 30.

_____ (2014b), Geotechnical Response to City of Agoura Hills Review Sheet Dated April 18, 2014, Senior Housing Community, Vesting Tentative Tract Number 71742 (APN# 2061-001- 025), 30800 Agoura Road, Agoura Hills, California, dated July 29.

_____ (2014c), Geotechnical Response to City of Agoura Hills Review Sheet Dated September 21 2014, Senior Housing Community, Vesting Tentative Tract Number 71742 (APN# 2061-001- 025), 30800 Agoura Road, Agoura Hills, California, dated November 12.

Weber, Harold F. 1984, Geology of the Calabasas-Agoura-Eastern Thousand Oaks Area, Los Angeles and Ventura Counties, California. California Division of Mines and Geology, Open-File Report 84-1 LA.

Geotechnical Map

Gorian & Associates, Inc.
Applied Earth Sciences

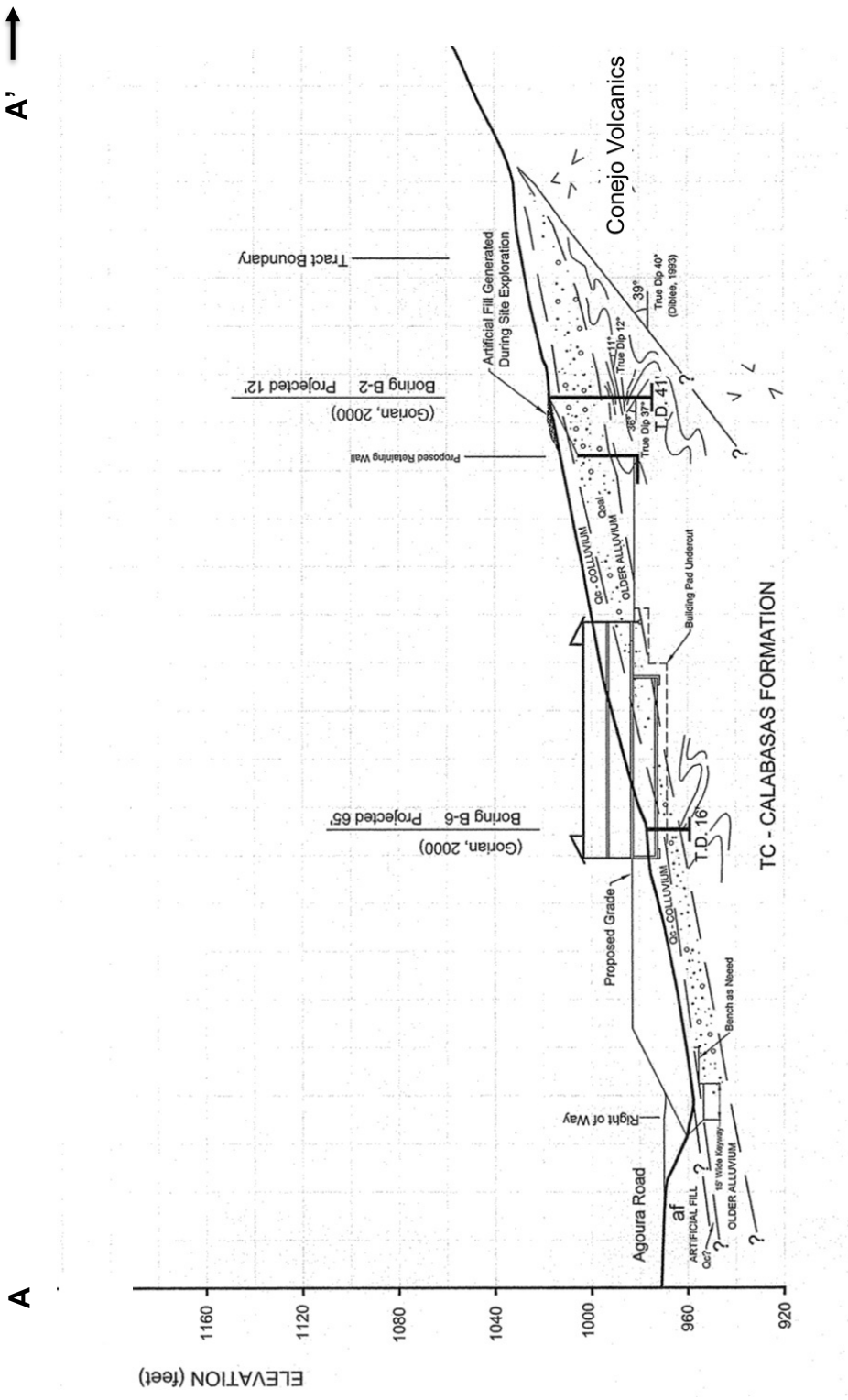
Job No: 2272-0-0-102	Date: July 2014
Scale: 1" = 40' · Drawn by: · Approved by:	PLATE 1

EXPLANATION

afc	Certified Engineered Fill
Qal	Alluvium
Qoal	Older Alluvium
Tc	Calabasas Formation
Tcvag	Conejo Volcanics (Agglomerate)
	Approximate Contact Between Geologic Units
T-4	Approximate Location of Exploratory Backhoe Pit
IP-4	Approximate Location of Stormwater Infiltration Test Pit
B-6	Approximate Location of 24" Diameter Exploratory Boring
	Strike and Dip of Bedding
	Groundwater
ST-3	Approximate Location of Seismic Traverse
A A'	Geotechnical Cross Section

VESTING TENTATIVE TRACT MAP NUMBER 71742
LOCATED IN A CORPORATED TERRITORY OF
THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA
SEPTEMBER 2012
SHEET 1 OF 1

PLATE 1



NORTHERN PORTION OF CROSS-SECTION A-A' (GORIAN, 2014)
Pure Water Project Advanced Water Treatment Plant Siting Study
Due Diligence Review, 30800 Agoura Road
Agoura Hills, California

Appendix E – Preliminary Environmental Review

DRAFT Technical Memorandum

National Experience. Local Focus.

Las Virgenes – Triunfo JPA Advanced Water Treatment Plant Preliminary Siting Study

Subject: **Preliminary Environmental Review**

Prepared by: Rosalyn Prickett, Alexis Cahalin

Date: July 5, 2017

Reference: 0254-004.03

This technical memorandum (TM) was prepared as a preliminary review of potential environmental concerns associated with implementation of a proposed advance water treatment plant (AWTP) at 30800 Agoura Road by Las Virgenes – Triunfo Joint Powers Authority (JPA) in Agoura Hills, California. This includes consideration of the following resource topics: air quality and greenhouse gas emissions (GHGs), biological resources, cultural resources, and hydrology/water quality.

1 Environmental Review

The first step of California Environmental Quality Act (CEQA) compliance is generally completion of an Initial Study, which evaluates whether construction or operation of a proposed project will result in potential environmental impacts. The following environmental resource topics were briefly reviewed to identify those potential concerns that could require additional research or analysis prior to site selection:

☐ Aesthetics	☐ Agricultural and Forestry Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☐ Geology and Soils
☒ Greenhouse Gas Emissions	☐ Hazards/Hazardous Materials	☒ Hydrology and Water Quality
☐ Land Use and Planning	☐ Mineral Resources	☐ Noise
☐ Population and Housing	☐ Public Services	☐ Recreation
☐ Transportation/Traffic	☐ Utilities and Service Systems	☒ Mandatory Findings of Significance

Several of the other resource topics listed above will likely need mitigation measures to ensure that the proposed Project will not result in significant environmental impacts. Standard mitigation measures are anticipated to be sufficient to address potential concerns for the resources topics not included in this TM. As such, standard mitigation measures associated with construction activities are not addressed further in this TM. Rather, this TM focuses on vetting potential resource topics that could require new technical studies, additional permitting, or other non-standard mitigation to support the CEQA process.

1.1 Air Quality and Greenhouse Gas Emissions

The proposed Project site is located within the South Coast Air Basin, which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The South Coast Air Basin is in non-attainment for both federal and state standards for ozone and nitrogen dioxide, and the state standard for PM10 (SCAQMD 2013). The Basin is required to implement strategies to reduce pollutant levels to meet the recognized air quality standards. The SCAQMD has adopted an Air Quality Management Plan, which provides significance thresholds for both temporary construction-related and operational emissions, to implement its strategy for attainment of federal and state standards.

A project-specific air quality analysis will be required as part of the CEQA process to determine potential air quality and greenhouse gas emissions impacts associated with construction and operation of the proposed AWTP. The estimated emissions resulting from the proposed Project will be compared to the SCAQMD significance thresholds to determine whether the proposed Project would exceed the applicable thresholds, thereby resulting in a potentially significant air quality impact. If it is determined that the proposed Project would exceed the SCAQMD significance thresholds and that feasible mitigation would not be sufficient to reduce the impacts to less than significant, the JPA may be required to prepare and adopt a statement of overriding consideration as part of the CEQA process.

1.2 Biological Resources

A Biological Resources Inventory and Impact Analysis was prepared for the proposed Project site in February 2014. A supplementary rare plant species survey was conducted in May 2014 and an Oak Tree Report was prepared for the site in September 2013. To determine the probability of sensitive plant and wildlife species occurring on the proposed Project site, a field survey was conducted, and a California Natural Diversity Database (CNDDB) search was performed on January 23, 2014. These technical studies provide the basis for the analysis of biological resources impacts resulting from development of this site.

According to the 2014 California Natural Diversity Database (CNDDB) search, a total of 27 special-status species, including 13 plants and 14 animals, may occur within proximity to the proposed Project site. The site's vegetation generally consists of annual grasses with scattered Valley Oak trees, a band of Coast Live Oak woodland across the southern portion of the property, and willow riparian woodland surrounding on-site drainage. Nine native and two non-native plant communities occur at the site, including three rare or sensitive communities (Valley Oak Woodland Alliance, Red Willow – Arroyo Willow / Mulefat Woodland Association, and Purple Needlegrass Grassland). The site consists of jurisdictional features, including three natural drainages, a man-made drainage, and a man-made seasonal wetland. Due to the jurisdictional features that occur on the proposed site, the JPA will be required to consult with CDFW, USACE, and the RWQCB to obtain applicable permits. Permits that may be required include: Clean Water Act Section 404 permit from USACE, Section 401 water quality certification or Waste Discharge Requirements from RWQCB, and Streambed Alteration Agreement from CDFW. These permits typically require mitigation to reduce impacts to water quality and quantity, vegetation, and wildlife.

Prior to or concurrent with the CEQA process, a complete biological resources assessment will need to be completed to address special-status species and communities, as well as jurisdictional features and associated wetland habitat. The biological resources assessment will also need to address potential removal of trees at the site, which is a concern due to the sensitive oak tree species located on the site and the potential impacts to raptors and other bird species. Mitigation measures will likely include pre-construction surveys and protection measures for listed species found to occur on-site. As described above, it is likely that permits will need to be obtained through applicable jurisdictional agencies prior to construction.

1.3 Cultural Resources

A Phase I Archeological Survey was conducted for the proposed site in August 2000. The proposed Project site is currently undeveloped, although several small dwellings were previously present on the site. Because these dwellings were previously removed from the site, the proposed Project would not affect any extant historic structures.

According to the Phase I Survey, a prehistoric quarry and chipping station was recorded on a portion of the proposed Project site. Due to this finding, a Phase II Archaeological Test Excavation was conducted in January 2001, and archaeological remains were not discovered. However, a property within proximity to the proposed Project site has previously encountered archeological resources, thus demonstrating the

potential for discovering archeological resources in the area. Because of this established archeological sensitivity of the area, and the identification of the prehistoric quarry and chipping station, extended Phase I studies (pre-construction excavation of the site to confirm no buried resources prior to full deployment of construction) for the site may also be needed Project. This would likely occur after the CEQA process is completed, but prior to project approvals and construction initiation.

Prior to or concurrent with the CEQA process, a complete cultural resources assessment with general archeological surveys will need to be completed. The cultural resources assessment will need to include an updated cultural resources database search (through South Central Coast Information Center [SCCIC] and Native American Heritage Commission [NAHC]) and communication/coordination with Native American tribal representatives. Mitigation measures will likely include onsite Native American monitors during all excavation and construction activities, along with additional requirements.

1.4 Hydrology and Water Quality

Approval of the Project must necessarily assess the hydrogeological impacts of proposed indirect potable reuse (IPR) surface water augmentation activities. As part of the Title 22 Engineering Report for approval by the State Water Resources Control Board's Division of Drinking Water (DDW), the JPA shall evaluate the recycled water's travel time, changes in the Las Virgenes Reservoir's ambient concentration of key constituents, and potential changes to any municipal drinking water supplies as a result of the proposed IPR surface water augmentation activities. A hydrogeological analysis and its findings should be included in the CEQA document and its administrative record. Mitigation measures will likely include ongoing surface water quality monitoring and compliance with DDW requirements.

In addition to water quality impacts, the CEQA assessment must consider potential erosion and sedimentation, and flooding impacts of the proposed IPR facilities. Mitigation measures will likely include compliance with storm water best management practices during construction and in design of storm water capture facilities at the new treatment facility.

2 Conclusion

This TM addressed preliminary review of the environmental resource topics that may need additional technical assessment to support the CEQA process. Below is a list of technical studies that should be included in the scope of the CEQA effort:

1. *Air Quality Analysis*
2. *Biological Resources Assessment* – to include updated records search, field surveys, focused assessment of potential impacts to special status species and wetland habitat at site.
3. *Cultural Resources Assessment* – to include updated records search, field surveys, Native American consultation, focused assessment of potential impacts to archeological resources at the site.
4. *Hydrogeological Assessment* – to include hydrogeological modeling, assessment of potential changes in groundwater quality due to recharge activities.

Additionally, due to the jurisdictional drainages located on the site, coordination with jurisdictional agencies may be required, as well as applicable permits.

POLICY PRINCIPLES FOR FUTURE USE OF 30800 AGOURA ROAD

JUNE 22, 2017

The Las Virgenes-Triunfo Joint Powers Authority (JPA) is currently considering the purchase of a vacant 7.1-acre parcel at 30800 Agoura Road for future facilities that may be required for the Pure Water Project Las Virgenes-Triunfo. The site is one of several to be considered for the construction of an advanced water treatment plant that would purify excess recycled water during the wintertime to supplement existing water supplies.

Because the design of the Pure Water Project Las Virgenes-Triunfo is several years away, the JPA proposes to outline policy principles for the future use of the property should it be selected for the construction of an advanced water treatment plant, as follows:

1. Involve the City and the community in the development and design of facilities.
2. Preserve the natural beauty of the site.
3. Reserve a portion of the property for public benefit in coordination with the City of Agoura Hills.
4. Minimize the impact to oak trees and other natural resources on the property.
5. Design the facilities with architecture compatible with the surrounding area.
6. Minimize the overall footprint of the facility.
7. Provide for the on-site capture and/or treatment of stormwater.
8. Keep the community and recreational users informed of any project-related activities that may affect them.
9. Minimize the potential for noise or light to emanate from the site.
10. Utilize renewable energy sources to offset demands at the site.

#####

LEMIEUX & O'NEILL

4165 E. Thousand Oaks Blvd., Suite 350

Westlake Village, Ca 91362

(805) 495-4770

info@lemieux-oneill.com

MEMO

To: David Pedersen

From: Manuel D. Serpa

Subject: Treatment Plant Construction

Date: June 22, 2017

Please consider the following opinion on the application of permit, zoning, and plan requirements under the California Government Code to the potential construction of an advanced water treatment plant at 30800 Agoura Road in the City of Agoura Hills. The District's construction of such a facility is exempt from a conditional use permit requirement under Gov. Code, § 53091(d) and (e).

Although it is true generally that local agencies are required to comply with the building and zoning ordinances of the cities and counties in which they are situated per Gov. Code, § 53091, there are two enumerated exceptions for local water districts. The first is an absolute exemption under subdivision (d) for: "facilities for the production, generation, storage, or transmission of water." The second exception under subdivision (e) is for facilities "related to storage or transmission of water." Regarding the latter, facilities "related to storage or transmission of water" within the meaning of section 53096 have been held to include only those which have a "connection with" and are in fact integral to the proper operation of particular storage and transmission functions of water districts. City of Lafayette v. East Bay Mun. Utility Dist. (1993) 16 Cal.App.4th 1005, 1015. Ancillary structures that are not directly connected to the unique function of water storage and transmission, and need not be located in proximity to qualifying facilities, such as warehouses, administrative buildings, or automotive storage and repair buildings, are considered non-exempt. Id.

The state attorney general has provided an opinion that the analysis contained in the City of Lafayette case is dispositive as to the proper interpretation and application of Gov. code sections 53091 and 53096 to the operations of California water districts. The opinion concludes that a water district is exempt from those county or city building and zoning ordinances which regulate the location or construction of facilities directly and immediately used for the production, generation, storage, or transmission of water, and is conditionally exempt from county or city

zoning ordinances with respect to facilities related and integral to the proper operation of particular water storage or transmission functions of the district. 78 Ops.Cal.Atty.Gen. 31, (1995). The construction of a water treatment plan falls squarely under the first exception.

While §53091 applies to permits and zoning ordinances, Government Code sections 65401, 65402, and 65403 concern general plan compliance.[1] Per these regulations, the District is required to submit its project to the planning agency in the county in which the facilities are being constructed, Los Angeles County in this instance. The submissions are for advisory purposes only, however. Government Code section 65401 provides:

> If a general plan or part thereof has been adopted, within such time as may be fixed by the legislative body, each county or city officer, department, board, or commission, and each governmental body, commission, or board, including the governing body of any special district or school district, whose jurisdiction lies wholly or partially within the county or city, whose functions include recommending, preparing plans for, or constructing, major public works, shall submit to the official agency, as designated by the respective county board of supervisors or city council, a list of the proposed public works recommended for planning, initiation or construction during the ensuing fiscal year. The official agency receiving the list of proposed public works shall list and classify all such recommendations and shall prepare a coordinated program of proposed public works for the ensuing fiscal year. Such coordinated program shall be submitted to the county or city planning agency for review and report to said official agency as to conformity with the adopted general plan or part thereof.

A submission requirement is also stated under Gov. Code §65402: local agencies shall not construct or authorize a public structure in any county until the project has been submitted to and reported upon by the planning agency having jurisdiction over the project as to conformity with the local general plan.

Gov. Code, § 65403 states that a district *may* prepare a five-year capital improvement plan to be referred to the planning agency of any affected city or county. Although a district "shall not carry out" any part of the program if the planning agency finds that it is not consistent with the applicable general plan, a district may overrule the finding and carry out its capital improvement program.

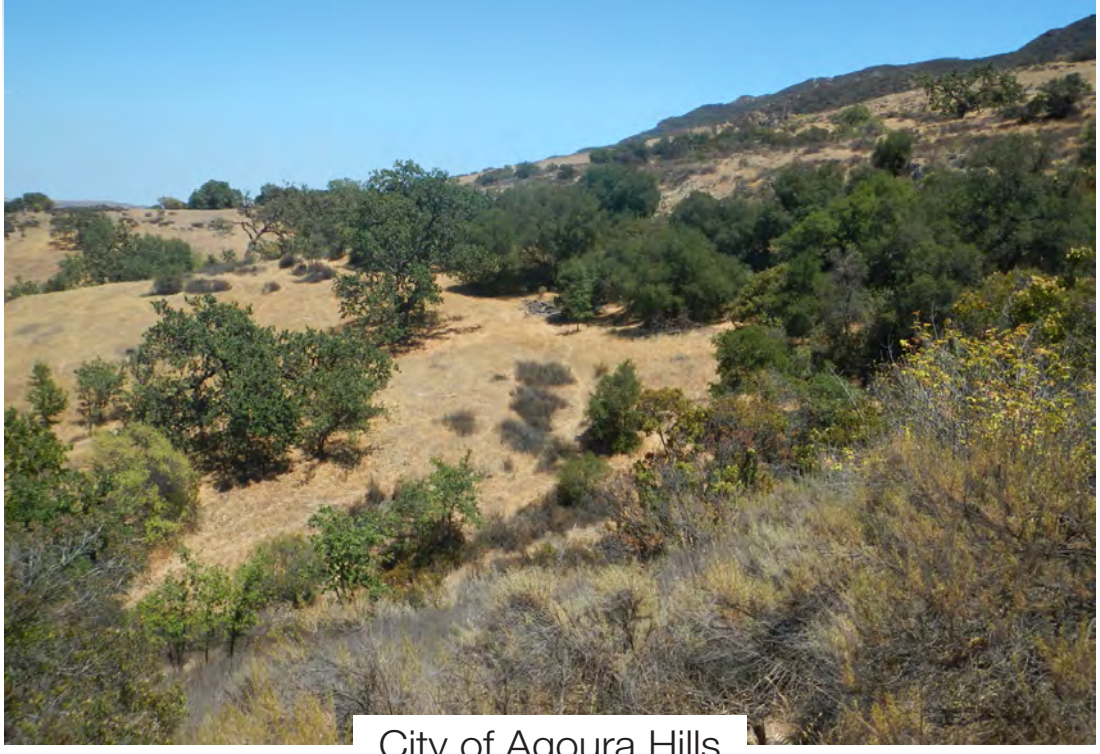
The District must comply with the above regulations in planning and carrying out its project. Please let me know if you need any additional information. Thank you.

[1] The case of Friends of the Eel River v. Sonoma County Water Agency (2003) 108 Cal.App.4th 859, 880–81, as modified on denial of reh'g (June 13, 2003), held that an agency need only submit its project to the planning agency of the county where additional facilities would be constructed rather than all three counties affected by the project and that while Gov. Code, § 53091 requires that local agencies maintain compliance with county building and zoning ordinances, it does not mandate compliance with a county's general plan.

JPA Acquisition of:

30800 Agoura Road

Draft Initial Study/Negative Declaration



City of Agoura Hills

PREPARED FOR:

Las Virgenes - Triunfo
Joint Powers Authority
4232 Las Virgenes Road
Calabasas, California 91302
Attention: John Zhao, Principal Engineer
(818) 251-2230

PREPARED BY:

ENVICOM CORPORATION
4165 E. Thousand Oaks Blvd., Suite 290
Westlake Village, California 91362
Contact: Laura Kaufman, Director of Environmental Services
(818) 879-4700

July 2017

JPA ACQUISITION OF 30800 AGOURA ROAD PROJECT

DRAFT
INITIAL STUDY/NEGATIVE DECLARATION

Prepared for:

LAS VIRGENES-TRIUNFO JOINT POWERS AUTHORITY
4232 Las Virgenes Rd.
Calabasas, CA 91302
Contact: John Zhao, Principal Engineer
818-251-2230

Prepared by:

ENVICOM CORPORATION
4165 E. Thousand Oaks Blvd. Suite 290
Westlake Village, CA 91362
Contact: Laura Kaufman, Director of Environmental Services
818-879-4700

Reference: # 47-755-101

July 2017

SECTION

FIGURES

1.0 INTRODUCTION

The Las Virgenes Municipal Water District (LVMWD, or "District") and the Triunfo Sanitation District together form the Las Virgenes-Triunfo Joint Powers Authority (JPA), which is considering the purchase of the subject property located at 30800 Agoura Road in the City of Agoura Hills. The JPA, as lead agency, has conducted an Initial Study, pursuant to the California Environmental Quality Act (CEQA) Statute and Guidelines,[1] to determine the potential environmental impacts, if any, of the action.

CEQA REVIEW

The JPA, as lead agency under CEQA, has determined an Initial Study should be prepared to evaluate potential environmental impacts of this proposed action and determine the appropriate CEQA document to be prepared for the proposed purchase and maintenance of the property based on existing local conditions and applicable regulations. As lead agency, the JPA has assumed responsibility for preparing this document.

The term "project" has a specific meaning the CEQA context. The distinction between the everyday use of the term and the specific CEQA meaning is very important for determining whether an action is subject to CEQA compliance or not.[2] Section 15378 of the State CEQA Guidelines provides the following definition of a project:

> (a) "Project" means the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, and that is any of the following:
>
> (1) An activity directly undertaken by a public agency including but not limited to public works construction and related activities clearing or grading of land, improvement to existing public structures, enactment and amendment of zoning ordinances, and the adoption and amendment of local General Plans or elements thereof pursuant to Government Code Sections 65100-65700.
>
> (2) An activity undertaken by a person which is supported in whole or in part through public agency contacts, grants subsidies, or other forms of assistance from one or more public agencies.
>
> (3) An activity involving the issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies.

Section 15378(b) of the State CEQA Guidelines clarifies what a project does not include. Because Section 15378(b) of the State CEQA Guidelines does not explicitly exclude the purchase of property from the definition of a project, the JPA has prepared this Initial Study to evaluate potential environmental impacts, if any.

SITE HISTORY

The site is the location of the previously proposed Park at Ladyface Mountain Senior Apartments project,[3] which would have developed a 46-unit senior housing apartment complex on the site. On September 1, 2016, the City Planning Commission held a public hearing on the previously proposed project to consider

[1] California Public Resources Code, Division 13. Environmental Quality, Section 21000 et seq., California Environmental Quality Act (CEQA); and California Code of Regulations, Title 14, Guidelines for the Implementation of the California Environmental Quality Act, Section 15000 et seq., (State CEQA Guidelines).

[2] Craig Stevens and Nisha Chauhan, California Association of Environmental Professionals, CEQA Portal Topic Paper, Project Description, 3/23/2016, accessed May 19, 2017, at https://ceqaportal.org/topic_papers.cfm

[3] Case Nos. GPA-01219-2016; 08-SPA-001; 08-CUP-001; SIGN- 01270-2016; 08-VAR-002(A, B & C); 08-OTP-004; and VTTM 71742.

the project, which would have required multiple City approvals including a General Plan Amendment and Zoning Change. Following the closure of the public hearing, the applicant, Agoura Hills Center Properties, LLC, withdrew the project applications and no action was required of the Planning Commission.

The JPA is now considering purchase of the subject property. While this property is one of several sites that may be needed for a future water supply project, the selection of this site and the proposed components and potential design of the facilities are not currently known. Therefore, this Initial Study considers the only the potential purchase of the property. The Fire Department requires fuel modification and brush clearance on the project site, which would continue with the JPA purchase of the property. These activities are collectively referred to as "maintenance" in this document. Should the JPA approve the purchase and propose water supply facilities on the site, additional CEQA review would occur at the time the plans are proposed, to determine the type of CEQA documentation warranted.

2.0 FINDINGS OF THIS INITIAL STUDY

The JPA finds that based on the Initial Study/Environmental Checklist and the accompanying discussion provided in Section 4.0, the proposed purchase and continued fuel modification and brush clearance of the subject property would have no significant adverse effect on the environment regarding the environmental factors listed below and no mitigation measures would be required. The following Initial Study/Environmental Checklist indicates potential for the purchase and maintenance of the subject property to result in environmental impacts with a brief explanation of how the significance of potential impacts was determined for each issue area. For each issue addressed in Section 4.0, the purchase and continued fuel modification and brush clearance of the subject property has been determined to have "No Impact;" therefore, no mitigation measures would be required and the JPA has prepared this Negative Declaration. Future projects on the subject property would be reviewed under separate CEQA analysis.

3.0 PROJECT DESCRIPTION

The JPA is considering the purchase and routine maintenance of the property located at 30800 Agoura Road ("subject property") in the City of Agoura Hills ("City"), California. Routine maintenance consists of the continuation of existing fuel modification and brush clearance on the subject property as required by the County of Los Angeles Fire Department. The JPA is considering purchase of the property as one of several potential sites for facilities that may be needed for a future water supply project. The future use and improvements of the property are currently unknown, and would therefore be covered under separate CEQA review. The scope of this CEQA analysis is limited to the purchase of the property and continued fuel modification and brush clearance of the current undeveloped condition of the subject property ("site").

3.1 SITE LOCATION AND EXISTING LAND USES

The subject property is located at 30800 Agoura Road within the western portion of the Ladyface Mountain Specific Plan between Reyes Adobe Road and the westerly City limits on the south side of Agoura Road. Regionally, the City is located in the eastern Conejo Valley between the Simi Hills and Santa Monica Mountains in western Los Angeles County as shown in **Figure 1, Regional Location Map**. The site is located in Township 1 North, Range 18 West of the U.S. Geological Survey (USGS) Thousand Oaks Quadrangle 7.5-Minute Series (Topographic) Map as shown in **Figure 2, Local Setting Map**. U.S. Highway 101 is approximately 650 feet north of the site.

The subject property consists of a 7.1-acre vacant parcel, Assessor Parcel Number (APN 2061-001-025). **Figure 3, Site Boundaries - Fuel Modification and Brush Clearance**, provides an aerial photograph of existing conditions at the site. Existing fuel modification and brush clearance would continue over portions of the site (i.e., the frontage along Agoura Road and discing the western portion of the site adjacent to the Lexington Apartments to the west), as required by the Los Angeles County Fire Department and shown in Figure 3, Site Boundaries - Fuel Modification and Brush Clearance. The existing condition of the subject property is vacant land with oak trees, native vegetation, and non-native vegetation. An undeveloped parcel is located adjacent to the east of site, with the Conrad N. Hilton Foundation headquarters to the east of that property. An office building with associated surface parking is located north the site across from the site frontage along Agoura Road. The Lexington Apartments are adjacent to the site's western boundary. Undeveloped open space in the foothills of Ladyface Mountain lies to the south.

The City provides development guidance through General and Specific Plans as well as zoning. The following classifications are provided for the site:

- **Existing General Plan Designation:** Planned Development (PD) District
- **Existing Zoning:** Planned Development (PD) – Ladyface Mountain Specific Plan
- **Ladyface Mountain Specific Plan**

PROJECT COMPONENTS

The proposed activity is limited to the JPA's purchase of the subject property and routine maintenance of the site in the current, undeveloped condition and the existing General Plan Designation and Zoning. Maintenance would consist of fuel modification and brush clearance as previously approved and required by the Los Angeles County Fire Department. In Los Angeles County, abatement of hazardous vegetation (weeds and brush) is a joint enforcement and clearance effort between the County Departments of Fire and the Agricultural Commissioner/Weights and Measures (ACWM). Generally, fuel modification refers to the thinning or removal of flammable vegetation around habitable structures to create defensible space and

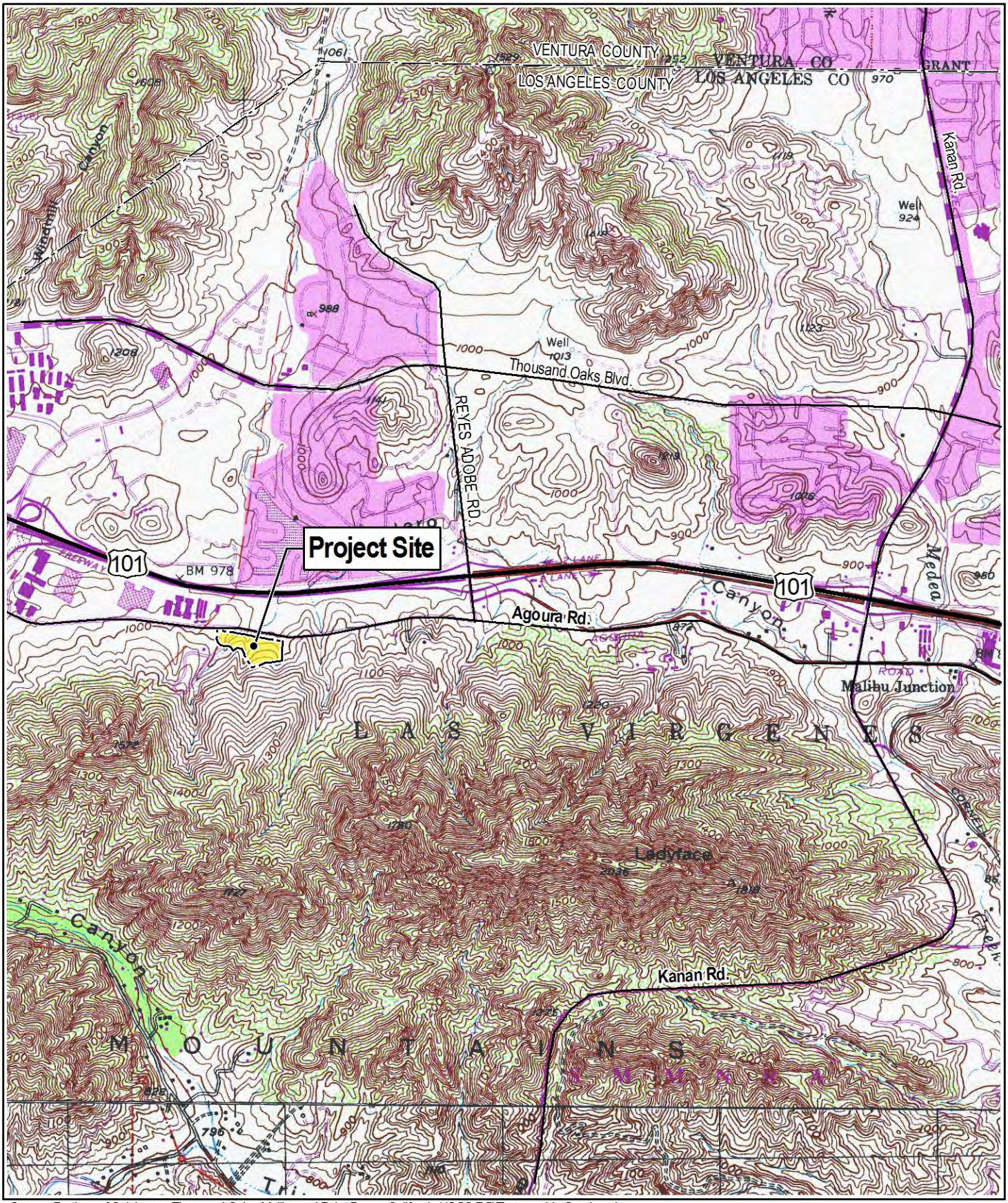
JPA ACQUISITION OF 30800 AGOURA ROAD

envicom

Regional Location Map

MILES 0 4 8

FIGURE 1



Source: Portions of Calabasas, Thousand Oaks, Malibu and Point Dume, California USGS 7.5' Topographic Quadrangle maps.

JPA ACQUISITION OF 30800 AGOURA ROAD

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Local Setting Map

0 1,000 2,000 Feet

FIGURE 2

Source: GoogleEarth Pro, Oct. 2, 2016.

JPA ACQUISITION OF 30800 AGOURA ROAD

envicom

Site Boundaries - Fuel Modification and Brush Clearance

0 100 200 Feet

FIGURE 3

is required by the County Fire Department.[4] Brush clearance refers to the removal of hazardous vegetation (weeds and brush), often along the shoulders fire access roads. Given there is no existing or proposed habitable structure on the subject property, the continuation of brush clearance would be carried out by the property owner or ACWM. Brush clearance would extend 10 feet from Agoura Road and up to 200 feet from the existing Lexington Apartments on the adjacent property as shown in Figure 3, Site Boundaries – Fuel Modification and Brush Clearance.

No physical changes to the site (e.g., grading, landscaping, drainage facilities, hardscape, buildings, structures, parking, signage, or other amenities) are proposed.[5] The purchase and continued fuel modification and brush clearance of the site would result in no oak tree encroachments or removals. Further, no discretionary approvals, aside from the decision by the Las Virgenes-Triunfo JPA to approve the purchase, would be required. As the purchase and continued fuel modification and brush clearance of the site would maintain the subject property in the existing condition, the JPA would not request any approvals from the City for the purchase of the site. Future projects on the subject property would be reviewed under separate CEQA analysis.

3.2 REQUIRED APPROVALS

The purchase and continued fuel modification and brush clearance of the site may require the following approvals from the following agencies:

- Las Virgenes-Triunfo JPA - Approval of site purchase.

3.3 OBJECTIVE

The objective for the for purchase and maintenance of the site is as follows:

- Purchase and maintain the subject property in the property's existing vacant condition.

[4] County of Los Angeles Fire Department Forestry Division, A Firewise Landscape Guide for Creating and Maintaining Defensible Space, 2011, accessed May 10, 2017, at: https://www.fire.lacounty.gov/wp-content/uploads/2014/02/Fuel-Modification-Plan-Guidelines-8-10-11.pdf

[5] LVMWD, John Zhao, Principal Engineer, Email correspondence with Envicom Corporation, May 17, 2017.

4.0 INITIAL STUDY / NEGATIVE DECLARATION

Las Virgenes Municipal Water District Joint Powers Authority

CALIFORNIA ENVIRONMENTAL QUALITY ACT
INITIAL STUDY AND CHECKLIST

1. Project title:
Las Virgenes-Triunfo JPA Acquisition of 30800 Agoura Road

2. Lead agency name and address:
Las Virgenes-Triunfo JPA
c/o Las Virgenes Municipal Water District Facilities & Operations Office
4232 Las Virgenes Rd.
Calabasas, CA 91302

3. Contact person and phone number:
John Zhao, LVMWD, Principal Engineer
818-251-2230

4. Project location:
30800 Agoura Road
Agoura Hills, CA 91301

5. Project sponsor's name and address:
Las Virgenes-Triunfo JPA
c/o Las Virgenes Municipal Water District Facilities & Operations Office
4232 Las Virgenes Rd.
Calabasas, CA 91302

6. General plan designation:
Planned Development District

7. Zoning:
Ladyface Mountain Specific Plan - PD

8. Description of project:
Purchase and continue existing routine fuel modification and brush clearance at the subject property. See Section 2.0 above for details.

9. Surrounding land uses and setting:
The subject property lies within the Ladyface Mountain Specific Plan area. Surrounding land uses are as follows: to the north, Agoura Road and existing commercial office buildings with surface parking lots; to the east, an undeveloped vacant parcel and the Conrad N. Hilton Foundation headquarters; to the south, vacant open space within the Ladyface Mountain Specific Plan; and to the west, the Lexington Agoura Hills Apartments.

10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.):
None.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would not be potentially affected by the proposed purchase and maintenance of the site, as indicated by the checklist on the following pages no environmental factors would be potentially affected.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology /Soils
☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials	☐ Hydrology / Water Quality
☐ Land Use / Planning	☐ Mineral Resources	☐ Noise
☐ Population / Housing	☐ Public Services	☐ Recreation
☐ Transportation/Traffic	☐ Tribal Cultural Resources	☐ Utilities / Service Systems
☐ Mandatory Findings of Significance		

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

☒ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed Project. Therefore, an EIR Addendum will be prepared.

_____ Date:

Signature

_____

Name and Title

Las Virgenes Municipal Water District, for Las Virgenes-Triunfo JPA

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
I.	**AESTHETICS.** Would the project:				
a.	Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b.	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a scenic highway?	☐	☐	☐	☒
c.	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒
d.	Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

a-c. No Impact. The 7.1-acre site is located within the western portion of the Ladyface Mountain Specific Plan Area in the northern foothills of Ladyface Mountain within the City, which is located in the eastern Conejo Valley between the Simi Hills and the Santa Monica Mountains in western Los Angeles County. The areas to the south and east of the site are vacant. The northern site boundary fronts Agoura Road. The topography of the subject property has an average slope of 16 to 20 percent, rising from an elevation of approximately 950 feet above mean sea level (msl) at the northerly property line to about 1,015 feet above msl at the southern property line. Gradually steepening foothills on the northwestern side of Ladyface Mountain are visible through the site to the south. The existing general appearance of the site includes riparian, grassland, and oak woodland vegetation. The site is approximately 650 feet south of a portion of United States Highway (U.S.) 101 eligible for designation as a State scenic highway but has not been designated as such by the County of Los Angeles General Plan.[6] Existing business park development and vegetation on the north side of Agoura Road obstruct southward directed views from U.S. 101 toward the site. The City's General Plan identifies Agoura Road as a "valuable scenic resource" that provides scenic views of Ladyface Mountain. Southward views of the site from Agoura Road are characterized by rolling grassland, mature oak woodland, and riparian areas. The Ladyface Mountain Specific Plan states that the existing oak trees "contribute to the natural beauty of the Ladyface Mountain setting."[7] The existing visual character of the site in southward directed views from Agoura Road consists of open space on the slopes of Ladyface Mountain in the background.

Consistent with existing conditions, the flammable brush along the Agoura Road frontage and up to 200 feet from the Lexington Apartments would be periodically cleared as required by the County of Los Angeles Fire Department. Continuation of this existing brush clearance is not a changed condition, and this action would nevertheless have no impact on scenic resources or the existing visual character at the site. Given the purchase and continued fuel modification and brush clearance of the site would maintain the existing conditions of the vacant site, there would be no impact on scenic vistas, scenic resources, or visual character.

d. No Impact. The purchase and continued fuel modification and brush clearance of the site does not propose any reflective surfaces or lighting that could create a new source of substantial light or glare which could adversely affect day or nighttime views in the area. Therefore, the purchase and continued fuel modification and brush clearance of the site would have no lighting or glare impacts.

[6] County of Los Angeles General Plan, Fig. 9.7, Scenic Highways, Department of Regional Planning, March 2017.
[7] City of Agoura Hills Planning Department, Ladyface Mountain Specific Plan, pg. 18.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
II.	**AGRICULTURE AND FORESTRY RESOURCES**. Would the project:				
a.	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b.	Conflict the existing zoning for agricultural use, or a Williamson Act Contract?	☐	☐	☐	☒
c.	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d.	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e.	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

a-e. **No impact**. The site is not used for agricultural or farmland purposes and does not contain forest lands. The site does not contain Prime Farmland, Unique Farmland, or Farmland of Statewide Importance.[8] The site is zoned for Planned Development, not agricultural use. The City does not have agricultural zoning or Williamson Act Contract land. There would be no conflict with zoning for agricultural use or with a Williamson Act contract and the purchase and continued fuel modification and brush clearance of the site would not convert agricultural lands to non-agricultural use. The site does not contain forest land and therefore could not convert forest land to non-forest use. Therefore, there would be no impact.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
III.	**AIR QUALITY.** Would the project result in:				
a.	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b.	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☒

[8] California Department of Conservation, Farmland Mapping and Monitoring Program, Los Angeles County Important Farmland Map, 2014, http://www.conservation.ca.gov/dlrp/fmmp/Pages/LosAngeles.aspx, accessed May 9, 2017.

c.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☒
d.	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
e.	Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

a-e. No Impact. The site is within the South Coast Air Basin ("Basin") under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The SCAQMD is required to monitor air pollutant levels to ensure compliance with state and federal air quality standards and, if standards are not met, to develop compliance strategies. Although the Basin is classified as being in "nonattainment" of the ozone and two of the Particulate Matter (PM) 2.5 standards, the Air Quality Management Plan provides the latest control strategies to achieve attainment as expeditiously as practicable.[9]

Because no construction is proposed and no change in operating conditions would occur, the purchase and continued fuel modification and brush clearance of the site would not create a change in emissions. Therefore, the purchase of the property would have no impact with regard to SCAQMD construction or operational thresholds or on the attainment status of the Basin. There would be no impact on air quality.

		Potentially Significant Impact	**Potentially Significant Unless Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
IV.	**BIOLOGICAL RESOURCES.** Would the project:				
a.	Have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
b.	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in the City or regional plans, policies, regulations by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c.	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒

[9] South Coast Air Quality Management District, "Clean Air Plans," http://www.aqmd.gov/home/library/clean-air-plans (accessed May 9, 2017).

d.	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f.	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan?	☐	☐	☐	☒

a. No Impact. Based on the previously prepared biological resource technical studies on file with the City[10], there are 27 special-status species (meeting the definition of special-status for CEQA analysis), consisting of 13 plants and 14 animals, within the five-mile radius of the site. The subject property includes the following vegetation types:

- Annual Grasslands dominated by non-native grasses and forbs, with scattered native species, covers the majority of the site.
- Valley Oak Woodland, generally along the southern portion of the site and the drainage adjacent and to the west of the proposed Building B.
- Coast live oak woodland in the southern portion of the site.
- Willow riparian woodland (*Salix* spp.) surrounding the most prominent on-site drainage (i.e., the blue-line stream).
- Coastal sage scrub and shrubland patches dominated by California sagebrush (*Artemesia californica*) and California buckwheat (*Eriogonum fasciculatum*) within and along the southern property line.

A total of 130 vascular plant species were identified during surveys of the site. Eighty-seven of the plants observed were naturally occurring native species and 43 were non-native or introduced, representing moderate diversity of native species and a significant proportion of non-natives. Most special-status plant species known to occur in the region are precluded from occurring at the site due to lack of suitable habitat. Also, given the intensity and correct timing of the 2014 rare plant survey and 2013 springtime field survey, as well as the negative results of prior surveys of the site by in November 2010, October 2010, and June 2006, most potentially occurring species can be confirmed as absent or their potential for occurrence is low.

Most special-status plant species known to occur in the region are precluded from occurring at the site due to lack of suitable habitat. Other than the Ojai navarretia, no other special-status plant species are known to occur or are expected to occur at the site, based on a potential for occurrence analysis and the negative results of spring botanical surveys of the site conducted in 2014, 2013, and 2006. However, rare plant surveys conducted in 2014 detected 181 individual Ojai navarretia plants on the subject property. This species was placed on the California Native Plant Society's List as 1B.1 (Very Threatened), in April 2008, and remains on the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) list as Rare Plant Rank 1B.1 (April 2016). The soils in area likely contain Ojai navarretia seed in the seed bank, and the number above ground plants is anticipated to vary each season depending on growing conditions. Based on the 2014 survey, the Ojai navarretia are outside the

[10] Biological Resources Inventory and Impact Analysis, Envicom Corporation, July 31, 2013, letter report, May 2014, Oak Tree Report, The Oak Collaborative, September 2013.

200 foot fuel modification zone associated with the existing Lexington Apartments and the 10 foot brush clearance along Agoura Road.

No wildlife species listed as Endangered, Threatened, California Fully-Protected, or as a California Species of Special Concern have been observed during previous biological surveys of the site. The Biological Resources Inventory and Impacts Analysis found that 32 special-status animals, including four reptiles, 17 birds, and 11 mammals were determined to have at least some potential to occur at the site with varying probabilities ranging from high to very low.

The purchase and continued fuel modification and brush clearance of the site would maintain the existing conditions of the vacant site, existing brush clearance would continue 10 feet from the site frontage with Agoura Road and up to 200 feet from the existing Lexington Apartments on the adjacent parcel to the west. Previous approval for the Lexington Apartments and the Agoura Road Widening project established the existing fuel modification areas.[11] Existing fuel modification would not change with the JPA's purchase of the property, therefore the proposed purchase of the property would have no impact with regard to removal of vegetation.

b. No Impact. The subject property contains Nine native and two non-native plant communities and CDFW jurisdictional areas. There are three natural drainages (Drainages 1, 2, and 3), a man-induced or man-made drainage (Drainage 4), and a man-induced seasonal wetland. Only Drainage 1, which is identified as a "blue-line" stream on the 7.5 USGS Thousand Oaks quadrangle map, contains significant riparian habitat. The Biological Resources Inventory and Jurisdictional Delineation identified this riparian habitat as Red Willow – Arroyo Willow/Mulefat Woodland (*Salix laevigata – Salix lasiolepis/Baccharis salicifolia*), a California Department of Fish and Wildlife Natural Community of Special Concern (Envicom, 2013). The southern extent of Drainage 1 is within the 200-foot fuel modification limits extending on to the site from the existing Lexington Apartments on the adjacent parcel to the west. Existing fuel modification activity would not change with the JPA's purchase of the property, therefore the proposed purchase of the property would have no impact with regard to CDFW jurisdictional areas.

c. No Impact. Jurisdictional areas include three natural drainages (Drainages 1, 2, and 3), a man-induced drainage (Drainage 4), and a man-induced seasonal wetland associated with Drainage 2. Given the proximity of the seasonal wetland adjacent to Agoura Road and the completion of the Agoura Road Widening project in 2016, the continuation of brush clearance within 10 feet south of Agoura Road could affect vegetation within the seasonal wetland. Such periodic impacts would not involve the direct removal, filling, or hydrological interruption of the wetland, would not constitute substantial adverse effects. Given that the continuation of the existing brush clearance along the Agoura Road frontage would not change with the JPA's purchase of the property, the proposed purchase of the property would have no impact with regard to federally protected wetlands.

d. No Impact. The term wildlife corridor describes physical connections that allow wildlife to move between areas of suitable habitat in both undisturbed landscapes or landscapes fragmented by urban development. The site lacks aquatic habitat for the movement of migratory fish species. The purchase and continued fuel modification and brush clearance of the site would maintain the existing conditions of the vacant site and would therefore have no impact on the movement of any native resident or migratory wildlife species or with established native resident or migratory wildlife corridors.

e. No Impact. Oak trees are present on the subject property. Although oak trees meeting the criteria specified in the City's Oak Tree Preservation Ordinance are protected, the purchase and continued

[11] Documents available upon request from the City Planning Department.

fuel modification and brush clearance of the site would maintain the existing conditions of the vacant site, involve no oak tree removals or encroachments, and would therefore not conflict with any local policies or ordinances protecting biological resources.

f. **No Impact**. There are no habitat conservation plans that apply to the site.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
V.	**CULTURAL RESOURCES:** Would the project:				
a.	Cause a substantial adverse change in significance of a historical resource as defined in CEQA Section 15064.5?	☐	☐	☐	☒
b.	Cause a substantial adverse change in significance of an archaeological resource pursuant to CEQA Section 15064.5?	☐	☐	☐	☒
c.	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
d.	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

a-d. **No Impact**. The site is vacant and does not contain historical resources or known archaeological or paleontological resources, unique geologic features, or human remains.[12] The purchase and continued fuel modification and brush clearance of the site would maintain the existing conditions of the vacant site and would therefore have no impact on potential archaeological or paleontological resources, unique geologic features, or human remains.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
VI.	**GEOLOGY AND SOILS.** Would the project:				
a.	Exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving:				
i.	Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii.	Strong seismic ground shaking?	☐	☐	☐	☒
iii.	Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv.	Landslides?	☐	☐	☐	☒
b.	Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c.	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☒

[12] Phase I Archaeological Survey, W & S Consultants, August 2000, and Phase II Archaeological Test Excavation, January 2001.

d.	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e.	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

a. i-iv. No Impact. The purchase and continued fuel modification and brush clearance of the site would maintain the existing conditions of the vacant site and would therefore have no impact with regard to exposure of people or structures to potential substantial adverse effects involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure including liquefaction, or landslides.

b. No Impact. The purchase and continued fuel modification and brush clearance of the site would maintain the existing conditions of the vacant site and would therefore have no impact with regard to substantial soil erosion or the loss of topsoil.

c-d. No Impact. The purchase and continued fuel modification and brush clearance of the site would maintain the existing conditions of the vacant site, proposes no structural development, and would therefore have no impact with regard to soil stability or expansiveness.

e. No Impact. The purchase and continued fuel modification and brush clearance of the site would maintain the existing conditions of the vacant site, does not propose use of a septic system, and would therefore have no impact regarding septic tank or alternative wastewater disposal system use.

		Potentially Significant Impact	**Potentially Significant Unless Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
VII.	**GREENHOUSE GAS EMISSIONS.** Would the project:				
a.	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☐	☒
b.	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

The City is within the South Coast Air Basin under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The SCAQMD has not adopted GHG emissions thresholds that apply to land use projects where the SCAQMD is not the lead agency and the City has not adopted any specific GHG emissions reduction plan or GHG emissions thresholds. Therefore, any potential future development would be evaluated based on the SCAQMD's recommended and preferred option threshold for all land use types of 3,000 metric tons $C0_2E$ per year, which has been used in past CEQA analyses prepared for projects in the City.[13]

[13] South Coast Air Quality Management District, Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans, December 5, 2008, accessed May 10, 2017, at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgboardsynopsis.pdf?sfvrsn=2

a-b. No Impact. The purchase and continued fuel modification and brush clearance of the site would maintain existing conditions at the vacant site that include the use of machinery for routine fuel modification and brush clearance. Such routine maintenance would be infrequent, small in scale, and a continuation of existing conditions. Given that the purchase of the subject property would not generate new vehicle trips from new construction and does not propose any building floor space, construction and operational emissions cannot be estimated and would be limited to the periodic use of machinery for brush clearance. Such periodic use of machinery for routine maintenance would not generate greenhouse gas emissions that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Therefore, the purchase and continued fuel modification and brush clearance of the site would have no impact from greenhouse gas emissions.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
VIII. HAZARDS AND HAZARDOUS MATERIALS. Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for the people residing or working in the area?	☐	☐	☐	☒
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

a-c. **No Impact**. The purchase and continued fuel modification and brush clearance of the site would maintain existing conditions. The ownership of the site would not involve the routine transport, use, or disposal of hazardous materials, the release of hazardous materials into the environment, or the emission or handling of hazardous or acutely hazardous materials; there are no existing or planned schools within one-quarter mile of the subject property. Therefore, the purchase and continued fuel modification and brush clearance of the site would have no impact regarding hazardous materials.

d. **No Impact**. No known sites contaminated with hazardous materials are located near the site.[14] No Superfund sites are located within one mile of the site and no properties that contain potential or recognized contamination with hazardous materials are located within one-quarter mile of the site. Furthermore, no underground or aboveground storage tanks observed on-site. To validate these results from 2000, the following databases were consulted in May of 2017 for known hazardous materials contamination near the site:

- Superfund Enterprise Management System (SEMS) database;
- State Water Resources Control Board's GeoTracker database;
- Department of Toxic Substances Control's EnviroStor database; and
- California Environmental Protection Agency's "Cortese" list.

Consistent with the findings of the Phase I ESA, no listed sites on these databases occur within one-quarter mile of the site. Therefore, the site would not be located on a site included on a list of hazardous materials sites, there would be no impact.

e-f. **No Impact.** The site is not located within an airport land use plan and is not within the vicinity of an airport or private airstrip, therefore, the purchase and continued fuel modification and brush clearance of the site would have no impact.

g. **No Impact.** The continued fuel modification and brush clearance of existing site conditions would not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. There would be no adverse effects.

h. **No Impact.** Although the City is located in a High Fire Hazard Severity area, the purchase and continued fuel modification and brush clearance of the site would maintain the existing vacant site and does not propose any structures. Routine site maintenance would include the continuation of fuel modification and brush clearance to reduce wildland fire risks; therefore, the purchase and maintenance of the site would have no impact with regard to wildland fires.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
IX.	**HYDROLOGY AND WATER QUALITY.** Would the proposal result in:				
a.	Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☒

[14] Phase I Environmental Site Assessment, APN# 2061-001-025 and 30800 Block of Agoura Road, Agoura Hills, California, Gorian & Associates, Inc., October 2000.

b.	Substantially deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned land uses for which permits have been granted)?	☐	☐	☐	☒
c.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
d.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off site?	☐	☐	☐	☒
e.	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f.	Otherwise substantially degrade water quality?	☐	☐	☐	☒
g.	Place housing within a 100-year flood plain as mapped on federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h.	Place within a 100-year flood plain structures, which would impede or redirect flood flows?	☐	☐	☐	☒
i.	Expose people or structures to a significant risk of loss, inquiry or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j.	Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

a-f. No Impact. The purchase of the subject property would maintain the existing undeveloped condition of the site and would therefore have no impact with regard to the violation water quality standards or waste discharge requirements, substantial groundwater depletion, substantial alteration of the existing drainage pattern in a manner that could result in substantial erosion or siltation on- or off-site or increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off site, create runoff water that could exceed the capacity of existing stormwater drainage system, or otherwise substantially degrade water quality.

g-j. No Impact. The purchase of the subject property does not propose housing within a 100-year flood plain or structures within a 100-year flood plain which could impede or redirect flood flows. The site is not located within a flood plain[15] and does not propose structures that could expose people to a significant risk of loss, inquiry or death involving flooding, including flooding as a result of the failure of a levee or dam, or inundation by seiche, tsunami, or mudflow.

[15] U.S. Dept. of Homeland Security, Federal Emergency Management Agency, Flood Insurance Rate Map, Los Angeles County, California, Map #06037C1243F, Sept. 26, 2008, FEMA Flood Map Service Center, accessed May 10, 2017, at http://msc.fema.gov/portal/search#searchresultsanchor

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
X.	**LAND USE AND PLANNING**. Would the project:				
a.	Physically divide an established community?	☐	☐	☐	☒
b.	Conflict with applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including but not limited to the general plan, specific plan, coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c.	Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

a. **No Impact.** The purchase of the subject property would maintain the existing conditions of the vacant site and no development would occur. Therefore, the purchase of the subject property would not physically divide an existing community.

b. **No Impact**. The purchase and continued fuel modification and brush clearance of the site would maintain the existing conditions of the site consistent with the existing General Plan designation, Ladyface Mountain Specific Plan, and Zoning. Therefore, there would be no impact related to conflicts with applicable plans, policy, or regulations.

c. **No Impact.** The site is not located within, and does not include, a habitat conservation plan or natural community conservation plan, there would be no impact.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XI.	**MINERAL RESOURCES**. Would the project:				
a.	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b.	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

a-b. **No Impact.** As indicated in the City General Plan, according to the California Division of Mines and Geology, no significant mineral deposits are known to exist within the City.[16] The site is within the City limits, does not contain a known mineral resource that would be of value to the region and the residents of the state, and would not result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

[16] City of Agoura Hills Planning Department, Final General Plan Update March 2010, Ch. 4, Natural Resources, pg. 4-20.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XII.	**NOISE.** Would the project result in:				
a.	Exposure of persons to or generation of noise in level in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒
b.	Exposure of people to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c.	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d.	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
e.	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f.	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

a-d. No Impact. The purchase and maintenance of the site would maintain the existing condition of the vacant site and would involve no new construction activities. Routine maintenance for fuel modification and brush clearance would continue within the timeframes allowed by existing City ordinances. Therefore, the purchase and maintenance of the site would have no impact regarding exposure of persons to, or generation of, noise in level in excess of standards established in the local general plan or noise ordinance, exposure of people to or generation of excessive groundborne vibration or groundborne noise levels, a substantial permanent increase in ambient noise levels in the site vicinity above levels existing without the purchase and maintenance of the site, or a substantial temporary or periodic increase in ambient noise levels in the site vicinity above levels existing without the purchase and maintenance of the site.

e-f. No Impact. The site is not located within an airport land use plan and is not within the vicinity of an airport or private airstrip and would therefore have no impact.

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XIII.	**POPULATION AND HOUSING**. Would the project:				
a.	Induce substantial population growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒

b.	Displace substantial numbers of existing housing necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c.	Displace substantial numbers of people necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

a-c. **No Impact.** The continued fuel modification and brush clearance of the existing condition of the vacant site would not provide new homes or additional jobs in the area, and therefore would not directly induce substantial population growth. The purchase and continued fuel modification and brush clearance of the site would not introduce new roads or utilities that would indirectly induce population growth in the area. The purchase and continued fuel modification and brush clearance of the site would not displace existing housing or people. Therefore, there would be no impact with regard to population and housing.

	Potentially Significant Impact	**Potentially Significant Unless Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
XIV. PUBLIC SERVICES. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
a. Fire protection?	☐	☐	☐	☒
b. Police protection?	☐	☐	☐	☒
c. Schools?	☐	☐	☐	☒
d. Parks?	☐	☐	☐	☒
e. Other public facilities?	☐	☐	☐	☒

a. **No Impact**. The purchase of the subject property would maintain existing conditions at the vacant site and would therefore result in no increase in demand for fire protection services that could cause adverse physical impacts associated with the provision of new or physically altered fire protection facilities. Given the site would remain unimproved with no habitable structures, the property owner or Weed Hazard and Integrated Pest Management Bureau of the County Agricultural Commissioner would be responsible for continued brush clearance.

b.-e. **No Impact.** The purchase of the subject property would not construct new housing or generate residents or employees in the area. Therefore, the purchase and continued fuel modification and brush clearance of the site would not increase demand for police services or the use of schools, parks, libraries, or other public facilities. No new or physically altered governmental facilities would be required to provide these services and there would be no impact.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XV. RECREATION.				
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

a-b. No Impact. The purchase of the subject property would not construct new housing or generate residents or employees in the area. Therefore, the purchase of the subject property would not require the expansion of recreational facilities or increase the use of existing recreational facilities and would have no impact on recreation.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XVI. TRANSPORTATION/CIRCULATION. Would the project:				
a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒
b. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d. Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e. Result in inadequate emergency access?	☐	☐	☐	☒
f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

a-f. No Impact. The purchase of the subject property would maintain the existing condition of the vacant site, generate no vehicle tips, and would therefore not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system or an applicable congestion management program. The site is not located within an airport land use area and would have no impact on air traffic patterns. The JPA would maintain the existing condition of the vacant site and would therefore not increase hazards due to a design feature or incompatible uses, result in inadequate emergency access, or conflict with adopted policies plants or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. Therefore, the purchase and continued fuel modification and brush clearance of the site would have no impact on transportation and circulation.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XVII. TRIBAL CULTURAL RESOURCES. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☐	☒
b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	☒

a-b. No Impact. The purchase and continued fuel modification and brush clearance of the site would maintain existing conditions at the vacant site, does not propose new construction, and would therefore result in no impact on potential tribal cultural resources.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XVIII. UTILITIES AND SERVICE SYSTEMS. Would the project:				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒

b.	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c.	Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d.	Have sufficient water supplies available to serve the project from existing entitlements and resource, or are new or expanded entitlements needed?	☐	☐	☐	☒
e.	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f.	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g.	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

a-b. No Impact. The purchase and continued fuel modification and brush clearance of the site would maintain existing conditions at the vacant site, does not propose new construction, would not generate wastewater, demand water, or require the construction of new stormwater drainage facilities. The purchase and site maintenance would not generate solid waste that would exceed the permitted capacity of area landfills. Vegetation removed for fuel modification and brush clearance would be properly disposed in compliance with federal, state, and local statues and regulations related to solid waste. Therefore, the purchase and continued fuel modification and brush clearance of the site would result in no impact on utilities and service systems.

	Potentially Significant Impact	**Potentially Significant Unless Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE.				
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☒
b. Does the project have impacts which are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects).	☐	☐	☐	☒

c.	Does the project have environmental effects which cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

a. No Impact. As evaluated above, the purchase and continued fuel modification and brush clearance of the subject property would have no impact on these environmental factors.

b. No Impact. As noted in the analysis of each of the environmental issues above, purchase of the subject property would have "No Impact." No impacts were determined to be "Potentially Significant" or "Less Than Significant with Mitigation Incorporated" so no mitigation measures are needed to reduce impacts to below the level of significance. Therefore, the purchase and continued fuel modification and brush clearance of the subject property would have no impacts which are individually limited, but cumulatively considerable.

c. No Impact. Generally, impacts to human beings are associated with air quality, hazards and hazardous materials, and noise impacts. As shown in the preceding analysis, the purchase and continued fuel modification and brush clearance of the subject property would result in no impact to these environmental factors. Therefore, the purchase and continued fuel modification and brush clearance of the subject property would not have substantial adverse effects on human beings, either directly or indirectly.

5.0 REFERENCES

California Department of Conservation, Farmland Mapping and Monitoring Program, Los Angeles County Important Farmland Map, 2014, http://www.conservation.ca.gov/dlrp/fmmp/Pages/LosAngeles.aspx, accessed May 9, 2017.

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California Public Resources Code, Division 13. Environmental Quality, Section 21000 et seq., California Environmental Quality Act (CEQA); and California Code of Regulations, Title 14, Guidelines for the Implementation of the California Environmental Quality Act, Section 15000 et seq., (State CEQA Guidelines).

City of Agoura Hills Planning Department, Final General Plan Update March 2010, Ch. 4, Natural Resources, pg. 4-20.

City of Agoura Hills Planning Department, Ladyface Mountain Specific Plan.

County of Los Angeles Fire Department Forestry Division, A Firewise Landscape Guide for Creating and Maintaining Defensible Space, 2011, accessed May 10, 2017, at: https://www.fire.lacounty.gov/wp-content/uploads/2014/02/Fuel-Modification-Plan-Guidelines-8-10-11.pdf.

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The Park at Ladyface Mountain Senior Apartments Project, Final Initial Study-Mitigated Negative Declaration, Rincon Consultants Inc., June 2016.

South Coast Air Quality Management District, "Clean Air Plans," http://www.aqmd.gov/home/library/clean-air-plans (accessed May 9, 2017).

South Coast Air Quality Management District, Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans, December 5, 2008, accessed May 10, 2017, at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgboardsynopsis.pdf?sfvrsn=2.

U.S. Dept. of Homeland Security, Federal Emergency Management Agency, Flood Insurance Rate Map, Los Angeles County, California, Map #06037C1243F, Sept. 26, 2008, FEMA Flood Map Service Center, accessed May 10, 2017, at http://msc.fema.gov/portal/search#searchresultsanchor.

August 7, 2017 JPA Board Meeting

TO: JPA Board of Directors

FROM: Facilities & Operations

Subject : Tapia Water Reclamation Facility Chloride Study: Request for Proposals

SUMMARY:

On June 1, 2017, the Los Angeles Regional Water Quality Control Board (LARWQCB) renewed the NPDES permit for the Tapia Water Reclamation Facility. Since 1999, the Los Angeles River outfall has been used to dispose of excess water during the Malibu Creek prohibition period when recycled water system demand is not high enough to use all of the water. Previous NPDES permits had an effluent chloride limit of 190 mg/L for the Los Angeles River discharge. The 2017 NPDES permit reduced the limit to 150 mg/L. This occurred because LARWQCB staff discovered that the application of a resolution allowing the higher limit in previous NPDES permits was in error because it only covered the portions of the Los Angeles River downstream of the Sepulveda Flood Control Basin. Tapia's discharge to the Los Angeles River occurs upstream of the Sepulveda Flood Control Basin.

Since Tapia's effluent cannot meet the new chloride limit, a Time Schedule Order (TSO) was issued. The TSO requires a study considering chloride levels in Tapia's effluent, which is to include an investigation and evaluation of sources, identification of options to reduce levels, and a recommendation on how to achieve compliance. The desired result from this study will be the consideration and implementation of a discharge-specific variance, the development of a site-specific water quality objective, or a basin plan amendment by the LARWQCB to restore the 190 mg/L chloride limit.

RECOMMENDATION(S):

Approve the issuance of a Request for Proposals for the Tapia Water Reclamation Facility Chloride Study.

FISCAL IMPACT:

No

ITEM BUDGETED:

No

FINANCIAL IMPACT:

There are no costs associated with the issuance of a request for proposals. The adopted Fiscal Year 2017-18 Budget does not provide funding for this study, so an appropriation will be requested when the study is recommended for award. The cost of the study will be allocated 70.6% to LVMWD and 29.4% to Triunfo Sanitation District.

DISCUSSION:

In 1999, Tapia began periodically discharging its treated effluent to the Los Angeles River to comply with a prohibition on discharges to Malibu Creek from April 15th to November 15th each year. The discharges to the Los Angeles River were originally permitted under NPDES Order No. 99-066, which prescribed a chloride limit of 190 mg/L rather than the 150 mg/L Basin Plan Water Quality Objective. The rationale for the higher chloride limit was LARWQCB Resolution No. 97-02 that revised the chloride limit from 150 mg/L to 190 mg/L for various surface waters, including certain reaches of the Los Angeles River, due to the impacts of drought on chloride levels in potable source waters. The 190 mg/L chloride limit has been maintained in all subsequent permits for Tapia based on the same rationale.

During the renewal of Tapia's NPDES permit, the LARWQCB staff discovered that the long-standing application of Resolution No. 97-02 was in error because it only covered the portions of the Los Angeles River downstream of the Sepulveda Flood Control Basin and Tapia's discharge occurs upstream. The reason that the 1997 Resolution did not include the portions of the Los Angeles River upstream of Sepulveda Flood Control Basin is because there were no discharges from publicly owned treatment works upstream of the Tillman Water Reclamation Plant, which is adjacent the Sepulveda Flood Control Basin, at that time. Tapia's permitted-discharges to the upstream reach of the Los Angeles River did not begin until two years later in 1999.

Tapia's discharge to the Los Angeles River is vital to the success of the Pure Water Project Las Virgenes-Triunfo. The new NPDES permit has stipulations that allow for discharge to Malibu Creek during heavy rain events when daily flows exceed 11 MGD. The rationale for the 11 MGD trigger point was that 6 MGD could be sent to the advanced water treatment facility and 5 MGD could be pumped to the Los Angeles River. If the option to discharge to the Los Angeles River is not available, then the capacity to dispose of excess effluent during rain events is reduced to 6 MGD. Additionally, discharge to the Los Angeles River may also be necessary to dispose of small amounts of effluent when there is not enough water available to start up and maintain operation of the advanced water treatment plant.

During the draft permit comment period, JPA staff requested that the LARWQCB issue a Time schedule Order (TSO), which would culminate in a proposed Basin Plan Amendment. At the June 1, 2017 permit hearing the LARWQCB issued a TSO, which requires a study to be completed with the following requirements:

1. Investigation

- Identify chloride levels in all source waters delivered to residents in the JPA's service area from 1999 to present. The composition of the various sources of water delivered to the service area shall be described, including but not limited to water from the State Water Project, Colorado River Aqueduct, Los Angeles Department of Water and Power and Las Virgenes Reservoir.

- Identify chloride concentrations in the influent, effluent and receiving water from 1999 to present, if available.
- Describe impacts of drought, water conservation, and statewide water efficiency standards on final effluent chloride concentrations.
- Identify potential impacts from unique geology in the Malibu Creek Watershed on chloride levels.
- Identify impacts to the final effluent chloride concentrations from the use of sodium hypochlorite at the Tapia Water Reclamation Facility, Westlake Filtration Plant and for potable water distribution system maintenance.
- Investigate the number of water softeners in the service area using available data.
- Identify possible source reduction activities including, but not limited to, chlorine dose optimization and ultraviolet light disinfection.
- Complete a Chloride Source Investigation Report.

2. Evaluation

- Evaluate data from the Chloride Source Investigation Report and impacts on chloride levels in the final effluent.
- Evaluate beneficial uses of the receiving water downstream of the discharge point to the Los Angeles River, the frequency of the discharge, characterization of the discharge location and flow path, and the impact the discharge may have on the receiving waters.
- Evaluate potential source reduction activities that the Permittee can feasibly implement to reduce chloride in influent and effluent, including timeframes for each activity.
- Evaluate the effect of drought on chloride levels in source and influent water and substantiate whether or not the findings in Resolution No. 97-02 are applicable to Tapia Water Reclamation Facility's discharge.
- Complete Chloride Evaluation of Options Report.

3. Identification of Options

- Propose possible source reduction activities including, but not limited to, public outreach, chloride dose optimization, and the cost, impact and feasibility of installing an ultraviolet light disinfection system.
- Propose solutions that may include utilizing the Chloride Source Investigation and Evaluation Reports, development of a Site-Specific Objective, a Basin Plan Amendment, and/or a discharge-specific variance for consideration by the LARWQCB.
- Complete an Identification of Options Report.

4. Recommendation

- Present a recommendation and supporting data for appropriate remedial actions including possible source reduction activities and site-specific or discharge-specific regulatory actions.
- Complete a Recommendation Report.

The scope of work for the Request for Proposals is for the consultant to develop the source investigation, evaluation, identification of options and recommendation for chloride in Tapia effluent as outlined in the TSO. The desired result from the study will be the consideration and implementation of a discharge-specific variance, development of a site-specific water quality objective, or approval of a basin plan amendment to restore the 190 mg/L chloride limit.

In addition to investigation of the number of water softeners in the service area, the TSO requires that public outreach on the prohibition of self-regenerating water softeners be enhanced. This work will be done by staff in coordination with the Investigation Phase of work for the TSO.

Prepared by: Brett Dingman, Water Reclamation Manager

ATTACHMENTS:

Tapia Chloride Study Request for Proposals

REQUEST FOR PROPOSALS

FOR

Tapia Water Reclamation Facility Chloride Study

PROPOSALS DUE by 3:00 p.m., September 7, 2017

LAS VIRGENES – TRIUNFO JOINT POWERS AUTHORITY
4232 LAS VIRGENES ROAD
CALABASAS, CA 91302
818.251.2100

August 2017

REQUEST FOR PROPOSALS
Las Virgenes – Triunfo Joint Powers Authority

TABLE OF CONTENTS

ATTACHMENTS

I. BACKGROUND INFORMATION

The Las Virgenes – Triunfo Joint Powers Authority (JPA) was formed between the Las Virgenes Municipal Water District (LVMWD) and the Triunfo Sanitation District (TSD) in 1964 to construct, operate and maintain a joint wastewater treatment system for their respective service areas, primarily within the Malibu Creek Watershed. The JPA facilities include the Tapia Water Reclamation Facility (WRF), the Rancho Las Virgenes Composting facilities, approximately 60 miles of trunk sewers, and an extensive recycled water transmission and distribution system.

The Tapia WRF was originally constructed to treat 0.5 million gallons per day (MGD). Several expansions have increased the plant to a capacity of 12 MGD, treating wastewater to the tertiary level. Tapia currently treats approximately 7.0 MGD ADWF which is disposed of through three different methods: recycled water use, discharge to the Los Angeles River, or discharge to Malibu Creek. Discharge to Malibu Creek and the Los Angeles River are regulated under a National Pollutant Elimination System (NPDES) permit issued by the Los Angeles Regional Water Quality Control Board. Due to the development and implementation of new Total Maximum Daily Loads to protect benthic macroinvertebrates in Malibu Creek, the permit limits for nutrients discharged to Malibu Creek have been drastically reduced making discharge of effluent impractical.

In 2016, the Joint Powers Authority Board selected the use of indirect potable reuse as the preferred method to attain regulatory compliance through a project known as "*Pure Water Project Las Virgenes – Triunfo.* A new Advanced Water Treatment Plant (AWT) will be constructed to produce purified water from Tapia's effluent, which will be used for surface water augmentation, and eventually, treatment and distribution to potable water customers. The implementation of indirect potable reuse will eliminate almost all discharge of Tapia's effluent. There will still be instances of discharge to the L.A. River when there is not enough available water to start up the AWT or when there is high effluent flows at Tapia due to wet weather.

In June of 2017, the Los Angeles Regional Water Quality Control Board approved a new NPDES permit and Time Schedule Order (TSO) for Tapia. The permit recognized that compliance with the winter time TMDL nutrient limits would be achieved through indirect potable reuse and provided a 13.5 year time schedule for compliance. The TSO was issued to address a change in the chloride limit for discharge to the Los Angeles River. In previous permits, the limit for chloride in effluent discharged to the Los Angeles River was 190 mg/L. However, during the permit renewal, it was found that there was no regulatory justification for this limit and that a Basin Plan limit of 150 mg/L should be implemented. Because Tapia cannot meet the 150 mg/L limit, a TSO was issued. In the TSO a milestone schedule was included which calls for a chloride source investigation and evaluation report with identified options and recommendations to be completed which will result in the consideration of a discharge-specific variance, the development of a site-specific water quality objective, or other basin plan amendment to restore the 190 mg/L chloride limit. The scope of this RFP is to develop the source investigation, evaluation, identification of options and recommendation for chloride in Tapia effluent as outlined in the TSO.

II. SCOPE OF WORK

The proposed scope of work includes the following tasks; however, the consultant should include additional tasks as necessary for the ultimate success of the project:

1. Investigation
    a. Identify chloride levels in all source waters delivered to residents in JPA's service area from 1999 to present. The composition of the various sources of water delivered to the service area shall be described, including but not limited to water from the SWP, Colorado River Aqueduct, Los Angeles Department of Water and Power, and Las Virgenes Reservoir.
    b. Identify chloride concentrations in the influent, effluent, and receiving water from 1999 to present, if available.
    c. Describe impacts of drought, water conservation, and state-wide water efficiency standards on final effluent chloride concentrations.
    d. Identify potential impacts from unique geology in the Malibu Creek Watershed on chloride levels.
    e. Identify impacts to the final effluent chloride concentrations from the use of sodium hypochlorite at the Tapia WRF, Westlake Filtration Plant and in potable water distribution system maintenance.
    f. Investigate the number of water softeners in the service area using available data.
    g. Identify possible source reduction activities including, but not limited to, chlorine dose optimization and ultraviolet light disinfection.
    h. Complete a *Chloride Source Investigation Report*.
2. Evaluation
    a. Evaluate data from the Chloride Source Investigation Report and impacts on chloride levels in the final effluent.
    b. Evaluate beneficial uses of the receiving water downstream of Discharge Point 005, the frequency of the discharge, characterization of discharge location and flow path, and the impact the discharge may have on the receiving water.
    c. Evaluate potential source reduction activities that the Permittee can feasibly implement to reduce chloride in influent and effluent, including timeframes for each activity.
    d. Evaluate the effect of drought on chloride levels in source and influent water and substantiate whether or not the findings in 97-02 are applicable to Tapia WRF's discharge.
    e. Complete *Chloride Evaluation of Options Report*.
3. Identification of options
    a. Propose possible source reduction activities including, but not limited to, public outreach, chloride dose optimization, and the cost, impact and feasibility of installing an ultraviolet light disinfection system.
    b. Propose solutions that may include utilizing the Chloride Source Investigation and Evaluation Reports, development of a Site-Specific Objective, a Basin Plan Amendment, and/or a discharge-specific variance for consideration by the Regional Water Board.
    c. Complete an *Identification of Options Report*.
4. Recommendation

a. Present a recommendation and supporting data for appropriate remedial actions including possible source reduction activities and site-specific or discharge-specific regulatory actions.
b. Complete a *Recommendation Report.*

5. Develop a project schedule indicating major milestones assuring compliance with the deadlines in the TSO.
6. Conduct JPA staff workshops to receive input/direction.
7. Review available materials related to the project.
8. Perform site visits as necessary.
9. Attend and/or present at JPA/ RWQCB meetings as necessary (Assume a minimum of four meetings).

III. SERVICES OR DATA PROVIDED BY DISTRICT

The District will provide the following data, access, services or resources:

- Access to the facilities.
- Available records.
- District staff to answer questions.

IV. MINIMUM CONSULTANT QUALIFICATIONS

- The selected firm shall have staff registered as a State of California Professional Engineer.
- The District's standard Consultant Agreement is included as an attachment. The consultant shall have the ability to execute the agreement in this form Professional liability insurance in the amount of $2 million.
- Proven experience on at least three recently completed projects of scope.

V. PROPOSAL REQUIREMENTS

1) Legal name of firm with address, telephone number and the name of at least one principal.
2) Project understanding and approach.
3) A recommended scope of work, which clearly displays an understanding of the project, including a proposed schedule.
4) Provide an itemized list of cost for the investigation, evaluation, identification of options, and recommendation listed in the scope of work.
5) List of assumptions or recommended services that are not a part of the proposal.
6) Names and résumés of individual(s) proposed to perform the services, including proof of professional registrations, as appropriate.
7) Names, qualifications and principals of any sub-consultants to be utilized in providing the service(s).
8) References for 3 recently completed projects of similar scope, including contact person and telephone number.
9) Description of the firm's internal quality control process.
10) Certificate of professional liability insurance.
11) Cost to perform the services, a schedule of rates and any anticipated rate changes. The costs and rate schedule shall be provided in a separate package.

VI. EVALUATION CRITERIA

Proposals will be evaluated based upon the following:

1) A comprehensive and understandable Scope of Work.
2) Expertise in performing the Scope of Work.
3) The quality of performance on similar past projects, including those on which the proposed team has worked together.
4) The ability to meet time schedules and complete the work within established budgets.
5) The firm's history and resource capacity to perform the requested service.
6) The experience and qualifications of assigned personnel.
7) The cost of proposal.

Interviews with selected consultants maybe conducted as a part of the review process.

VII. REQUEST FOR PROPOSAL SCHEDULE

Request for Proposals	August 8, 2017
Pre-proposal Meetings	If requested by consultant
Proposal Due Date (3:00 p.m.)	September 7, 2017
Interviews if necessary (week of)	September 25, 2017
Acceptance of Proposal (Board meeting)	November 6, 2017

Please submit five (5) physical copies and one (1) digital copy of your proposal no later than 3:00 p.m. on September 7, 2017 by mailing or delivering them to:

Attn: Brett Dingman, P.E.
Las Virgenes Municipal Water District
4232 Las Virgenes Road
Calabasas, CA 91302

For questions, or to arrange a tour. Please contact Brett Dingman (818) 251-2330, bdingman@lvmwd.com.

CONSULTANT AGREEMENT

As of DATE, Las Virgenes Municipal Water District hereinafter called "Agency," and **CONSULTANT NAME,** hereinafter called "Consultant," agree as follows:

1. Purpose.

Under this Agreement, Consultant shall provide description of work and for what project.

2. Services.

The Consultant shall, in good workmanlike and professional manner, furnish the technical, administrative, professional and other labor, supplies and materials, equipment, printing, vehicles, transportation, office space and facilities necessary to perform and complete the work and provide the services as set forth in Exhibit "A" of this Agreement.

3. Consideration.

(a) The Agency shall compensate Consultant on a time-and-material basis, contingent on satisfactory performance of the work. The aggregate payments under this Agreement shall not exceed $XXXXX, as more fully described on Exhibit "A." Consultant shall pay prevailing wages to the extent required by law, including Labor Code Section 1720.

(b) The Consultant shall complete and submit an invoice showing date of work, description of work performed, amount of invoice and supporting documentation. The Agency shall pay the Consultant within thirty (30) days of invoice being submitted.

4. Term.

This Agreement shall commence on the date above written, and shall continue until completion of the services described above. Either party may terminate this agreement on thirty (30) days' written notice. If this contract is terminated by Agency without cause, Agency shall pay Consultant for work performed prior to the date the notice of termination is received by contractor. If the contract is terminated by Consultant without cause, Consultant shall reimburse Agency for additional costs to be incurred by Agency in obtaining the work from another consultant.

5. Ownership of Data, Reports, and Documents.

The Consultant shall deliver to Agency on demand or completion of the project, notes of surveys made, reports of tests made, studies, reports, plans, and other materials and documents which shall be the property of the Agency. If the Agency uses any of the data, reports, and documents furnished or prepared by the Consultant for projects other than the project shown on Exhibit "A," the Consultant shall be released from responsibility to third parties concerning the use of the data, reports, and documents. The Consultant may retain copies of the materials. The Agency may use or reuse the materials prepared by Consultant without additional compensation to Consultant.

6. Subcontracts.

The Consultant shall not subcontract or assign responsibility for performance of any portion of this Agreement without the prior written consent of the Agency. Except as otherwise specifically approved by Agency, Consultant shall include appropriate provisions of this Agreement in subcontracts so rights conferred to Agency by this Agreement shall not be affected or diminished by subcontract. There shall be no contractual relationship intended, implied or created between Agency and any subcontractor with respect to services under this Agreement.

7. Independent Contractor.

The Consultant is an independent contractor, and not an employee of Agency.

8. Indemnification.

Consultant shall defend, indemnify, and hold harmless Agency, its officers, employees and agents, from and against loss, injury, liability, or damages arising from any act or omission to act, including any negligent act or omission to act by Consultant or Consultant's officers, employees, or agents. Consultant's duty to indemnify and defend does not extend to the damages or liability caused by the agency's sole negligence, active negligence, or willful misconduct.

9. Insurance.

(a) Consultant shall procure and maintain, for the duration of this Agreement, insurance against claims for injuries to persons or damages to property arising from or in connection with the performance of the work hereunder by the Consultant, officers, agents, employees, or volunteers.

(b) Consultant shall provide the following coverages:

(1) Commercial general liability insurance written on an occurrence basis in the amount of $1,000,000 combined single limit per occurrence for bodily injury, personal injury, and property damage. The insurance policy shall be amended to provide the general aggregate limit shall apply separately to the work under this Agreement or the general aggregate shall be twice the required per occurrence limit.

(2) Business automobile liability insurance insuring all owned, nonowned and hired automobiles, in the amount of $1,000,000 combined single limit per accident for bodily injury and property damage.

(3) Workers' Compensation insurance as required by the Labor Code of the State of California with the statutory limits required by the Labor Code and Employers Liability for $1,000,000 per accident for bodily injury or disease. Consultant and subcontractors shall cover or insure their employees working on or about the site, regardless of whether such coverage or insurance is mandatory or merely elective under the law.

(4) Professional liability insurance covering loss resulting from errors or omissions of Consultant with a liability limit of at least $1,000,000 per occurrence.

(c) The insurance policies required above shall contain or be endorsed to contain the following specific provisions:

(1) Commercial general liability and automobile liability:

(i) Agency and its board members, officers, employees, agents and volunteers are added as insureds.

(ii) Consultant's insurance shall be primary insurance as respects the Agency, its board members, officers, employees, agents and volunteers and any insurance or self-insurance maintained by Agency shall be in excess of Consultant's insurance and shall not contribute to it.

(iii) Any failure to comply with the claim reporting provisions of the policies or any breach of a policy warranty shall not affect coverage under the policy provided to Agency, its board members, officers, employees, agents and volunteers.

(iv) The policies shall contain a waiver of transfer rights of recovery ("waiver of subrogation") against Agency, its board members, officers, employees, agents and volunteers, for any claims arising out of the work of Consultant.

(v) The policies may provide coverage which contains deductible or self-insured retentions. Such deductible and/or self-insured retentions shall not be applicable with respect to the coverage provided to Agency under such policies. Consultant shall be solely responsible for deductible and/or self-insured retention and Agency, at its option, may require Consultant to secure the payment of such deductible or self-insured retentions by a surety bond or an irrevocable and unconditional letter of credit. The insurance policies that contain deductibles or self-insured retentions in excess of $25,000 per occurrence shall not be acceptable without the prior approval of Agency.

(vi) Prior to start of work under this Agreement, Consultant shall file with Agency evidence of insurance as required above from an insurer or insurers certifying to the required coverage. The coverage shall be evidenced on a certificate of insurance signed by an authorized representative of the insurer(s). A copy of certificate shall be filed with the Agency. Should the required coverage be furnished under more than one policy of insurance, Consultant may submit as many certificates of insurance as needed to provide the required amounts. If the Certificate furnished by Consultant does not adequately verify the required coverage, Agency has the right to require Consultant to provide copies of the specific endorsements or policy provisions actually providing the required coverage. The Agency reserves the right to require certified complete copies of any insurance coverage required by this Agreement, but the receipt of such policy or policies shall not confer responsibility upon the Agency as to sufficiency of coverage.

(2) Each policy required in this section shall contain a policy cancellation clause that provides the policy shall not be canceled or otherwise terminated by the insurer or the Consultant or reduced in coverage or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to the Agency, Attention: Office Manager.

(d) Insurance required by this Agreement shall be placed with insurers licensed by the State of California to transact insurance business of the types required herein. Each insurer shall have a current Best Insurance Guide rating of not less than A: VII unless prior approval is secured from the Agency as to the use of such insurer.

(e) Consultant shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein. Consultant shall maintain evidence of compliance with the insurance requirements by the subcontractors at the job site and make them available for review by Agency.

10. Miscellaneous.

(a) Copies of documents such as tracings, plans, specifications, and maps prepared or obtained under the terms of this agreement shall be delivered to and become the property of Agency. These documents are instruments of service for this project only and are not intended or authorized for other use by Agency or third parties.

Basic survey notes, sketches, charts, and computations shall be made available upon request to the owner without restrictions or limitations to their use. If the above-mentioned documents are reused by Agency, revisions will be indicated and Consultant will be released and held harmless of liabilities by Agency.

(b) Consultant shall not be responsible for the acts of omissions of any Contractor, any sub-contractor, or any of the Contractor's or sub-contractor's agents or employees or any other persons (except his own employees and agents) at the project site or otherwise performing any of the work of the project, except insofar as such acts or omissions were or should have been observed and reported by an experienced and qualified design professional or by the full-time Resident Project Representation. The Contractor is solely responsible for constructions, means, methods, materials, techniques, sequences, and safety at the site.

(c) Neither party hereto shall assign, sublet or transfer interests hereunder without first obtaining written consent from the other party.

(d) The waiver by either party of any breach of this agreement shall not bar the other party from enforcing any subsequent breach thereof.

(e) Notices shall be deemed received when deposited in the U. S. Mail with postage prepaid and registered or certified addressed as follows unless advising in writing to the contrary:

Las Virgenes Municipal Water District	Consultant
ATTN: Brett Dingman	ATTN: Their PM
4232 Las Virgenes Road	Mailing Address
Calabasas, CA 91302	

(f) If an action at law or in equity is brought to enforce this agreement, the prevailing party shall be entitled to reasonable attorney fees and costs.

11. Integration.

This Agreement represents the entire understanding of Agency and Consultant as to those matters contained herein. No prior oral or written understanding shall be of

any force or effect with respect to those matters covered hereunder. This Agreement may not be modified or altered except in writing, signed by both parties.

12. Governing Law.

This Agreement shall be interpreted and construed under, and the rights of the parties will be governed by the laws of the State of California.

IN WITNESS WHEREOF, the parties hereby have caused this Agreement to be executed the date first above written.

APPROVED:	APPROVED:
[Agency]	**[Consultant]**
_____	By: _____
_____	By: _____
_____	Name: _____
Name:	
Its:	Its:

August 7, 2017 JPA Board Meeting

TO: JPA Board of Directors

FROM: Resource Conservation & Public Outreach

Subject : Characterization, Evaluation and Control of Invasive Species in the Malibu Creek Watershed: Research Report

SUMMARY:

The 2013 *Malibu Creek and Lagoon TMDL for Sedimentation and Nutrients to Address Benthic Community Impairments,* established by the U.S. EPA, did not provide adequate consideration of the impact of invasive species on biological communities due to the lack of data and a time constraint to meet the court-ordered deadline for establishment of the TMDL. To fill this data gap, the JPA funded a research project, in the amount of $50,841 and beginning in August 2015, to assess the impacts of invasive species in the watershed on stream health.

The research work was performed by Pepperdine University and the University of California, Los Angeles, in partnership with the La Kretz Center for California Conservation Science and Mountains Restoration Trust. The objective was to evaluate the effects of invasive species on biodiversity in stream ecosystems. Attached is a copy of the research report. In summary, the research indicates that the effect of crayfish on benthic macroinvertebrates far exceeds the impact associated with water quality.

The research results will be a valuable tool to allocate future resources to actions that most effectively improve stream health, provide more information when the TMDL implementation plan is re-opened, and evaluate the implications of the JPA's creek flow augmentation requirements.

RECOMMENDATION(S):

Receive and file JPA Report No. 2755.00: *The Characterization, Evaluation and Control of Invasive Species in the Malibu Creek Watershed*.

FISCAL IMPACT:

No

ITEM BUDGETED:

Yes

FINANCIAL IMPACT:

There is no financial impact associated with this action. The total cost of the research was $55,841, which was within the approved budget for the project. One change order, in the amount of $5,000, was approved to perform additional sampling and analyses for post-winter scouring of macroinvertebrate communities at the 12 sample sites.

DISCUSSION:

Background:

During the comment period for the TMDL, JPA staff noted that the U.S. EPA considered only invasive species that may be niche competitors for benthic macroinvertebrates. By omitting consideration of invasive species with the potential for significant predation or habitat competition (crayfish and New Zealand mudsnails) within benthic macroinvertebrate communities, the TMDL ignored the impact that these species might have on achieving desired biological scores. Specifically, the TMDL used the California Stream Condition Index (CSCI) and the Southern California Index of Biological Integrity (IBI) to assess biodiversity in the watershed. Both of these methodologies have the potential to reflect depressed scores as a result of predation and habitat competition with benthic communities. TMDL objectives for CSCI scores are based upon a median scores over a four year period and should score between the 5th and 10th percentile of the model reference distribution (the 1st – 10th percentile is 0.62 – 0.72). The TMDL objectives for IBI are based on the median over four years and should be ≥40.

Research Partners:

In August 2015, the JPA contracted with Pepperdine University and the University of California, Los Angeles to better understand the effects of invasive species on benthic communities. The lead investigators for the project were Dr. Lee Kats, Pepperdine's Vice Provost for Research and Strategic Initiatives and Chair of the Natural Sciences Department, Dr. Gary Bucciarelli, Stunt Ranch Director of Research, UCLA La Kretz Center for California Conservation Science, and Debbie Sharpton, Executive Director for Mountains Restoration Trust.

Methodology:

The research began in spring 2016 at 12 study sites throughout the Santa Monica Mountains. Site visits and sample collection occurred over a 9-month period between April and November 2016. One additional sample collection occurred at each of the sites in April 2017. The last sample collection was to take advantage of the opportunity to compare benthic macroinvertebrate communities after the significant rain and stream flows that occurred over last winter to those collected the previous year at the end of a prolonged drought.

Analysis of samples collected over the winter included the identification and tabulation of organisms using both the CSCI and IBI indices. This information, combined with water chemistry and physical parameters at the collection sites, was applied using regression analyses to objectively identify the most important variables affecting bioscores and the relative influence of each variable.

Key Results:

The study provided much needed insight into the effects of invasive species are on benthic communities. Key findings included:

- Crayfish affect benthic macroinvertebrates and the overall biological integrity of a stream. Based upon the data collected and subsequent analyses, it appears that the effect of crayfish on benthic macroinvertebrate communities far exceeds the impact of water quality. In general, CSCI scores from streams with crayfish were depressed by approximately 50% to 75% relative to streams without crayfish.
- Crayfish removal improves stream biological conditions but not abiotic conditions. In general, sites where crayfish were removed consistently scored higher CSCI, MMI and IBI scores relative to sites where no trapping occurred.
- The percentage of invasive taxa can be used to predict break points in stream biological integrity. The study found that sites where sample contained greater than 15% invasive taxa, CSCI scores reached no higher than 0.35. However, when invasive taxa comprised less than 15% of a sample, CSCI scores could reach as high as 0.56.
- Drought appears to have dampened 2016 CSCI scores; IBI and MMI scores appear to be less sensitive to drought. When comparing sites between samples collected at the end of a prolonged drought in 2016 with those collected after an unusually wet winter in 2017, score were generally higher following the wet weather. CSCI scores rose on average by 70% in sites with no crayfish. Score were also significantly higher in sites with crayfish in 2017.

Application of New Information:

The Pure Water Project Las Virgenes-Triunfo brings the JPA in compliance with its regulatory requirements established by the TMDL. However, the information contained in the research report will continue to be extremely useful to guide decisions to further improve water quality and habitat in the watershed including:

- Future programs and projects: Focus restoration efforts on programs and projects that achieve the greatest return on investment. With the goal of the TMDL being the improvement of benthic macroinvertebrate communities, it could be that restoration investments would achieve greater benefits by including invasive species control rather than focusing solely on nutrient reductions.
- Future Reconsideration of the TMDL Implementation Plan: The TMDL Implementation Plan approved last year is scheduled to be re-opened after five years with the potential for changes based upon new information. This report could be instrumental in the development of new implementation objectives that include the control of invasive species as a means of TMDL compliance.
- Compliance Efforts by MS4 Permitees: The MS4 permitees will be able to use this information when discussing TMDL compliance with the Regional Water Board.
- Creek Flow Augmentation from Tapia Water Reclamation Facility: The release of recycled water from Tapia to support endangered species (flow augmentation) is still required even with the Pure Water Project Las Virgenes-Triunfo. A better understanding of the impact of this discharge on effective control of invasive species could be useful in future discussions about discharge requirements.

Prepared by: Dave Roberts, Resource Conservation Manager

ATTACHMENTS:

The Characterization, Evaluation and Control of Invasive Species in the Malibu Creek Watershed

The Characterization, Evaluation, and Control of Invasive Species in the Malibu Creek Watershed

Submitted to:

The Las Virgenes Municipal Water District
731 Malibu Canyon Road
Calabasas, CA 91302

Submitted by:

Gary M. Bucciarelli [1,2]; Debbie Sharpton [3]; Lee B. Kats [4]

[1] UCLA Department of Ecology and Evolutionary Biology; Los Angeles, CA 90095
[2] La Kretz Center for California Conservation Science; Los Angeles, CA 90095
[3] Mountains Restoration Trust; Calabasas, CA 91302
[4] Pepperdine University; Malibu, CA 90263

Prepared July 2017

LVMWD Report No. 2755.00

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Acronyms and abbreviations

CPOM	Coarse Particulate Organic Matter
CSCI	California Stream Condition Index
DO	Dissolved Oxygen
IBI	Southern California Index of Biological Integrity
lat	Latitude
lon	Longitude
pMMI	Predictive Multi-Metric Index
MLV	Mid Las Virgenes
NO	Nitrates and Nitrites
NZMS	New Zealand Mud Snail
ppb	Parts Per Billion
ppm	Parts Per Million
SWAMP	Surface Water Ambient Monitoring Program
TKN	Total Kjeldahl Nitrogen
TWRF	Tapia Water Reclamation Facility
TN	Total Nitrogen
TP	Total Phosphorous
ULV	Upper Las Virgenes

Site names and synonymy

study site name	synonyms	recognized site codes
Arroyo	Arroyo Sequit Creek	*HtB-19*
Cold Creek	Cold Creek Preserve	*HtB-03*
Lindero Upper	Lindero Creek Upper	-
Lindero Lower	Lindero Creek Lower	-
Malibu	Malibu Creek (at Cross Creek Rd.)	*HtB-MC-1*; *RSW-MC003D*
Medea	Medea Creek	-
MLV	Malibu Creek (at Muholland Dr.)	*S_LLASVIR* (~150 m downstream)
Solstice	Solstice Creek	*HtB-14* (~600 m downstream)
Tapia	Malibu Creek (near F-130 gage station)	*HtB-15*; *RSW-MC013D* (~200 m downstream)
Trancas	Trancas Canyon Creek	-
Tuna	Tuna Canyon Creek	-
ULV	Malibu Creek (above 101 freeway)	-

Executive Summary

Biodiversity is a vital component of healthy ecosystems and is integral to the services they provide. A "biodiversity hotspot" is where regional biodiversity is extremely high yet habitat is threatened. Southern California is recognized as one of only two biodiversity hotspots in North America. In Southern California, a major threat to biodiversity is habitat modification, which includes the degradation of aquatic resources. Urbanization, pollution, and complete habitat loss have all been identified as having major negative effects on water quality and aquatic biodiversity across streams and watersheds in the greater Los Angeles area. Additionally, non-native species have also been found to diminish stream ecosystems and habitat quality. This is because introduced species can displace or extirpate native species, especially in aquatic systems where species tend to be highly susceptible to abrupt changes in biological community dynamics and composition.

Over the last 80 years, crayfish (*Procambarus clarkii*) and other aquatic nonnative invertebrates, such as the New Zealand mud snail (NZMS, *Potamopyrgus antipodarum*) have established populations throughout streams in the Santa Monica Mountains. During this same period, researchers documented precipitous declines or the complete loss of local amphibian populations, which was linked to predation and competition from introduced crayfish. Field observations suggest that benthic macroinvertebrates (BMI) may also be impacted by non-native species, which could be due to competition, predation, and/or changes to stream conditions as a result of anthropogenic modifications (i.e. water temperature, dissolved oxygen content, sedimentation, and water chemistry).

On-going management activities (via manual trapping) throughout the Santa Monica Mountains have reduced crayfish abundances with documented benefits to native amphibians, but it remains untested whether this improves habitat for BMI (as measured using the California Stream Condition Index (CSCI), predictive Multi-Metric Index (pMMI), and Southern California Index of Biological Integrity (IBI) metrics). During spring 2016, Mountains Restoration Trust (MRT) removed over 175,000 crayfish in local streams in the upper portion of the Malibu Creek Watershed and initial observations suggested that habitat quality improved, as evidenced by the return of previously unobserved insects and amphibians. However, the extent to which crayfish and NZMS affect BMI, and as an extension stream biological integrity, remained empirically undetermined. Moreover, agencies and land managers do not know at what densities invasive species lead to a collapse in stream biological integrity and whether the removal of crayfish and/or NZMS improves stream biological integrity, thereby making it difficult to manage effectively both water resources and invasive species.

This study was designed to determine what effect crayfish, NZMS, and nutrients have on stream biological integrity, by answering the following key questions:

i) Do crayfish affect BMI and overall biological integrity of a stream? Additionally, what is the effect, if any of NZMS on overall biological integrity of a stream?

ii) By performing longitudinal sampling in crayfish and non-crayfish invaded streams, can we determine if stream biological integrity changes as a result of crayfish removal?

iii) Do nutrient levels correlate with the overall biological integrity of a stream?

iv) Can numbers of invasive species in a site be used to predict breaking points when the biological integrity of a stream will be compromised below currently recognized acceptable levels?

v) Can eDNA be used to detect the presence of crayfish and NZMS post restoration efforts?

To answer these questions, 12 stream sites (Figure 1) were visited approximately every 30 days from April through October 2016 to collect BMI and water samples. During this period, MRT trapped and removed crayfish from Upper Lindero, Mid Las Virgenes (MLV), and Upper Las Virgenes (ULV) Creeks. Taxa in each BMI sample were identified to calculate CSCI, pMMI, and IBI scores, and water samples were analyzed to quantify total nitrogen (TN), total phosphorous (TP), Total Kjeldahl Nitrogen (TKN), and nitrate/nitrite (NO) concentrations. Additionally, during each site visit physical habitat data were collected, which included water temperature, dissolved oxygen, pH, conductivity, stream wetted width, substrate composition, bank stability, crayfish presence/absence, and native species detected. These data, along with variables pertaining to the time of season and the number of times a site was sampled, were statistically modelled to identify which variables best explained CSCI, IBI, and pMMI scores. Given the longitudinal design of the study, sites could be evaluated through time to determine the effect of crayfish removal, any potential lag effect of nutrients could be evaluated, and temporal effects (i.e. seasonal changes and repeated sampling effects) in a site could be assessed.

As a follow up to this study, another round of BMI and water samples were collected this spring (May) 2017 to determine variation in CSCI scores between drought conditions of 2016 and wet conditions in 2017. Anecdotally, many sites experienced a drastic scouring event during the 2016/2017 winter, which completely or nearly completely removed NZMS and crayfish from sites, along with years of accumulated leaf litter. Thus, we compared these 2017 CSCI, pMMI, and IBI scores to initial sample scores at sites from 2016 (because 2017 samples were the initial and only samples), as well as May scores from 2016 (since it was the month we

sampled in 2017) to understand what ranges may be expected when local conditions are favorable or less than favorable.

Key Findings

1. *Crayfish affect BMI and the overall biological integrity of a stream*.

Overall, the CSCI, pMMI, and IBI values indicate that streams with crayfish consistently have lower scores than non-crayfish sites (Figure 5-7, 9). Many of the streams where crayfish occur tended to have the highest TN and TP concentrations throughout the entirety of the study (Table 3). However, based on our data and subsequent analyses, it appears that the effect of crayfish on benthic macroinvertebrate communities far exceeds their impact on water quality as assessed by measured nutrients (Figure 10, 11). We found that streams where water quality consistently exceeded TMDL concentrations (Figure 17, 18, Table 4), but where many thousands of crayfish were removed tended to have higher CSCI, IBI, and pMMI scores than crayfish sites where no trapping and removal was performed. Model results indicated that for predicting CSCI scores, the most important variable is the percentage of invasive taxa in a sample (*invasive % taxa*, Figure 10), whereas no strong correlation could be made for water quality predictors. Similar results were obtained with models to predict IBI scores (Figure 11). We found that presence or absence of crayfish was the most explanatory predictor of IBI scores, along with percentage of invasive species in a sample. In general, CSCI scores from streams with crayfish were depressed by approximately 50% - 75% relative to streams without crayfish.

In both results, percentage of invasive taxa in a sample - which includes NZMS and crayfish - was an important predictor. In our analyses, CSCI models did not detect meaningful ways in which NZMS predicted CSCI scores. However, IBI models suggest that NZMS have some importance in predicting IBI scores. Specifically, presence or absence of NZMS was a highly-ranked predictor. Given the importance of crayfish presence or absence as a predictor in the model, and the fact that all but one site (Arroyo) would have similar presence/absence patterns of NZMS and crayfish, the ranked importance of NZMS is not surprising, but it perhaps overestimates the effects of NZMS. Additionally, IBI scores have historically deemed sites as "good" even when a large percentage of taxa were NZMS, which suggests the IBI metric in general is not as robust as the CSCI metric. However, because we could not physically remove NZMS as we could crayfish, it is difficult to conclude what direct effects NZMS have on streams. Therefore, we can only conclude that based on our analyses the presence or absence of NZMS appears to have some effect on metrics of stream biological integrity.

2. *Crayfish removal improves stream biological conditions, but not abiotic conditions*.

In general, sites where crayfish were removed consistently scored higher CSCI, pMMI, and IBI scores relative to sites where no trapping occurred. When cumulative BMI samples were pooled (to collapse temporal dynamics) and metrics evaluated, sites where crayfish were removed also tended to have higher CSCI, pMMI, and IBI scores compared to sites where minimal or no trapping occurred (Figure 9). As a result, removal effort seems to be extremely important. Specifically, we found that only Mid Las Virgenes Creek reached CSCI and pMMI scores comparable to non-crayfish site scores when greater than 150,000 crayfish were removed from this study stretch. Other crayfish sites where 1,500 and up to 15,000 crayfish were removed showed improvement relative to non-removal sites (Malibu, Trancas, Medea, and Tapia Creeks), but were still not as close as MLV to reaching the TMDL-mandated CSCI percentile, which is a four-year median that falls within the 5^{th} – 10^{th} percentile of the reference distribution (the 1^{st} – 10^{th} percentile is 0.62 to 0.79) however, the actual determination of the 5^{th} – 10^{th} percentile range for TMDL compliance would be dependent on the EPA reference data set.

When attempting to answer whether nutrient levels correlate with biological integrity, it is important to note that nutrient levels were highly different between streams with and without crayfish. As such, we evaluated the effects of nutrients and physical habitat data on CSCI and IBI for streams with and without crayfish. This included evaluating TN, TP, NO, and TKN at the time of sampling as well as concentrations of these same molecules 30-days prior to sampling. In general, our models found very little association between biological integrity metrics and nutrient levels. Although TKN and prior TKN were deemed as important predictors in CSCI and IBI models of crayfish sites (Figure 13), their explanatory power is rather low (gauged by the branch length of the nodes in tree regression and rank in % increase to mean square error in random forest analyses) relative to the physical characteristics of the site (wetted width) and whether or not amphibians are detected.

One expectation of removing crayfish is that water quality may improve, specifically TN, TKN, and NO as biological material and waste are being reduced. Sites where the most crayfish were removed did not show improvements to water quality. At MLV, where 150,000 crayfish were removed from January through June, TN concentrations fluctuated above the TMDL summer target (0.65 ppm TN) throughout the duration of our study (range: 3.35 May 2016 to 5.01 April 2016; 2017 (May) = 1.48), and concentrations of nitrates and nitrites (NO) were consistently the highest in MLV across all sites throughout the entire study period. At the upper reach of Lindero Creek (Lindero Upper), a total of 16,000 crayfish were removed from the start of 2016 through the end of October 2016. Additionally, TN concentrations at Lindero Upper remained below TMDL targets throughout the full study period, whereas the lower reach of Lindero (Lindero Lower) maintained consistently elevated TN concentrations (Table 3). However, both Upper and Lower Lindero had non-detectable concentrations of TN from April to July and concentrations of TP below the TMDL target in April. Considering no trapping occurred

in Lower Lindero from April to July, but trapping did occur in Upper Lindero during the same time, yet both sites had non-detectable concentrations of TN (and to some extent TP), it does not seem logical to assert that crayfish removal improved or reduced nutrient levels. However, it may be that measured concentrations were in fact lowered as a result of removal. Furthermore, removal of crayfish likely improves water quality parameters that were not collected (i.e. turbidity) as a part of this study.

3. *The percentage of invasive taxa can be used to predict break points in stream biological integrity*.

We found that sites where samples contained greater than 15% invasive taxa, CSCI scores reached no higher than 0.35 (and if sampled more than twice, no higher than 0.26). However, when invasive taxa comprised less than 15% of a sample, CSCI scores could reach as high as 0.56. Thus, at sites where the percentage of invasive taxa is greater than 15%, we would predict that CSCI scores will be reduced by approximately 50% compared to sites where the percentage of invasive taxa is less than 15%. In other words, for every 10 taxa in a site, if 1-2 of them are invasive species, then we would expect a reduction in CSCI scores by 50%. When percentage of invasive taxa is below this 15% threshold, characteristics of the stream and time of sampling have a greater impact on CSCI scores. In effect, streams will have greater CSCI scores where invasive species comprise less than 15% of the community.

As a proof of concept, we evaluated 2017 CSCI scores in sites where the percentage of invasive taxa was near 15% (range: 10.1% - 16.7% invasive taxa) or relatively lower (range: 0.0% - 6.2% invasive taxa). We found that CSCI scores were depressed on average by 40% in sites where invasive percentage of taxa was closer to 15% relative to sites with lower percentages.

Overall, we realize that this metric is a function of the number of species in a site, such that sites with relatively low numbers of species and one or two invasive species will always have high percentages of invasive taxa. However, we attribute such low numbers of species in a site to the very presence of 1 or 2 invasive species (i.e. crayfish only, or crayfish and NZMS).

4. *Drought appears to have dampened 2016 CSCI scores; IBI and pMMI scores appear to be less sensitive to drought*.

During our 2016 study, CSCI scores tended to decrease through time, which appears to have a relatively strong role in CSCI scores (Figure 5). However, both number of samples (*sample*) and time of year (*month*) were standout predictors in model analyses. Thus, it does not seem likely that only repeated sampling affected CSCI scores. Instead, it appears that CSCI scores can be affected both by time of sampling and the number of samples collected from a

site in a given period. Along these same lines, we found that drought affected CSCI scores. During 2016, only two sites (Cold Creek and Tuna Creek) ever achieved CSCI scores within the targeted TMDL percentiles. However, the 2017 data show that CSCI scores generally improved. With the exception of one site (ULV, dropped 40%), CSCI scores rose on average by 70% in non-crayfish sites (range 17% - 107%) and two crayfish sites (Trancas more than tripled and Tapia increased by 53%) to a point that scores fell within the TMDL target as discreet sampling events. In other crayfish sites, scores rose on average 16% (range 7% - 37%).

Collectively, the 2016 and 2017 scores represent a range of values to be expected in wet years and during drought, and imply that conditions of the environment will have strong influences on CSCI scores. Thus, streams in the Santa Monica Mountains are most likely to reach TMDL mandates for CSCI scores when rain events occur and streams are scoured, but drought conditions will apparently dampen CSCI scores. As such, the 4-year median may not fall within the TMDL mandates for CSCI scores, particularly if sampling occurs during periods of drought.

5. Environmental DNA (eDNA) neither failed nor succeeded in assessing the presence of crayfish.

We attempted to extract DNA from the environment using water samples collected from a 400 m reach of Las Virgenes Creek where crayfish were previously trapped and removed. Although we successfully recovered DNA from these samples, we were unsuccessful in amplifying crayfish DNA using widely utilized genetic barcodes. We were also unsuccessful in amplifying DNA from positive controls. Together these results suggest that a new localized primer (i.e. genetic barcode) will need to be developed to utilize eDNA for monitoring and management purposes.

INTRODUCTION

Biodiversity is a vital component of healthy ecosystems and is integral to the services that they provide. Globally, only 36 regions in the world are recognized as "biodiversity hotspots." These hotspots are characterized by high numbers of endemic species that occur in threatened habitat. Southern California comprises a major component of the California Floristic Province, which represents one of only two biodiversity hotspots in North America. In Southern California, a major threat to biodiversity is habitat loss and modification, which includes the degradation of aquatic resources (Riley et al. 2005). Urbanization, pollution, and habitat destruction have all been implicated as stressors that typically compromise habitat quality and impair aquatic biodiversity across streams and watersheds (Vörösmarty et al. 2010, Miltner et al. 2015). Efforts to preserve local biodiversity are further challenged in the wake of global climate change and a severe drought.

An additional threat to biodiversity is the spread of non-native species. Their introduction into novel ecosystems can diminish biodiversity and ecosystem functioning (Simberloff et al. 2013). Introduced species potentially displace native species or in some cases entirely reduce native populations to extinction, either by means of direct predation or competition (Sax and Gaines 2008). This is particularly evident in aquatic systems where species tend to be highly susceptible to abrupt changes in biological community dynamics and composition (Gamradt and Kats 1996, Hammer and Parris 2013). As the frequency and duration of non-native species introductions escalates, the consequences of their impacts continue to unfold, ranging from the replacement of native taxa to the complete modification of ecosystems (Jackson et al. 2014).

Introduced into aquatic systems worldwide, the red swamp crayfish (*Procambarus clarkii*) and New Zealand mud snail (*Potamopyrgus antipodarum*) are globally recognized as invasive species. Stream ecosystems where crayfish are introduced tend to have significantly reduced biomass and taxonomic richness of benthic macroinvertebrates (Nyström 2001). Moreover, *P. clarkii* are well known to replace native species, to entirely alter detrital processing rates (Carvalho et al. 2016), and change dominant algal cover on substrates (Shin-ichiro et al. 2009). The direct effects *P. antipodarum* have on native biodiversity are less obvious. Given it is a non-predatory species, its effects on ecosystems may be primarily indirect.

The biodiversity that the greater Los Angeles area is composed of includes over 1,000 plant species, 400 species of birds, 45 species of mammals, 35 species of reptiles and amphibians, and over 50 threatened or endangered species. In the Santa Monica Mountains (Los Angeles, CA, USA), precipitous population declines of native species have been documented as a result of introduced *P. clarkii* (Gamradt et al. 1997). Over the last 60 years, *P. clarkii* has spread throughout

watersheds of the Santa Monica Mountains, and in many streams, the species has completely reduced local native amphibian populations (Riley et al. 2005). Introductions of *P. antipodarum* have occurred more recently and little research has examined the ways in which the species may affect local ecosystems.

Field observations suggest that like amphibians, benthic macroinvertebrate (BMI) communities may be impacted by the spread of *P. clarkii* and *P. antipodarum*. This may result from outcompeting native BMI for resources like substrate and food. It may also be that extremely high densities negatively affect stream characteristics so drastically that specific functional groups cannot withstand induced changes to the ecosystem. This is entirely possible given how sensitive BMI are to changes in water temperature, dissolved oxygen concentration, sedimentation, and altered water chemistry (Harrington et al. 1999).

Locally, the Malibu Creek Watershed is populated with both *P. clarkii* and *P. antipodarum*. Densities of *P. clarkii* can reach up to 50 individuals per m^2 and *P. antipodarum* even greater, at thousands per m^2. Previous management activities in combination with natural flooding events have reduced the abundance of *P. clarkii* in some watersheds to promote the potential recovery of native species (Kats et al. 2013). Currently, Mountains Restoration Trust (MRT) manages successful programs to remove crayfish in Medea and Las Virgenes Watersheds. To date, MRT has removed well over 200,000 crayfish from the Malibu Creek Watershed. Anecdotal evidence suggest that native species are responding positively to the removal of *P. clarkii*. Nevertheless, additional actions are required to better understand if stream biological integrity is affected by the presence of *P. clarkii* and *P. antipodarum*, what densities of invasive species may constitute a collapse in stream biological integrity, and whether the removal of *P. clarkii* and *P. antipodarum* improves stream biological integrity.

RESEARCH QUESTIONS

i) Do crayfish affect BMI and overall biological integrity of a stream? Additionally, what is the effect, if any of NZMS on overall biological integrity of a stream?

ii) By performing longitudinal sampling in crayfish and non-crayfish invaded streams, can we determine if stream biological integrity change as a result of crayfish removal?

iii) Do nutrient levels correlate with the overall biological integrity of a stream?

iv) Can densities of invasive species be used to predict breaking points when the biological integrity of a stream will be compromised below currently recognized acceptable levels?

v) Can eDNA be used to detect the presence of crayfish and NZMS post restoration efforts?

METHODS

Sampling sites - We visited 12 stream sites throughout the Santa Monica Mountains (Figure 1, Table 1) approximately every 30 days from April 2016 through October 2016, to collect BMI and water samples. These sites were chosen to incorporate samples from 8 crayfish sites (Upper and Lower Lindero, Upper Medea, Upper and Mid Las Virgenes, Malibu, Tapia, and Trancas Creeks) and 4 sites with no record of crayfish (Cold Creek Preserve, Tuna, Solstice, and Arroyo Creeks). Upper Lindero, Upper Medea, and Upper and Mid Las Virgenes sites were also selected because Mountains Restoration Trust (MRT) was carrying out a manual crayfish removal program in these sites from the start of 2016 throughout our study period.

Our sampling window was selected to ensure optimum BMI sampling since flooding events during peak flow typically wash out benthic taxa. We chose to collect samples every 30-days as a way to minimize any impact repeated sampling may have on BMI. Standard sampling protocols dictate that streams should be sampled 28 days after a scouring event (Ode 2007), at which point adequate time has elapsed to allow BMI to recolonize a site. Thus, we assumed that a window of 30-days between sampling events provided sufficient time to minimize sampling effects.

Habitat characteristics - During each sampling event, we followed guidelines in Ode (2007) to collect habitat data, which included water temperature, dissolved oxygen (DO), pH, conductivity, stream wetted width, substrate composition, bank stability, crayfish presence/absence, and native species observed. Water quality was measured using a Horiba U-50, which was calibrated regularly throughout the study. In six of the study sites, temperature and DO were continuously logged at 10 sec intervals from April through October using PME MiniDOT loggers to assess variation and fluctuations of conditions in and between sites.

Measuring chemical characteristics - In general, our study of nutrients in the Malibu Creek Watershed was focused on quantifying nitrogen and phosphorous and was not aimed to determine whether sources of nutrients were anthropogenic or possibly geologic. To collect water samples, we followed methods in Harrington et al. (1999). Briefly, 250 mL Nalgene bottles were filled with stream water to which sulfuric acid was added to inhibit nitrogen formation. Samples were transported to the laboratory and stored in incubators set at 4 °C. Samples were assayed to quantitate total nitrogen (TN), total phosphorous (TP), Total Kjeldahl

Nitrogen (TKN), and nitrate/nitrite (NO) concentrations using EPA methods 351.2, 353.2, and 365.3.

Benthic macroinvertebrate samples - BMI samples were collected following the Surface Water Ambient Monitoring Program (SWAMP) Reach Wide Benthos protocol detailed in Ode (2007). Briefly, a sample from a site consisted of 11 sub-samples (A-K) gathered along a 150 m transect at 15 meter intervals. Each subsample was collected by moving upstream and randomly sampling either the middle or halfway between the middle and right or left bank. If a transect point landed in a pool, field technicians moved up or downstream to target a wadeable area. A 500 µm D-net or appropriate handheld net (for very shallow habit) was placed on the substrate and a 0.09 m^2 portion of substrate upstream disturbed for 30 seconds. Any large rocks were scrubbed by hand in front of the net. The 11 samples from a transact were combined in a jar filled with two-thirds 95% ethanol. Transects were revisited approximately every 30 days starting in April through October 2016, and once again in May 2017 (with the exception of Malibu Creek) to collect BMI and water samples.

Taxa from the entire BMI sample were sorted by order and identified using a dichotomous key (Merrit and Cummins 1996). Specimens were identified to an accepted taxonomic level of resolution (generally genus or species, except Chironomidae which were identified to tribe or subfamily) following guidelines in Richards and Rogers (2011) and Mazor et al. (2016). Taxa were enumerated and final identification and taxon counts used to calculate stream biological metrics. For both years, field sampling was performed by the same technicians.

At all sites, we photographed up and downstream at the start, middle, and final transect points during each sampling event. These photographs were used to verify habitat characteristics and to determine if algal mats were present on the water surface at any time of year.

Assessing biological integrity - Three metrics were used to assess biological integrity at each stream site. First, benthic macroinvertebrate data and GIS data were used to calculate the California Stream Condition Index ((CSCI) and resultant pMMI metric) following Mazor et al. (2016) using the package *CSCI* v.1.1.2 in the *R* framework (Ihaka and Gentleman 1996). The GIS data needed to compute CSCI scores were compiled in ArcGIS v.10.3 using guidelines from Mazor et al. (2015). The final metric calculated was the Southern California Index of Biological Integrity (IBI) developed by Ode et al. (2005), which was derived specifically for the assessment of stream biological integrity in Southern California. We calculated scores using both methods because several of our study sites were previously scored with IBI, and using this metric would allow for agencies to compare scores from this study.

When calculating metrics, BMI data were analyzed two distinct ways. First, we calculated scores for each month from each site, including the 2017 samples. Thus, each site received CSCI, pMMI, and IBI scores for each month it was sampled. The other approach we took was to combine all taxonomic data within a site and compute CSCI, pMMI, and IBI scores irrespective of time. This approach was used to evaluate collective biodiversity across streams throughout the duration of our study.

eDNA monitoring – Water samples were collected from a 400 m reach of Las Virgenes Creek where crayfish were previously trapped and removed. The exact stretch where we collected eDNA samples was not part of our study sites, but was between the MLV and ULV sites where BMI samples were collected (along Lost Hills Road; (34.127409, -118.706779). Once the stretch was deemed clear of crayfish, traps were removed and the stream left undisturbed by field technicians for 30 days. This 30-day period served as a buffer to allow any lingering crayfish DNA from traps or previously removed crayfish to degrade or passively be moved from the study site (Dejean et al. 2011). If any undetected crayfish remained in the site or new crayfish entered it, eDNA samples should provide a reliable indication of their presence.

eDNA water samples were collected in 500 mL Nalgene bottles following methods in Carim et al. (2016). To prevent contamination, only new bottles were used in this application and all bottles were autoclaved prior to use. Water samples were collected at approximately 10 m intervals. At each collection point, two samples were collected from random positions to maximize detection. Negative controls were made by filling Nalgene bottles with nanopure water (n = 2) and positive controls were made by spiking nanopure water with crayfish effluent (n = 3). All samples were placed in a cooler on ice and transported to the laboratory where they were immediately vacuum filtered using a cellulose nitrate membrane with 0.45 µm pores. Membranes were preserved in 90% ethanol and stored at -80 °C. DNA was extracted from membranes using a Qiagen DNeasy blood and tissue extraction kit. Extracts were qPCR-amplified on a Roche light cycler using primers and a probe developed by Tréguier et al. (2014).

Modeling and statistical analyses – We created a series of classification models in the *R* statistical framework using the packages *tree* v. 1.0-29 (Ripley 1996) and *RandomForest* v. 4.6-6 (Liaw and Wiener 2002) to determine what predictors were most important in explaining CSCI and IBI scores. Our analyses omitted pMMI scores because they are calculated as a component of the CSCI and were determined to be highly correlated with CSCI scores (~ 0.90 measure of association; scale 0.0 – 1.0). Tree regression was selected because it uses a binary recursive partitioning method to construct a classification tree, hierarchically ranking predictor variables according to how much and at what level they explain variance in the response variable(s). This modelling approach is attractive because it is easily interpretable and indicates directionality and strength of a response. We used RandomForest in addition to our tree regressions as a means to evaluate the strength of relationships between predictor and response variables. This

algorithm iteratively and randomly removes portions of data to determine which variables best explain variation in a data set. For all RandomForest models, we constructed models to perform 10 000 iterations and used the same predictors as in our tree regression models. We used the RandomForest model rather than more traditional linear regression methods because it is a non-parametric procedure that does not assume an underlying distribution of the data. It has also been shown to outperform traditional regression tests (Breiman 2001), to adequately assess clustered datasets with repeated measures (Hajjem et al. 2014) and to describe the role of continuous variables across a landscape (Prassad et al. 2006).

The first two models broadly evaluated CSCI and IBI scores for all streams. These broad models were used to determine which predictors in general affect scores across streams in the region and the relative influence of each variable. The results of these models were used to establish break points in the data, thereby providing an understanding of what characteristics most affect scores and the relative value at which breaks are expected to occur. A second set of models separated study sites between crayfish and non-crayfish streams. Thus, four additional independent models analyzed CSCI and IBI scores in crayfish and non-crayfish stream. These models were created to assess whether variable importance differed or overlapped between crayfish and non-crayfish sites. In all analyses, we treated monthly CSCI or IBI scores as response variables. Predictors used in all models are listed in Table 2.

For our broad models, we included a suite of predictors to determine the influence of physical habitat characteristics, time and repeated sampling, water quality and chemistry, and invasive species. These included habitat type (*residential* or *natural*), mean stream wetted width and depth at sample sites, substrate type (based on substrate size categories in Ode (2007)), mean measurements of coarse particulate organic matter (*CPOM*), bank stability (*bank*, 3 categories: stable, eroding, or vulnerable), and water chemistry variables, which included TN, NO, TKN, and TP concentrations at the time of sampling, as well as the previously measured concentrations of these water chemistry variables from 30 days prior (*prior TN*, *prior NO*, *prior TKN*, and *prior TP*). For initial samples in April, no 30-day prior concentrations were available so we input these data as "NA" in the model. We also included a binary predictor to indicate if a sample was only partially collected on a transect. This occurred in 21 of our 72 samples where streams either flowed intermittently throughout the transect or if a part of the transect dried and was therefore not fully sampled. Due to large amounts of missing data, no water quality data (temperature, DO, conductivity, or pH) were included in the model. Predictors were also included to account for presence or absence of crayfish (*crayfish*) and New Zealand mud snails (*NZMS*) and the counts of each invasive species in samples (*crayfish count*, *NZMS count*). Finally, we incorporated continuous predictors to account for the percentage of invasive species in BMI samples and the percentage of invasive taxa in a sample.

For our non-crayfish sites (Cold Creek Preserve, Tuna, Arroyo, and Solstice), we included the same predictors as in our broad model, except no predictors related to crayfish were

included, and we only evaluated the effect of NZMS using counts from samples. When evaluating only crayfish sites, the broad model was updated to include the number of crayfish removed leading up to sampling and the number of crayfish removed 30 days prior, the number of tree frogs (*frogs obs,* adults and tadpoles) and odonate nymphs (*odonate obs*) observed during surveys, and trap effort, which we calculated by dividing the total monthly count of removed crayfish by the product of number of traps deployed and the number of days those traps were out.

Finally, to evaluate potential differences between 2016 and 2017 metrics and specimen counts, we performed two-tailed t tests and compared 2017 CSCI and IBI scores to 2016 initial CSCI and IBI scores and CSCI and IBI scores from May. To evaluate potential differences in biodiversity between years, Shannon Index values were also tested using the same temporal comparisons. We compared the 2017 metrics to these three 2016 metrics since May was the same month of sampling in both years and because the 2017 samples were also initial samples.

RESULTS

Sampling sites - Of the 12 steam sites we visited during our study, one transect dried completely during June – September (Malibu Creek) and another during July – October (Solstice). Two sites could not be sampled at the start of the study (Cold Creek Preserve in May and Tapia in April). In 2017, additional BMI and water samples were collected from all sites except Malibu Creek. At all sites, we never detected algal mats on the surface of the water.

Habitat characteristics – In the six sites where DO and temperature loggers were deployed, we found that water temperatures peaked in July, reaching between 20 - 25 °C in pools before gradually decreasing to near spring temperatures (Figure 2). Dissolved oxygen concentrations in five of these sites dropped to an average of nearly zero mg/L by June or July. Only Tuna Creek consistently maintained DO concentrations between ~ 5 – 10 mg/L, and although daily concentrations tended to fluctuate dramatically, DO concentrations at all other sites remained near an average of zero for extended periods of time (from a few weeks to many months). Of the five sites where DO concentration were regularly lower than Tuna (Cold Creek, Upper Lindero, Medea, Trancas, and Upper Las Virgenes Creeks) only one (Cold Creek) ever rebounded to concentrations consistently above 5 mg/L.

Measuring chemical characteristics - Concentrations of TN, TP, NO, TKN by month for each site are provided in Table 3 and shown in Figure 3. Overall, concentrations of nutrients in non-crayfish streams were often so low as to not be detectable or relatively low compared to crayfish sites. However, TN concentrations in Arroyo and Cold Creek were measurable and exceeded TMDL targets in September 2016 (Arroyo) and May of 2017 (Arroyo and Cold Creek),

and TKN concentrations were detectable in all non-crayfish sites at some point either in 2016 or 2017, ranging from 0.22 – 1.55 ppm. In crayfish sites, TN, TP, NO, and TKN concentrations were consistently elevated. In the upper segments of the Malibu Creek Watershed (Upper and Lower Lindero, Medea, and Upper and Mid Las Virgenes Creek sites) concentrations were consistently measureable and almost always elevated above TMDL mandates, especially TN in Upper and Mid Las Virgenes and MLV, and TP in Upper Lindero. Sites below Mid Las Virgenes in the Malibu Creek Watershed (Tapia and Malibu Creeks) had detectable TN concentrations that exceeded TMDL targets in April, May, and October 2016 (Malibu Creek) and July through October 2016 (Tapia Creek). In these same sites, TP exceeded TMDL targets in April, October, and May 2017 at Malibu Creek and June through July and September through October at Tapia Creek. Only at Upper and Mid Las Virgenes were NO concentrations regularly detected.

Benthic macroinvertebrate samples - Site total specimen counts by month during 2016 are provided in Figure 4. In general, the total specimens per sample were low. Although there is no established minimum count of specimens per sample, IBI scores may be affected by small counts and CSCI scores may be depressed when counts are below ~ 400 - 450 specimens (Ode et al. 2005, Mazor et al. 2015).

No photographs showed evidence of algal mats on the water surface of any site throughout the duration of our study.

Biological integrity scores - Monthly CSCI scores were generally low relative to the reference distribution values and tended to decrease after initial samples were collected (Figure 5). Initial scores were highest and ranged from 0.22 to 0.79 (scale 0.0 – 1.2). In five sites, CSCI scores could not be calculated at various months because the only specimens in the sample were taxa that are not used in CSCI calculations (i.e. snails, worms, bivalves, and crustaceans; sites included Lower and Upper Lindero, Medea, MLV, Tapia, Trancas. See Table 4). CSCI scores improved in 2017 and ranged from 0.39 – 1.12. pMMI scores followed similar patterns and ranged from 0.28 – 1.02 at the start of 2016 (Figure 6). However, pMMI scores in 2017 ranged from 0.35 – 1.04, ultimately varying little in range from 2016 scores. Initial IBI scores for 2016 also tended to decrease throughout the study period (Figure 7). The 2017 IBI scores were similar to 2016 scores (Table 4) with the exception of Trancas which doubled. IBI scores were calculated for months in sites where CSCI scores could not be computed. However, we recommend that these scores be interpreted with caution given the lack of taxonomic diversity in each representative sample.

When we aggregated all BMI samples within a site (Figure 8) and evaluated CSCI, pMMI, and BMI (Figure 9), many sites still did not exceed mid-range CSCI, pMMI, or IBI values and CSCI scores of only three sites exceeded or fell within the 1st to 10th percentiles of the reference distribution. However, there are two distinct patterns across all sets of scores. First, we found

that crayfish sites where manual trapping occurred had higher scores relative to crayfish sites where few or no crayfish were removed. Second, even though metrics improved as crayfish were removed, a very clear distinction occurs between sites with and without crayfish, such that non-crayfish sites tend to have greater taxonomic richness relative to crayfish sites regardless of whether the site was trapped (Figure 9d). Thus, although scores improved, actual biological integrity and as an extension biodiversity, continued to lag.

eDNA monitoring – We confirmed that DNA was successfully extracted from water samples by measuring the concentration of DNA in 1 µL of eluate from each sample. Although we successfully recovered DNA from these samples, we were unsuccessful in amplifying crayfish DNA using widely utilized genetic barcodes for *P. clarkii* (Tréguier et al. 2014). We were also unsuccessful in amplifying DNA from positive controls. Together these results suggest that a new localized primer (i.e. genetic barcode) will need to be developed to utilize *P. clarkii* eDNA for monitoring and management purposes.

Modeling and statistical analyses – The two broad models that first evaluated monthly CSCI and IBI scores across all of the study streams showed that invasive species were by far the most important predictor affecting scores. The CSCI model ranked the percentage of invasive taxa (*invasive % taxa*) as the most informative predictor of CSCI scores, followed by time of year (*month*), number of samples collected (*samples*), and physical characteristics of the habitat, including whether the site was residential or natural (*habitat*) and the stream mean wetted width (*width*) and depth (*depth*) and the random forest analysis corroborated these results (Figure 10). Tree regression indicated that a breakpoint occurs when the percentage of invasive taxa in a sample exceeds ~ 15%. Specifically, the tree regression analysis showed that CSCI scores will reach somewhere near 0.35 if the percentage of invasive taxa exceeds ~ 15% and a site has been sampled no more than twice. Oppositely, CSCI scores in our data set reached 0.56 if the percentage of invasive taxa were below 15%. However, this was contingent upon samples being collected early in the season, from natural sites with smaller streams. Essentially, for every 10 taxa if 1 or 2 are invasive, then CSCI scores will be reduced by 50% relative to sites where invasive taxa are not present.

The broad model to assess predictors affecting IBI scores indicated that presence or absence of crayfish in a site was by far most informative (Figure 11). As with CSCI model results, physical characteristics of the stream (mean wetted width and depth) and number of samples were also important predictors for IBI scores. The random forest analysis highly ranked these predictors, too, but also included presence/absence of NZMS. In both models, chemical characteristics of streams did not explain patterns of CSCI or IBI scores in tree regression. However, they were ranked as having explanatory value in random forest analyses, specifically TKN and prior TKN for CSCI scores and TN for IBI.

Additional independent analyses of scores at sites with and without crayfish indicated that variable importance differs between these two categories. In sites without crayfish (Cold Creek Preserve, Tuna, Arroyo, and Solstice) CSCI and IBI scores were primarily driven by characteristics of the habitat, primarily stream mean wetted width and depth and repeated sampling (Figure 12). Streams where mean wetted width was greater than 2 m had CSCI scores near 0.52 and IBI scores around 34.2. However, mean wetted width affected IBI scores more so than CSCI. If streams were less than 2 m wide and only sampled once, CSCI scores tended to be close to scores when streams were wider than 2 m (0.54 compared to 0.52), but if streams were wider than 2 m and sampled once, then IBI scores nearly doubled (58.1 compared to 34.2). For both metrics, sampling in smaller streams more than once reduced scores.

The independent analyses of CSCI and IBI scores at crayfish sites (Upper and Lower Lindero, Medea, MLV, Tapia, Trancas, and ULV Creeks) showed that detection of frogs (CSCI) and mean wetted width (IBI) were the two predictors that best explained variation in scores (Figure 13). For CSCI scores, detection of frogs was linked with scores near 0.52, and in streams where frogs were not detected, time of sampling and TKN were most important. Random forest analysis supported the importance of frogs being detected, but also highly ranked odonate presence (*odonates observed*) and prior crayfish removal (*prior crayfish*). As with the other analyses of IBI scores, model results indicated that mean wetted width in crayfish streams was most important in explaining IBI scores across crayfish streams. Where wetted width exceeded 3.6 m in crayfish stream, IBI scores were near 11.3. In smaller streams where frogs were detected, scores increased and were highest (24.9). If frogs were not detected in these smaller streams, then physical characteristics of the habitat, time of sampling, water chemistry and presence of NZMS all affected IBI scores. Results from the random forest analysis also indicated that mean wetted width was the most important predictor, but also included mean depth and the numbers of NZMS in samples. The number of frogs detected, TN and TP concentrations, and the number crayfish within a sample clustered as the next most important predictors explaining IBI scores.

When we statistically compared 2017 specimen counts (Figure 14) and metrics (Figure 15) to 2016 results, we found no significant difference between specimen counts in 2017 ($\bar{x}$: 334 ± 183 s.d.) and either 2016 initial samples (p = 0.23; t = 1.22; $\bar{x}$: 238 ± 184) or samples from May (p = 0.06; t = 1.91; $\bar{x}$: 187 ± 175). The 2017 pMMI and IBI scores were not significantly different from either 2016 initial sample or May sample scores. However, the 2017 CSCI scores ($\bar{x}$: 0.68 ± 0.22) did significantly differ from 2016 initial (p = 0.02, t = 2.38, $\bar{x}$: 0.48 ± 0.15) and May 2016 scores (p = 0.002; t = 3.47; $\bar{x}$: 0.42 ± 0.11). Finally, test results comparing Shannon index values from April 2016 (p = 0.51, t = 0.65; $\bar{x}$: 1.41 ± 0.49) and May 2016 (p = 0.48, t = 0.70; $\bar{x}$: 1.40 ± 0.48) to 2017 ($\bar{x}$: 1.52 ± 0.32) values were not significantly different. Comparisons of 2017 scores, along with scores from April (initial) and May are presented in Figure 16.

DISCUSSION

Overall, the CSCI, pMMI, and IBI scores indicate that streams with crayfish consistently score lower than non-crayfish sites. Many of the streams where crayfish occur tended to have the highest TN and TP concentrations throughout the entirety of the study. However, based on our data and subsequent analyses, it appears that the effect of crayfish on benthic macroinvertebrate communities exceeds the impact of water quality. We found that streams where water quality consistently was above TMDL mandates (Figure 17, 18), but where crayfish were removed tended to have higher CSCI, IBI, and pMMI scores than crayfish sites where no trapping and removal was performed (Figure 9). Model results indicated that for CSCI scores, the most important predictor is the percentage of invasive taxa in a sample (*invasive % taxa*, Figure 10). Similar results were obtained with models to predict IBI scores (Figure 11), such that presence or absence of crayfish was the most explanatory variable, along with percentage of invasive species in a sample. In general, streams with crayfish tended to have CSCI scores that were depressed by approximately 50% - 75% relative to streams without crayfish.

In both results, percentage of invasive taxa in a sample - which includes NZMS - was an important predictor. We found that sites where samples contained greater than 15% invasive taxa, CSCI scores reached no higher than 0.35 (and if sampled more than twice, no higher than 0.26). However, when invasive taxa comprised less than 15% of a sample, CSCI scores could reach 0.56. Thus, at sites where the percentage of invasive taxa is greater than 15% or less than 15% but in urban residential habitat, we would predict that CSCI scores will be reduced by approximately 50% compared to sites where the percentage of invasive taxa is less than 15% in natural habitat. In other words, for every 10 taxa in a site, if 1-2 of them are invasive species, then we would expect a reduction in CSCI scores by 50%. When percentage of invasive taxa is below this 15% threshold, characteristics of the stream and time of sampling have a far greater impact on CSCI scores. Thus, to achieve the highest possible CSCI scores, samples should be collected early in the season, from sections of stream that are less than 20 cm deep and less than 1.7 m wide. Ultimately, streams will have greater CSCI scores where invasive species comprise less than 15% of the community and habitat is more natural. As a proof of concept, we evaluated 2017 CSCI scores in sites where the percentage of invasive taxa was near 15% (*range*: 10.1% - 16.7% invasive taxa; *CSCI score*: 0.39 - 0.57) or relatively lower (*range*: 0.0% - 6.2% invasive taxa; *CSCI score*: 1.12 - 0.53) (Figure 15, Table 4). We found that CSCI scores were depressed on average by 40% in sites where invasive percentage of taxa was closer to 15% relative to sites with lower percentages of invasive taxa.

When we evaluated CSCI and IBI scores from crayfish sites independent of non-crayfish sites, we found that the detection of frogs was an extremely strong predictor of both metrics (Figure 13). Based on tree regression and random forest results, this predictor explained a great deal of variation across both metrics. Additionally, detection of odonates was ranked as an

important predictor for CSCI scores. The well-documented predatory effects that crayfish can have in streams and their negative impacts to local biodiversity (Kats and Ferrer 2003) suggest that the presence of frogs and odonates in crayfish sites is a reliable indicator that trapping and removal improves stream conditions and has the potential to restore ecosystems. With that said, the continuous physical data we collected at six of our study sites (DO and water temperature) suggests that stream recovery may be impeded as a result of physical conditions. We found that DO concentrations fluctuated between low and completely depressed values for extended periods (Figure 2). These data imply that biodiversity within a site will be low part of the year because conditions will not be able to support non-air breathing BMI species. We cannot conclude whether these conditions are typical each year or a phenomenon of drought conditions because only a single year of temperature and DO data was collected. However, MRT will continue to monitor physical habitat characteristics in our study sites, and other agencies are also using similar technology to monitor streams.

As for the effects of *P. antipodarum*, CSCI models did not detect meaningful ways in which NZMS predicted CSCI scores. However, IBI models suggest that NZMS have some importance in predicting IBI scores since their presence or absence was the second most important predictor. However, this result may overestimate the effects of NZMS. Given the importance of crayfish presence/absence, and the fact that all but one site (Arroyo) would have similar presence/absence patterns of NZMS and crayfish, the ranked importance of NZMS is not surprising. Additionally, IBI scores have historically deemed sites as "good" even when a large percentage of specimens were NZMS. This suggests the IBI metric in general is not as robust as the CSCI metric. Therefore, we can only conclude that NZMS appear to affect stream biological integrity metrics.

When cumulative BMI samples were pooled (to collapse temporal dynamics) and metrics evaluated, sites where crayfish were removed tended to have higher CSCI, pMMI, and IBI scores compared to sites where minimal or no trapping occurred (Figure 9a). As a result, removal effort seems to be extremely important. Specifically, we found that only Mid Las Virgenes Creek (MLV) reached CSCI and pMMI scores comparable to non-crayfish site scores when greater than 150,000 crayfish were removed from this study stretch. Other crayfish sites where 1,500 and up to 15,000 crayfish were removed showed improvement relative to non-removal sites (Malibu, Trancas, Medea, and Tapia Creeks), but were still not as close as MLV to reaching the TMDL-mandated CSCI percentile (median over four years within the 5^{th} – 10^{th} percentile to reference distribution). In 2017, MLV consistently ranked as one of the lowest scored sites for all metrics, including taxonomic richness. We attribute this to two factors. First, MLV and upper portions of the Malibu Creek Watershed (i.e. Medea, Lindero, and ULV) are morphologically distinct from non-crayfish sites that are high gradient streams. As a result, when rain storms occur, high gradient streams tend to be heavily scoured and as a result crayfish wash out (Kats et al. 2013). Second, no trapping in any of our study sites occurred in

2017 and crayfish were visibly detected at all but one crayfish site (ULV). Thus, although all streams showed significant improvement in CSCI scores, it is likely that scores in crayfish streams were still depressed to some degree due to lack of trapping and removal.

When attempting to answer whether nutrient levels correlate with biological integrity, it is important to note that nutrient levels were highly different between streams with and without crayfish. As such, we evaluated the effects of nutrients and physical habitat data on CSCI and IBI for streams with and without crayfish. This included evaluating TN, TP, and TKN at the time of sampling as well as concentrations of these same molecules 30-days prior to sampling. In general, our models found very little association between biological integrity metrics and nutrient levels. Although TKN and prior TKN were deemed as important predictors in the CSCI and IBI random forest models and crayfish models specifically (Figure 13), their explanatory power is rather low (gauged by the rank in percent increase to mean square error to scores in the RandomForest models for all sites (Figure 10, 11) and the branch length of nodes from the tree regression results for CSCI and IBI scores at crayfish sites (Figure 13) relative to the explanatory power of physical characteristics of the site (wetted width) and whether or not amphibians are present or absent.

One expectation of removing crayfish is that water quality may improve, specifically TN, TKN, and NO as a result of biological material and waste being reduced. However, sites where the most crayfish were removed did not show improvements to water quality, at least not with regard to the chemicals we assayed (Figure 3, 17, 18). At MLV, where 150,000 crayfish were removed throughout the year, TN concentrations fluctuated above the TMDL target (0.65 ppm) throughout the duration of our study (range: 3.35 May 2016 – 5.01 April 2016; 2017 (May) = 1.48), and concentrations of nitrates and nitrites (NO) were consistently the highest across all sites. At Lindero Upper, a total of 16,000 crayfish were removed from the start of 2016 through the end of October 2016. Additionally, TN concentrations at Lindero Upper remained below TMDL targets throughout the full study period, whereas Lindero Lower maintained consistently elevated TN concentrations. However, both Upper and Lower Lindero had non-detectable concentrations of TN from April to July (along with TP concentrations below the TMDL target in April). Considering no trapping occurred in Lower Lindero from April to July, but trapping did occur in Upper Lindero during the same time, yet both sites had non-detectable concentrations of TN (and to some extent TP), it does not seem logical to assert that crayfish removal improved or reduced our focal nutrient levels, at least at this site. However, removal may very well improve water quality parameters that were not collected (i.e. turbidity).

The temporal dynamics of stream biological integrity were multifaceted. First, over the course of 2016, CSCI scores tended to decrease through time (Figure 5). However, both time of year (*month*) and number of samples (*sample*) were standout predictors in models. Thus, it does not seem that only repeated sampling affected CSCI scores. Instead, it appears that CSCI scores can be affected both by time of sampling and the number of samples collected from a

site in a given period. Along these same lines, we found that CSCI scores from May 2016 and initial 2016 samples (collected in April) were significantly different from 2017 CSCI scores even though specimen counts were not significantly different (Figure 16, Table 4). Although we found no statistical differences in Shannon Index values, taxonomic richness at many sites in 2017 did exceed values from 2016. Collectively, these data imply that conditions of the environment will have strong influences on CSCI scores. During 2016, only two sites (Cold Creek Preserve and Tuna Creek) ever achieved CSCI scores within the targeted TMDL percentiles. Furthermore, the 2017 data indicate that CSCI scores generally improved from 2016. With the exception of one site (ULV, dropped 40%), CSCI scores rose on average by 70% in non-crayfish sites (range 17% - 107%) and two crayfish sites (Trancas more than tripled and Tapia increased by 53%) to a point that scores fell within the TMDL target. In other crayfish sites, scores rose on average 16% (range 7% - 37%). Thus, many streams in the Santa Monica Mountains likely will not reach TMDL mandates for CSCI scores under drought conditions. As such, the 4-year median of CSCI scores may not fall within TMDL mandates, particularly if samples are collected during periods of drought.

Viewed collectively, our results indicate that *P. clarkii* exert strong negative pressures on BMI communities and that their removal can be an effective means of mitigating the reduction of biodiversity and the general degradation of stream ecosystems. From 2016 to 2017, CSCI scores improved significantly and taxonomic richness generally increased. Although an extremely wet winter likely improved physical and chemical aquatic conditions, we did not detect significant increases in specimen counts or biodiversity. We speculate that the reduction of *P. clarkii* from many crayfish sites due to flooding had greater positive effect on BMI than wet winter weather. Given the climatic changes that are predicted to make Southern California hotter and drier, management strategies to improve stream conditions by removing invasive species will be of paramount importance, especially in years with minimal rainfall. Overall, the positive increases to CSCI scores and biodiversity imply that ecosystems do improve after *P. clarkii* are actively or passively removed. Thus, a sustained and long-term investment of resources is needed to allow ecosystems to rebound as best as they can under drought conditions as crayfish populations are reduced.

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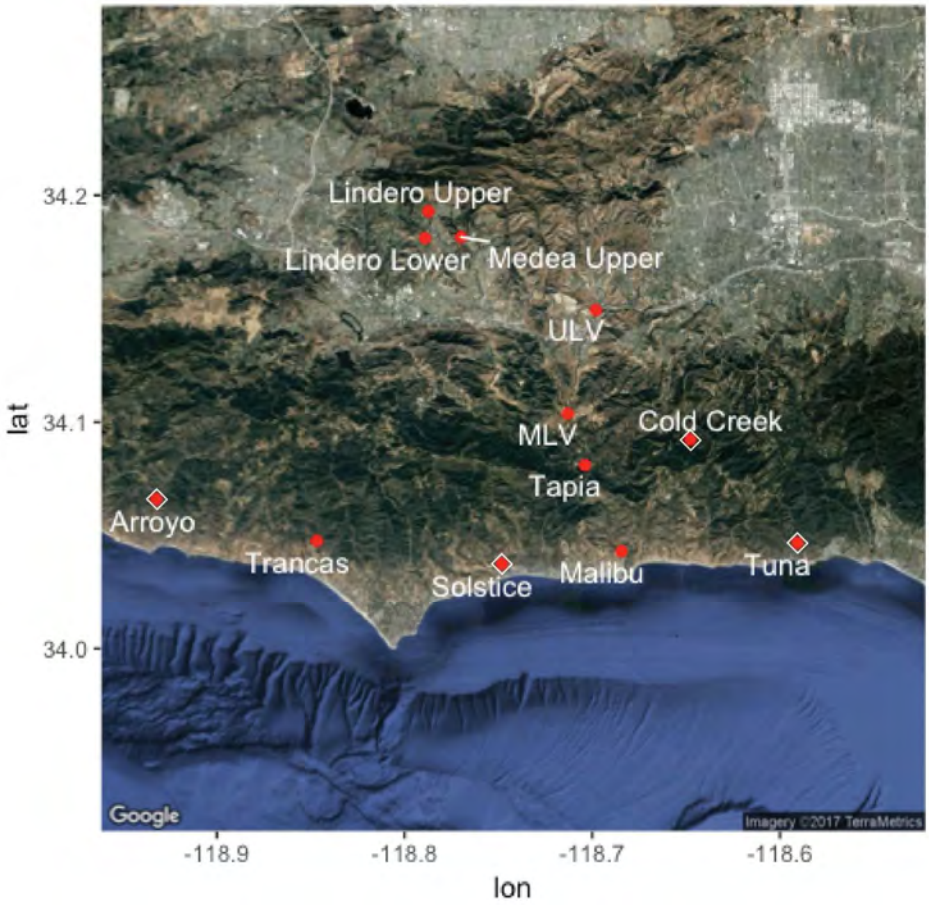

Figure 1. A map of the Santa Monica Mountains is marked to show the 12 study sites. Streams within and outside of the Malibu Creek Watershed, both with and without introduced *P. clarkii* and *P. antipodarum* were evaluated to understand BMI temporal patterns. *ULV* = Upper Las Virgenes, directly above the 101 freeway and Las Virgenes Road junction; *MLV* = Mid Las Virgenes, directly north of Mulholland Highway. Diamonds around the red circles denote sites where *P. clarkii* have never been introduced. Previous Heal the Bay study sites (Malibu = HtB-MC-1; Solstice = HtB-SC14; and Tapia = HtB-MC15) were included for comparative purposes.

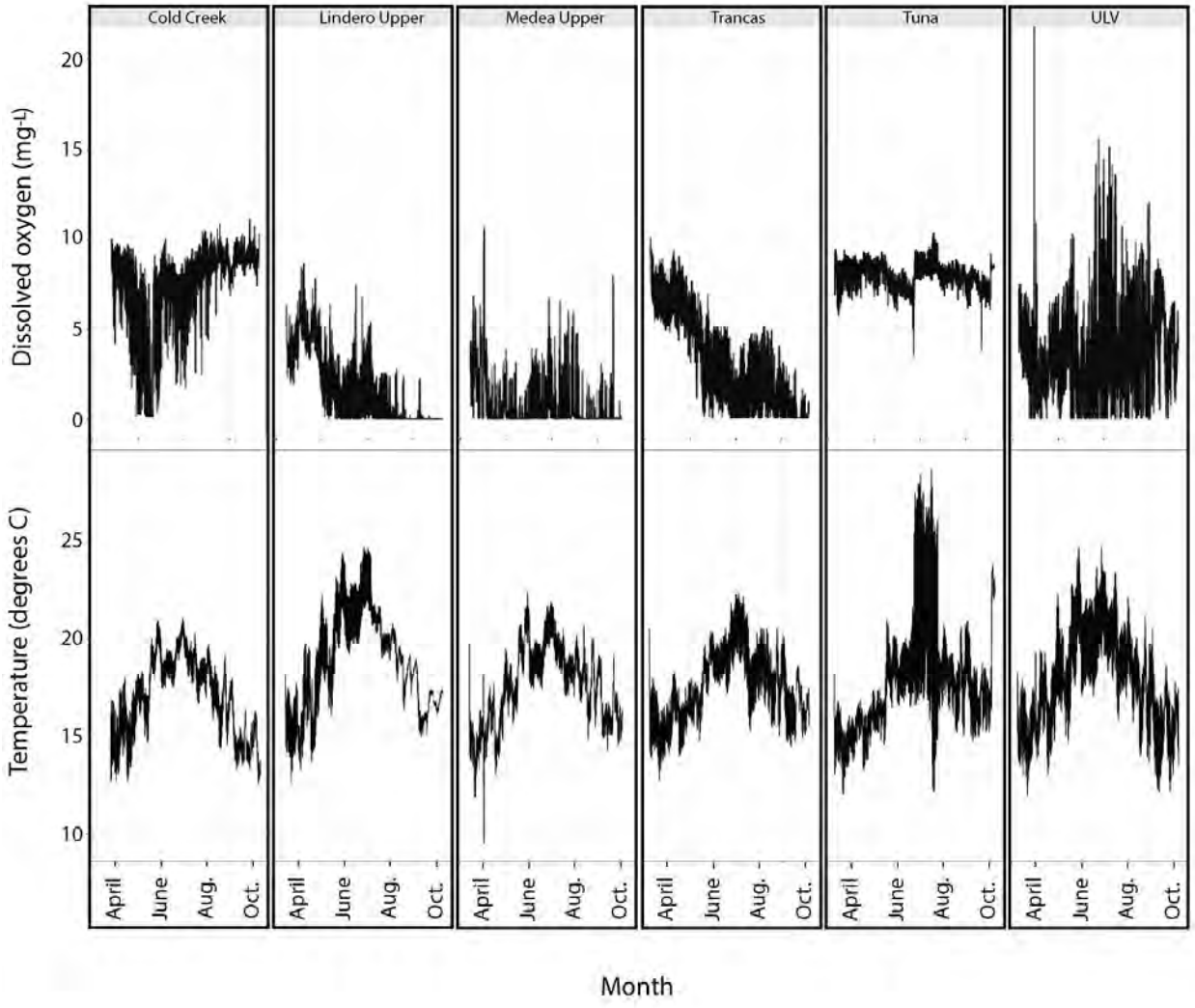

Figure 2. Continuous temperature and dissolved oxygen fluctuate within a site throughout seasons and differ between sites. Data from six study sites where loggers were deployed during the study show that some sites maintain relatively high concentrations of dissolved oxygen, even when water temperatures spike (i.e. Tuna). All sites showed a general increase in water temperatures from June to August. Perhaps most surprising is the sustained drop in concentrations of dissolved oxygen at sites throughout the year.

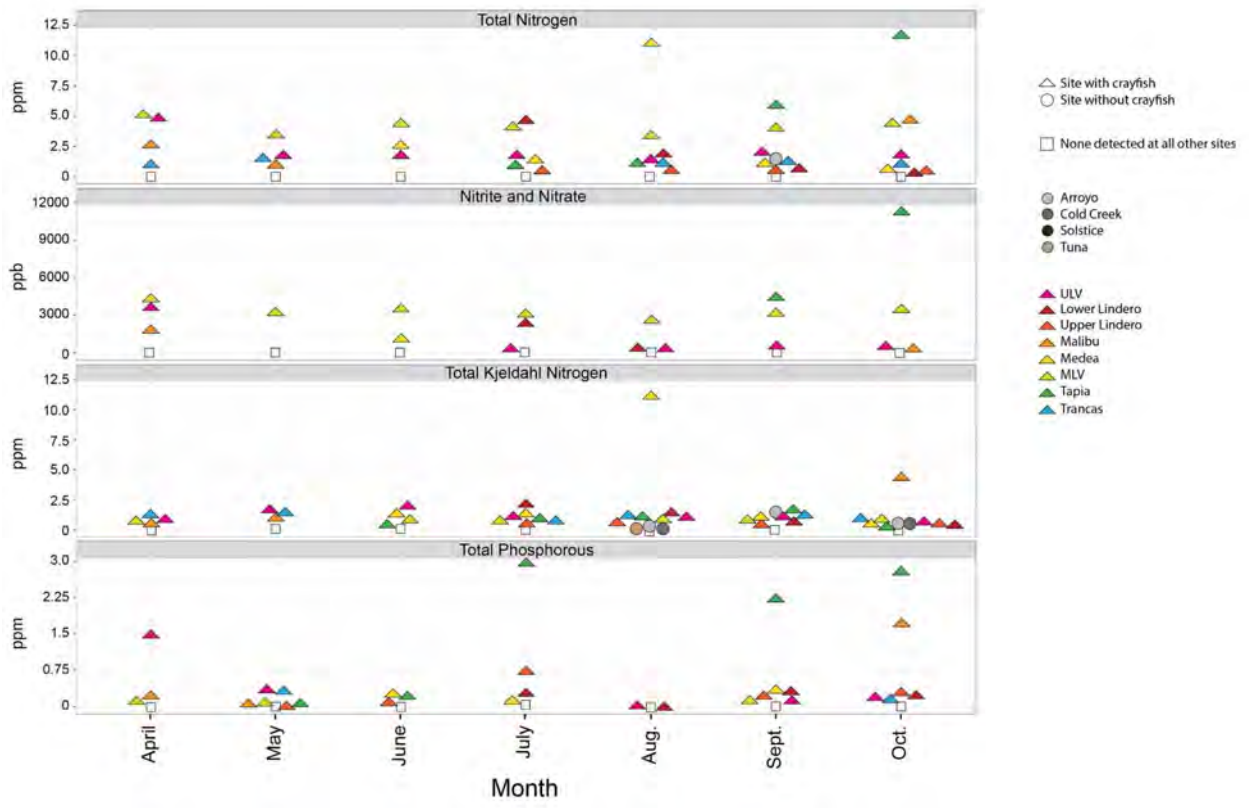

Figure 3. **Concentrations of total nitrogen (TN), nitrates and nitrites (NO), total Kjeldahl nitrogen (TKN), and total phosphorous (TP) tend to be elevated in crayfish sites throughout the Malibu Creek Watershed**. Sections of stream in residential areas and sampling sites that are above the Tapia Water Reclamation Facility (TWRF) had consistently elevated nutrient concentrations. Sites with crayfish are depicted with triangles, whereas non-crayfish sites are represented by circles. White squares indicate concentrations of a nutrient were non-detectable at all other sites sampled at the same time. Individual sites are color coded following the figure key.

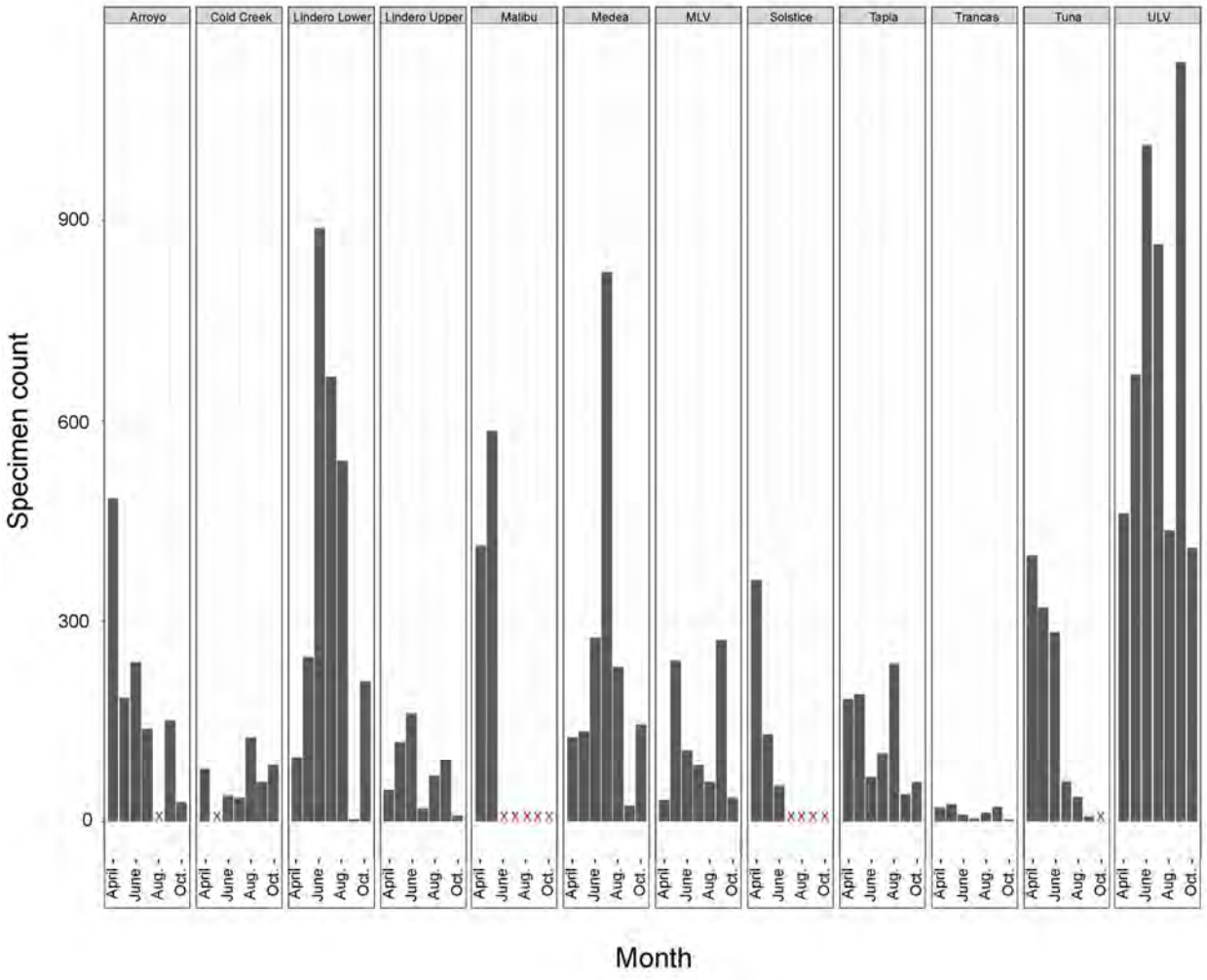

Figure 4. Specimen counts at each site by month generally show low numbers from the start of the project to the end of 2016. Many samples that exceed 300 specimens were primarily composed of NZMS and Chironomids. The (x) denotes sites that could not be collected (site dried) or that were lost in a fire (Cold Creek, May).

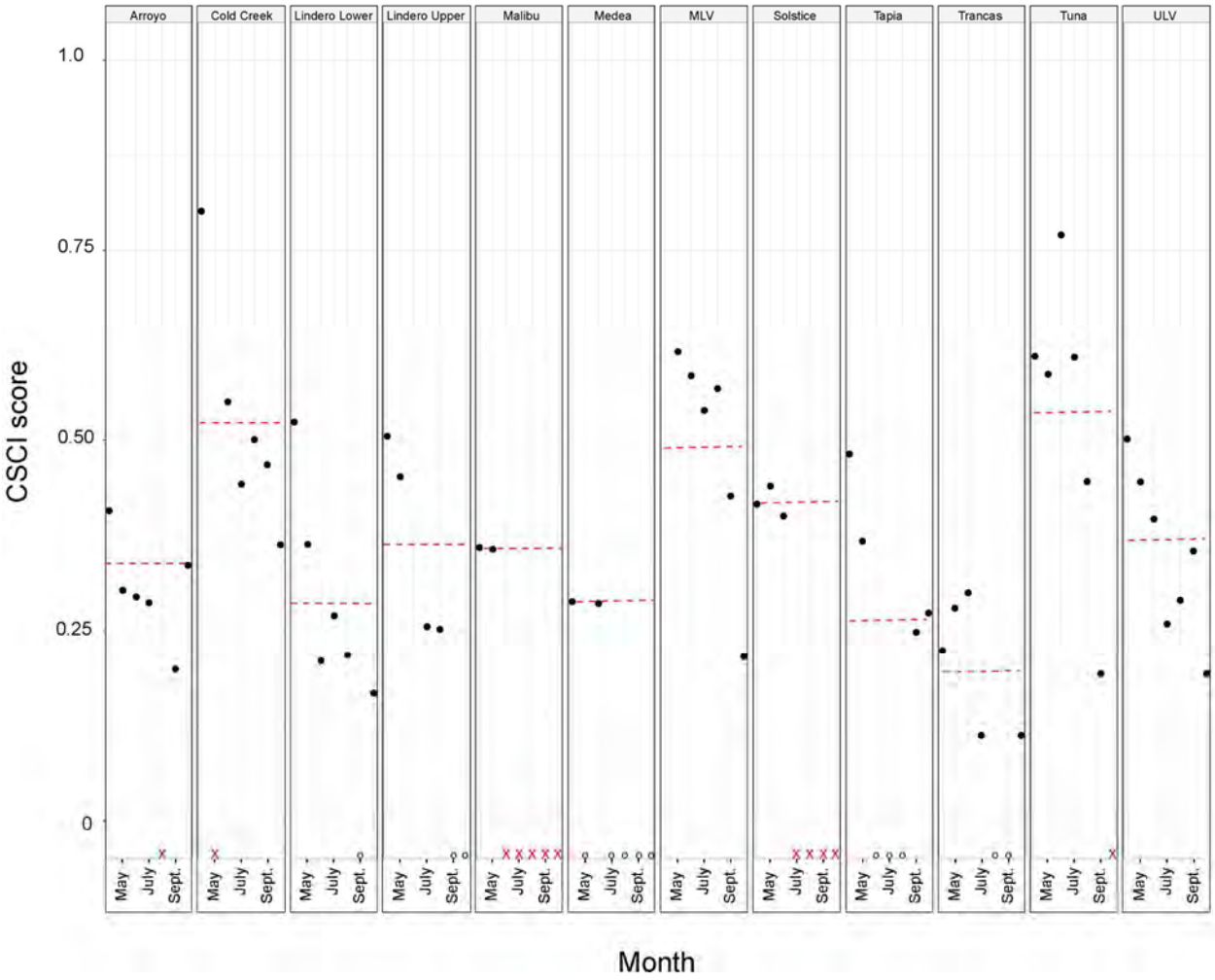

Figure 5. CSCI site scores by month tended to decrease through time and generally were well below TMDL objectives. Mean values are depicted by red dashed lines. Months where scores could not be calculated (o) or no sample was collected (x) are marked horizontally at the bottom of the axis (see Table 4 for specific values). The TMDL objective for CSCI scores is a 4-year median that falls within the 5th to 10th percentile of the reference distribution (1st – 10th percentile scores = 0.62 – 0.79). The majority of scores fall well below this threshold.

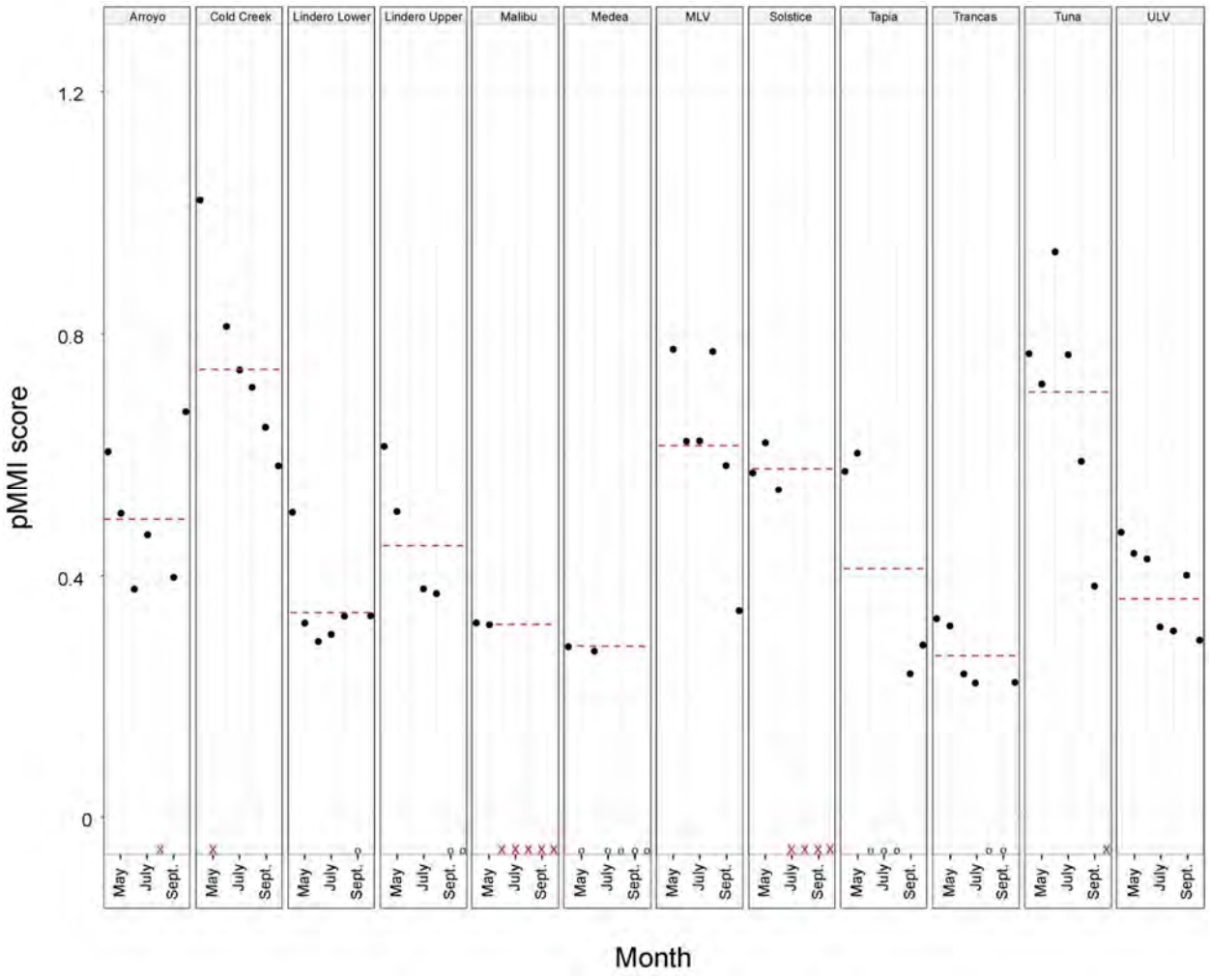

Figure 6. pMMI site scores by month and mean values generally decreased through time. Months where scores could not be calculated (o) or no sample was collected (x) are marked for each site (see Table 4 for specific details).

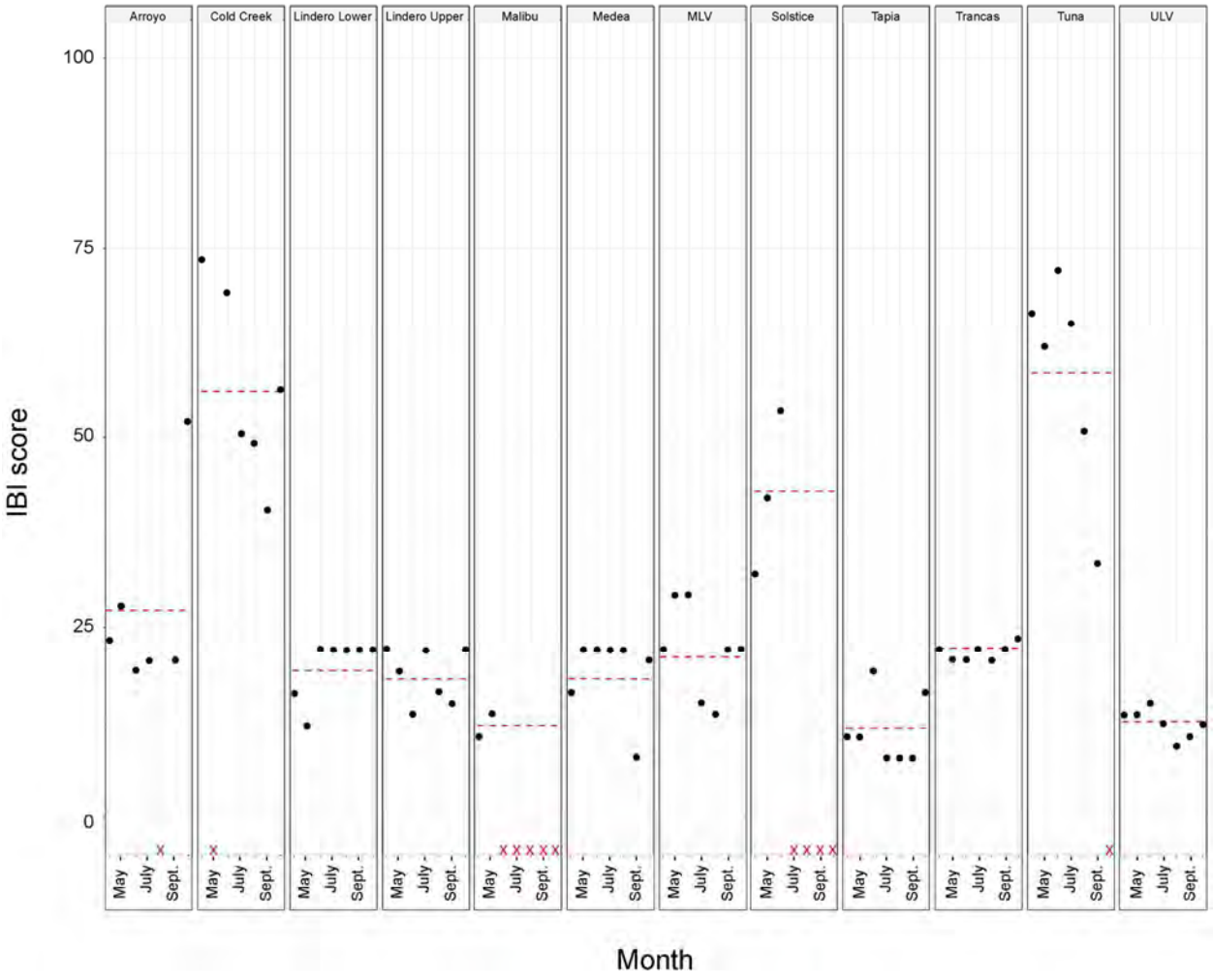

Figure 7. IBI site scores by month and mean values (dashed red lines). Months where no sample was collected (x) are marked for each site. See Table 4 for specific details.

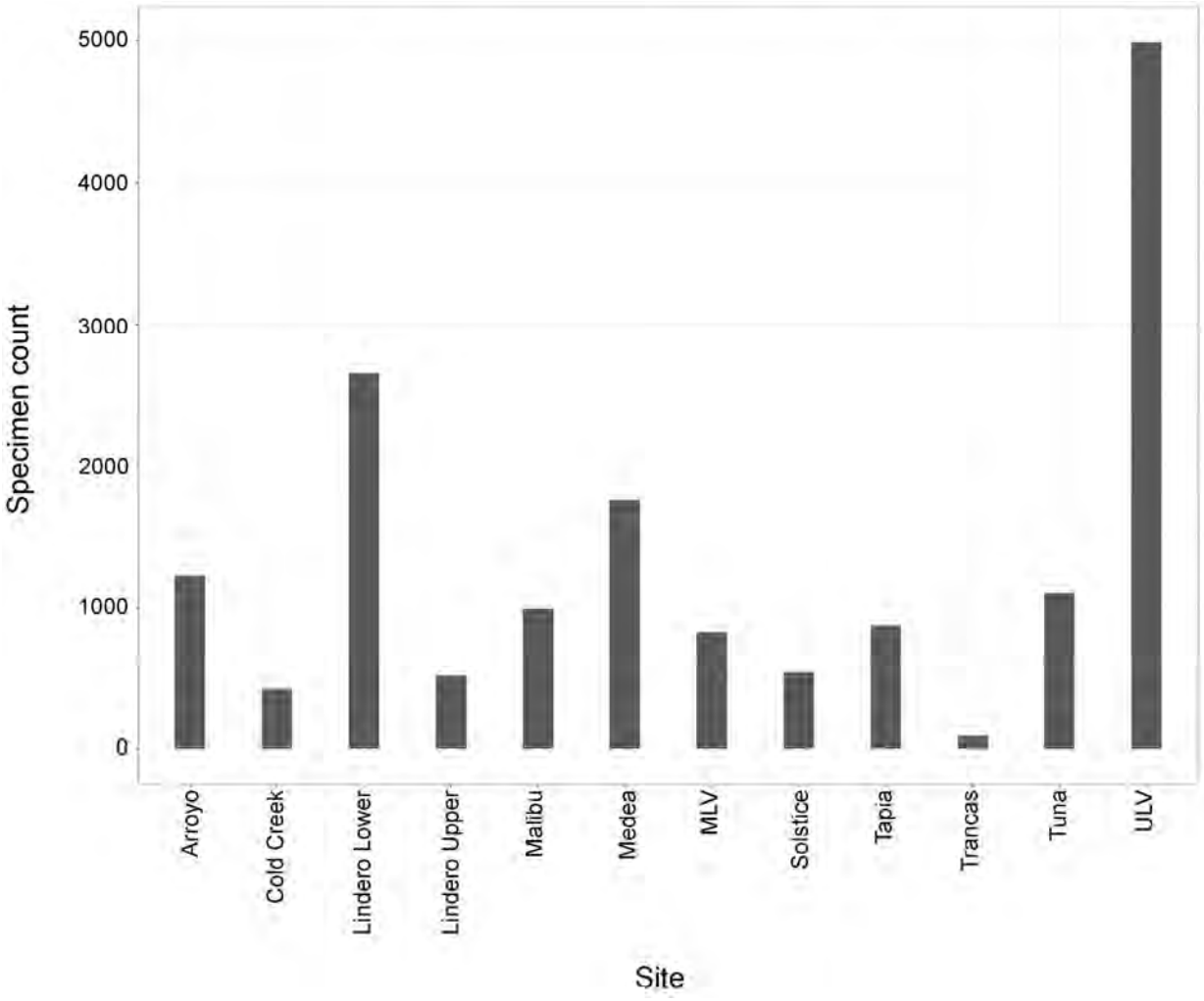

Figure 8. Combined specimen counts by site from 2016. When taxon data are temporally collapsed, only one site (Trancas) lacks greater than 350 specimens in all combined samples. This is also one site where manual trapping and removal of crayfish has not occurred for over three years.

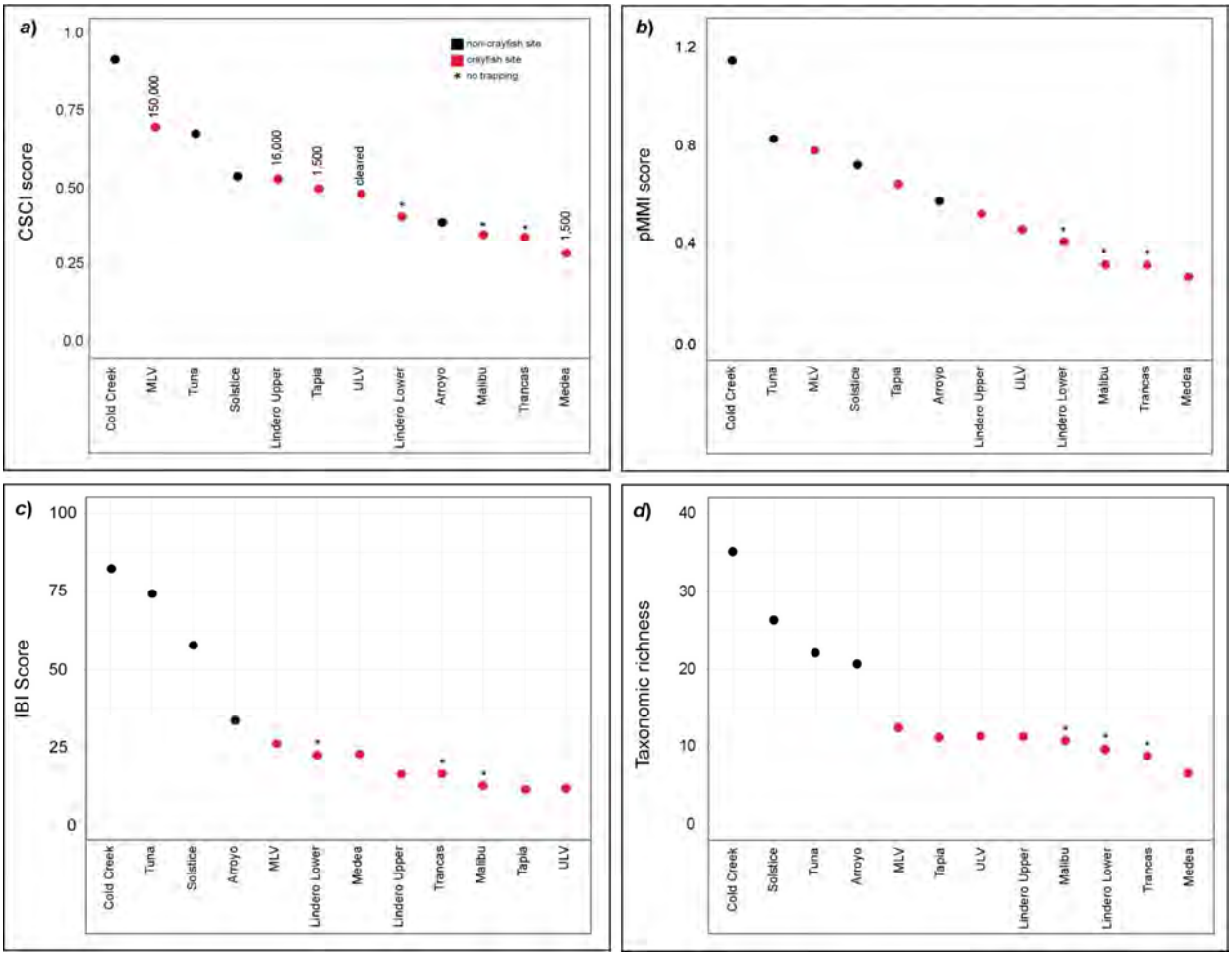

Figure 9. When monthly specimen data within a site were combined, CSCI scores, p scores, IBI scores, and taxonomic richness all tended to be lowest at sites where crayfish occur. a) However, in sites with crayfish, CSCI scores were highest where crayfish trapping and removal was greatest, as indicated by vertical numbers above data points. Sites with no trapping effort (*) are also marked above data points. **b)** pMMI scores were similarly lowest in sites with little or no crayfish trapping, as were IBI scores. **c**) The IBI scores we observed suggest crayfish similarly affect IBI scores as they do CSCI and pMMI scores. IBI scores in Malibu Creek, Solstice, and Tapia fall in line with IBI scores from 2014 (Heal the Bay). **d**) Taxonomic richness remains depressed at sites with crayfish even after extensive manual trapping and removal suggesting that sites require extended periods of restoration effort to improve biodiversity.

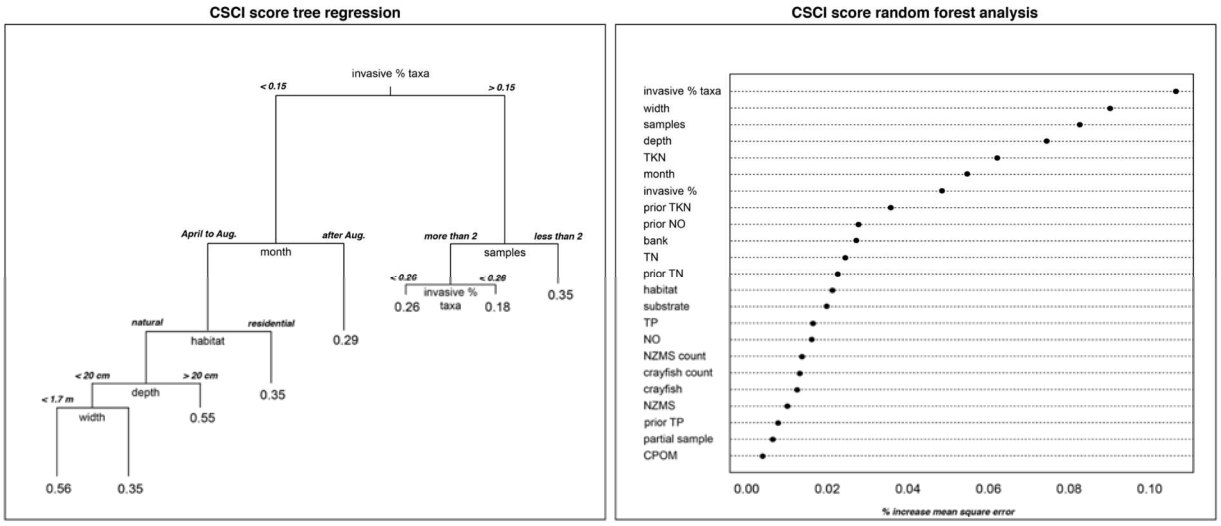

Figure 10. Overall CSCI tree regression and random forest results indicate that the percentage of invasive taxa is the most important predictor in explaining CSCI scores. In sites where invasive percentage of taxa exceeds 15% CSCI scores are compromised by approximately 50% relative to sites where invasive percentage of taxa is less than 15% and samples are collected early in the season from natural sites with shallow and narrow streams. Longer branch length of a node in the tree regression indicates greater explanatory power of the predictor. Random forest analysis corroborates the importance of percentage invasive taxa, time of year, number of samples, and physical habitat predictors. The predictor *invasive % taxa* appears twice in the tree regression because the analytical process allows predictors to repeatedly be used to explain variation in data.

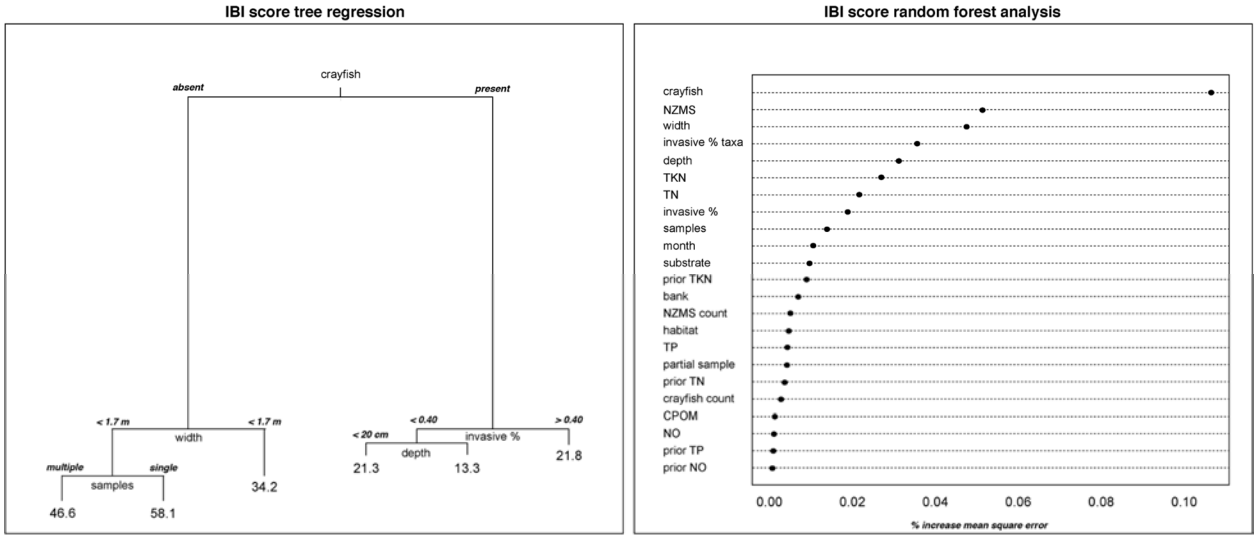

Figure 11. Overall IBI tree regression and random forest results indicate that the presence or absence of crayfish was the most important predictor in explaining IBI scores. Branch length in tree regression and node impurity scores in random forest analysis shows that the greatest extent of variation in IBI scores is explained by crayfish presence or absence. The presence or absence of New Zealand mud snails was also an important predictor in tree regression and ranked as the second highest predictor, followed by stream width, in the random forest analysis.

non-crayfish sites

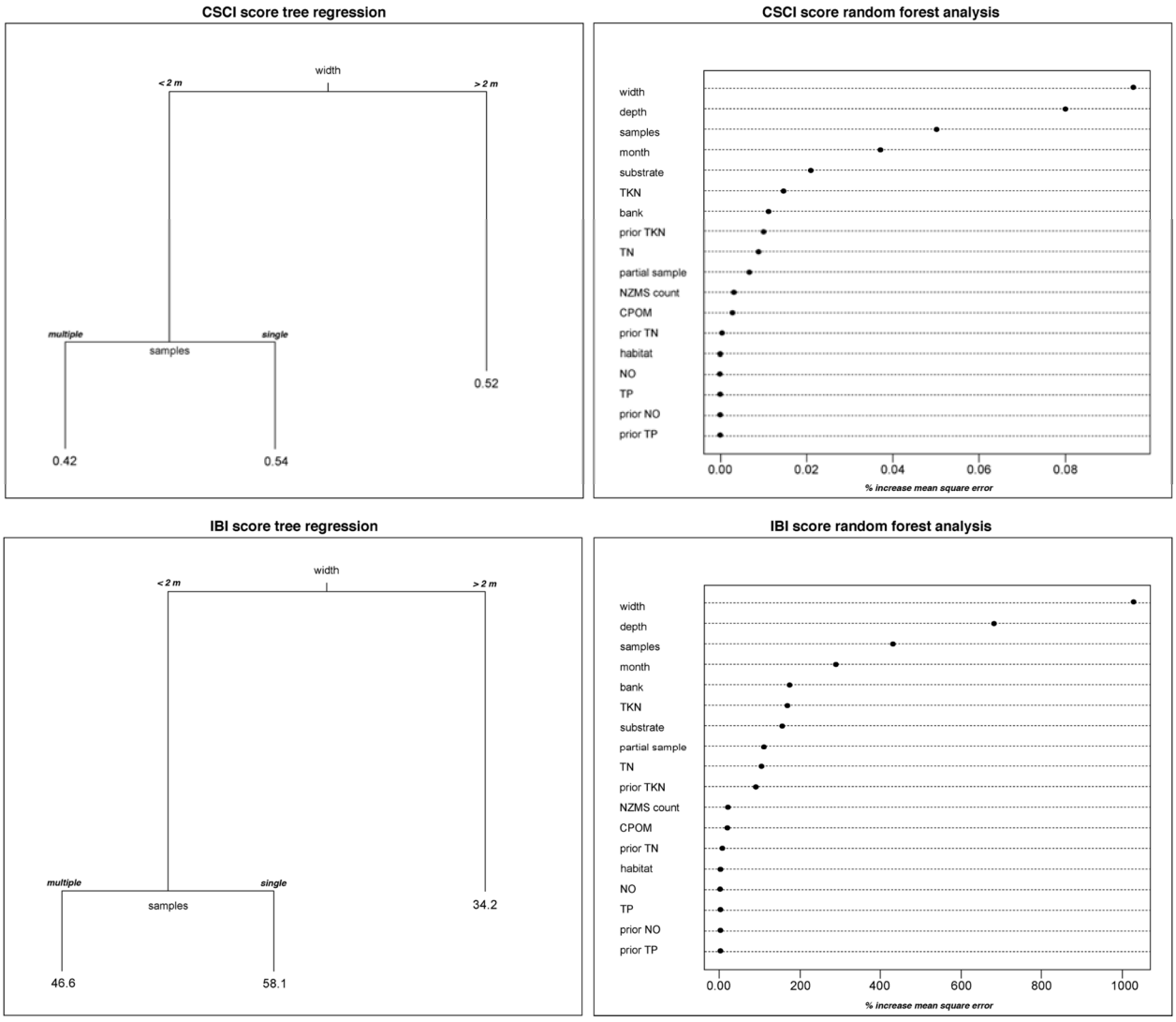

Figure 12. Physical characteristics of the habitat are the most important predictors explaining CSCI and IBI scores in non-crayfish sites. The number of samples and time of year were also standout predictors in both CSCI and IBI Random Forest models. Branch length of the main node in tree regression indicate the strength of stream wetted width in explaining CSCI and IBI scores in non-crayfish sites.

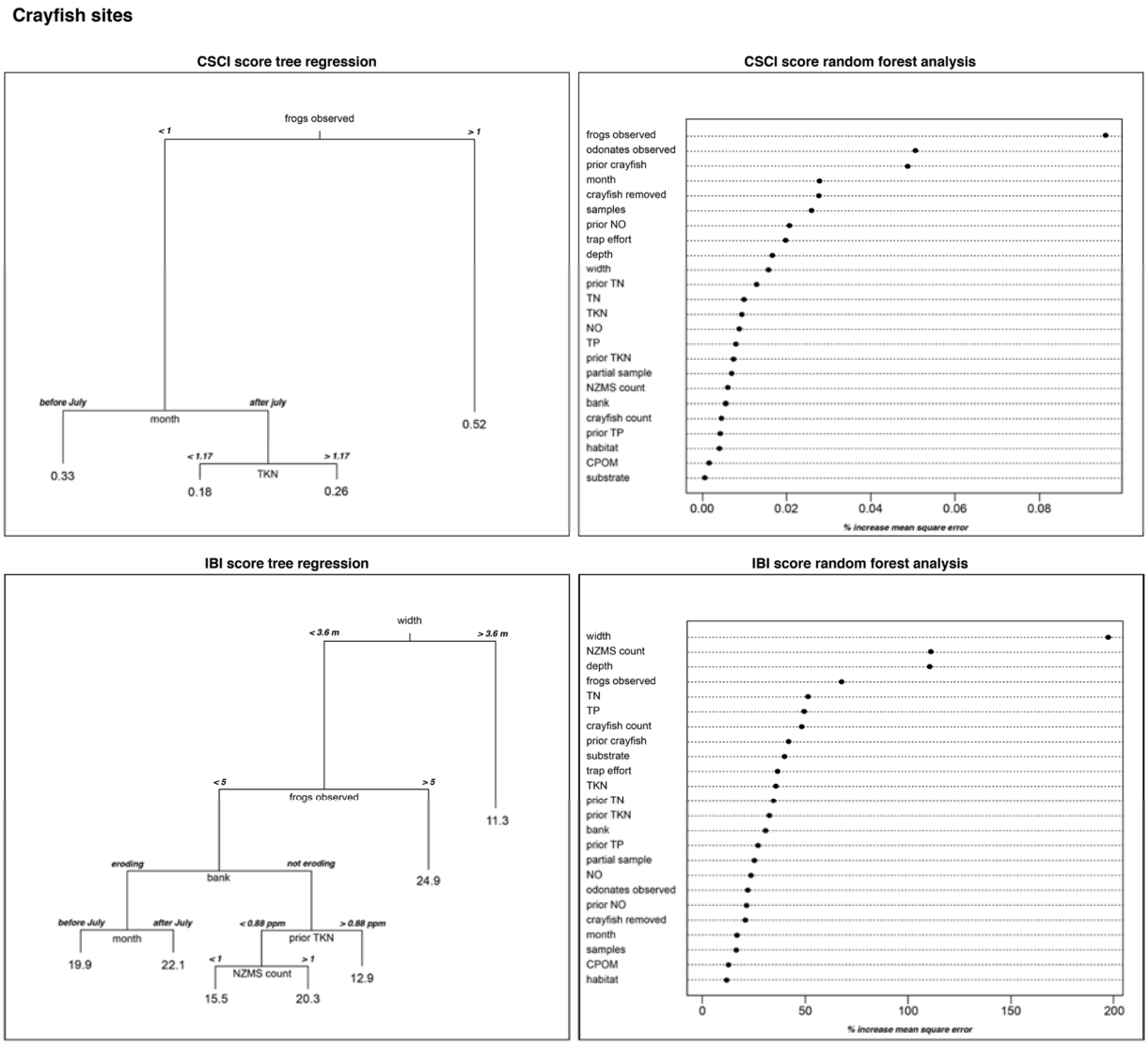

Figure 13. The most important predictors for explaining CSCI and IBI scores in crayfish streams are amphibians and stream width. Results of tree regression and random forest analyses of CSCI and IBI scores from crayfish sites indicate that CSCI scores were largely explained by the presence of frogs in a site, such that sites where frogs were detected tended to score about 40% higher than sites where frogs were not detected. CSCI scores were next best predicted by time of year and TKN. Random forest results also linked detection of frogs as the most important predictor for CSCI scores, but also whether odonates were observed and the prior number of crayfish removed, followed by time of year (*month*). Although TKN did explain some patterns of CSCI scores in tree regression, it was found to have very little explanatory power in the random forest analysis. Analyses of IBI scores also identified the detection of frogs as an important predictor, but ranked physical habitat characteristics higher (i.e. mean wetted width and mean depth). The number of NZMS in a sample was also one of the most important predictors of IBI scores.

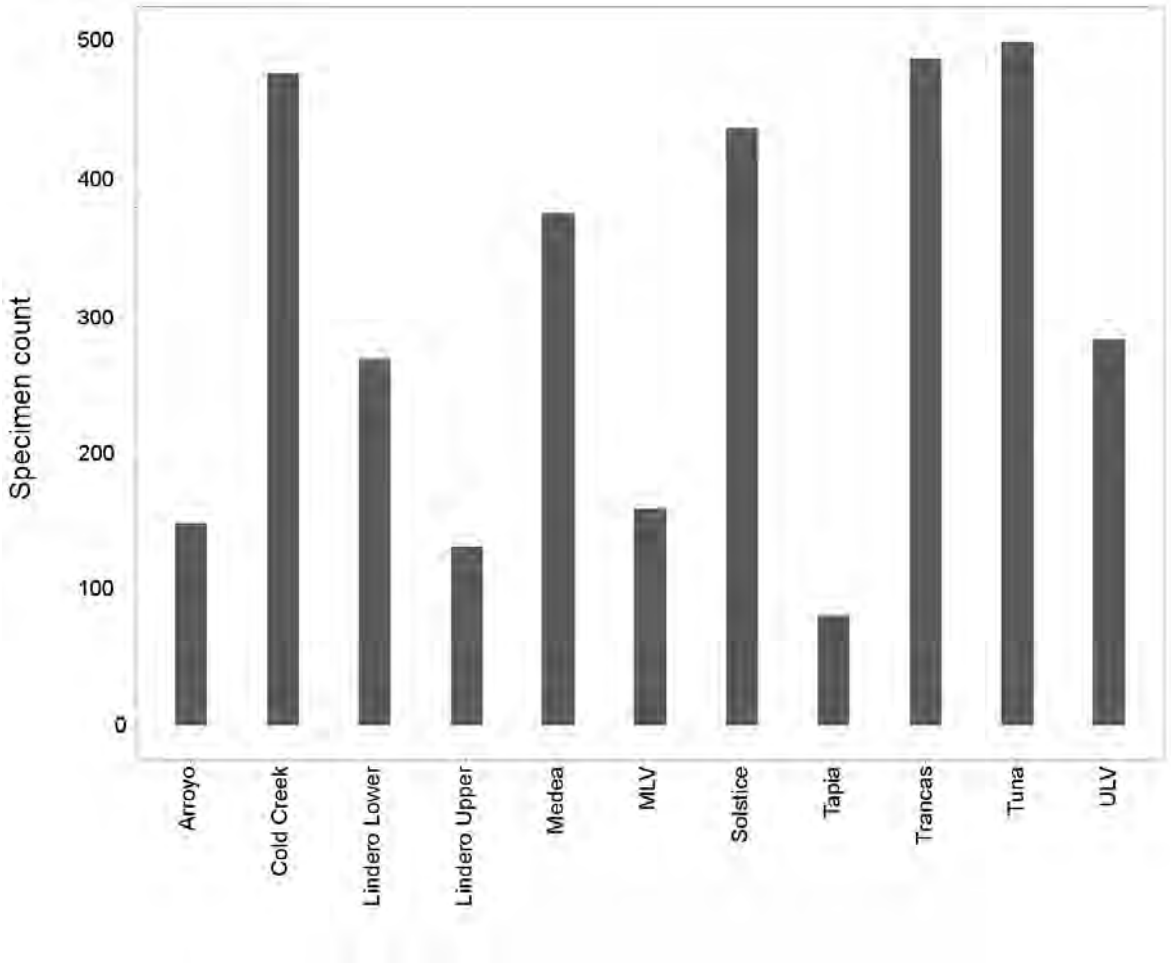

Figure 14. Total specimen counts from BMI samples collected in 2017. We found no significant difference overall in specimen counts between 2017 and 2016 samples. However, mean counts did increase in 2017 ($\bar{x}$ = 334, s.d. = 183) compared to 2016 initial samples ($\bar{x}$ = 238, s.d. = 184) and 2016 May samples ($\bar{x}$ = 187, s.d. = 175).

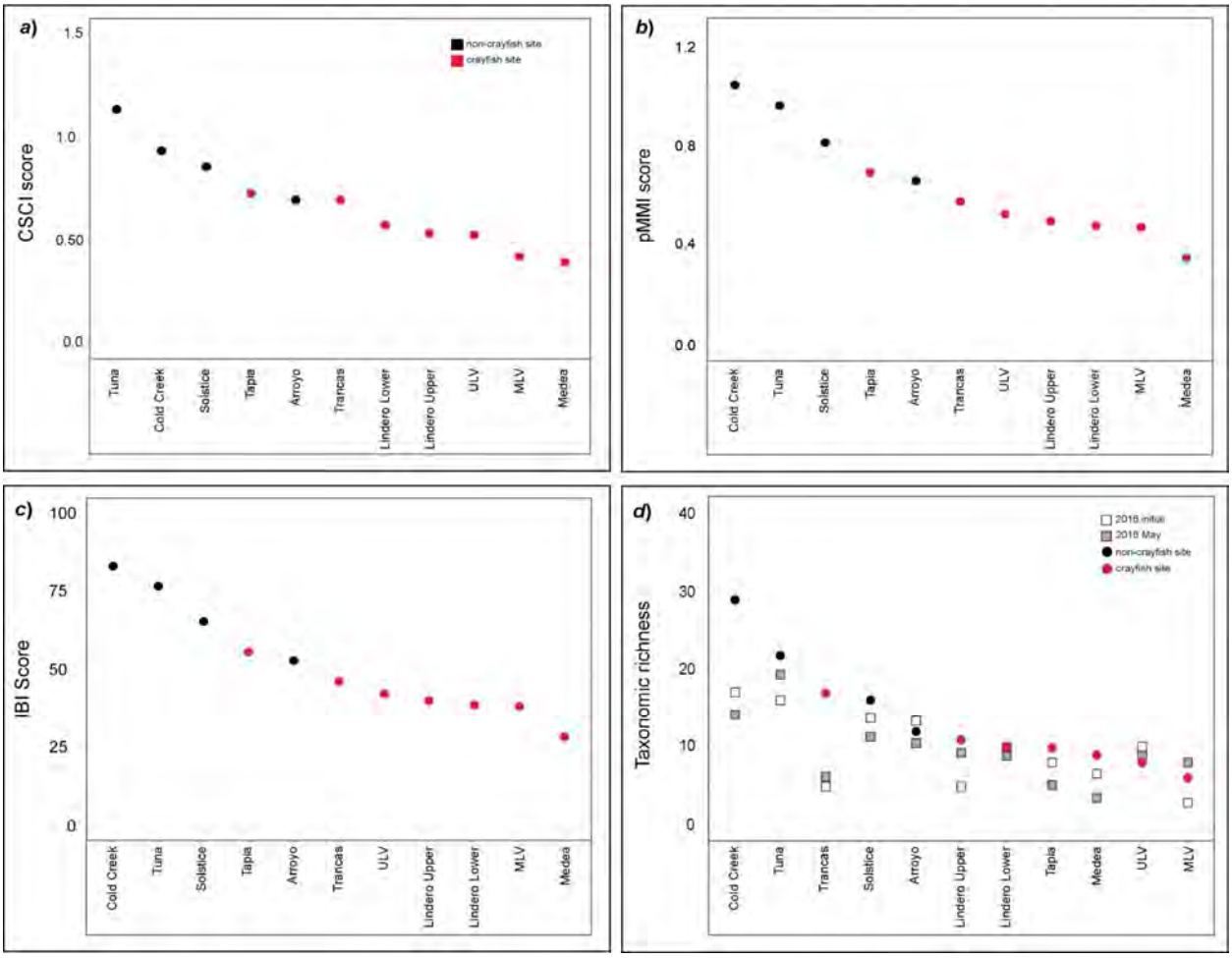

Figure 15. The 2017 CSCI, pMMI, IBI and taxonomic richness values follow similar patterns observed between crayfish and non-crayfish sites in 2016. a) A greater number of CSCI scores from the same time of year fall within the 1st – 10th percentile (0.62 – 0.79) compared to 2016 although a majority of crayfish sites remain below this threshold. **b**) pMMI scores tended to remain low in 2017 in crayfish sites. **c**) IBI scores generally increased across all sites, but remain depressed in crayfish sites. **d**) 2017 taxonomic richness scores in crayfish and non-crayfish sites (circles) generally remained about the same compared to 2016 initial samples (white squares) and 2016 samples collected in May (grey squares). One standout difference is Trancas Creek where richness effectively tripled. This was likely a result of winter flooding, which has been documented to wash out crayfish and improve habitat conditions for local species (Kats et al. 2013).

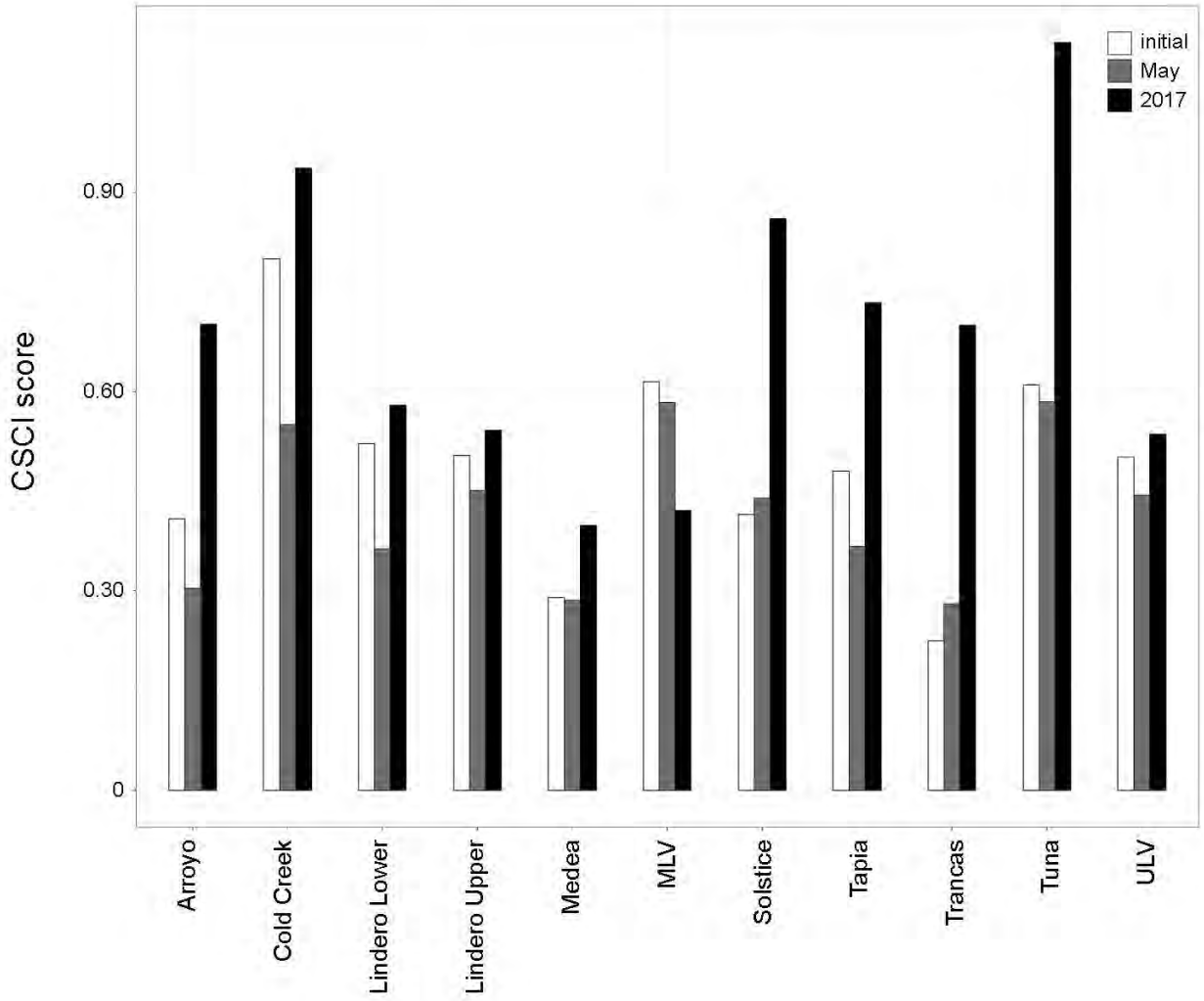

Figure 16. CSCI scores from 2017, initial 2016 samples, and May 2016 samples show general increases between years suggesting that drought and presence of crayfish both exerted strong pressure on local stream systems.

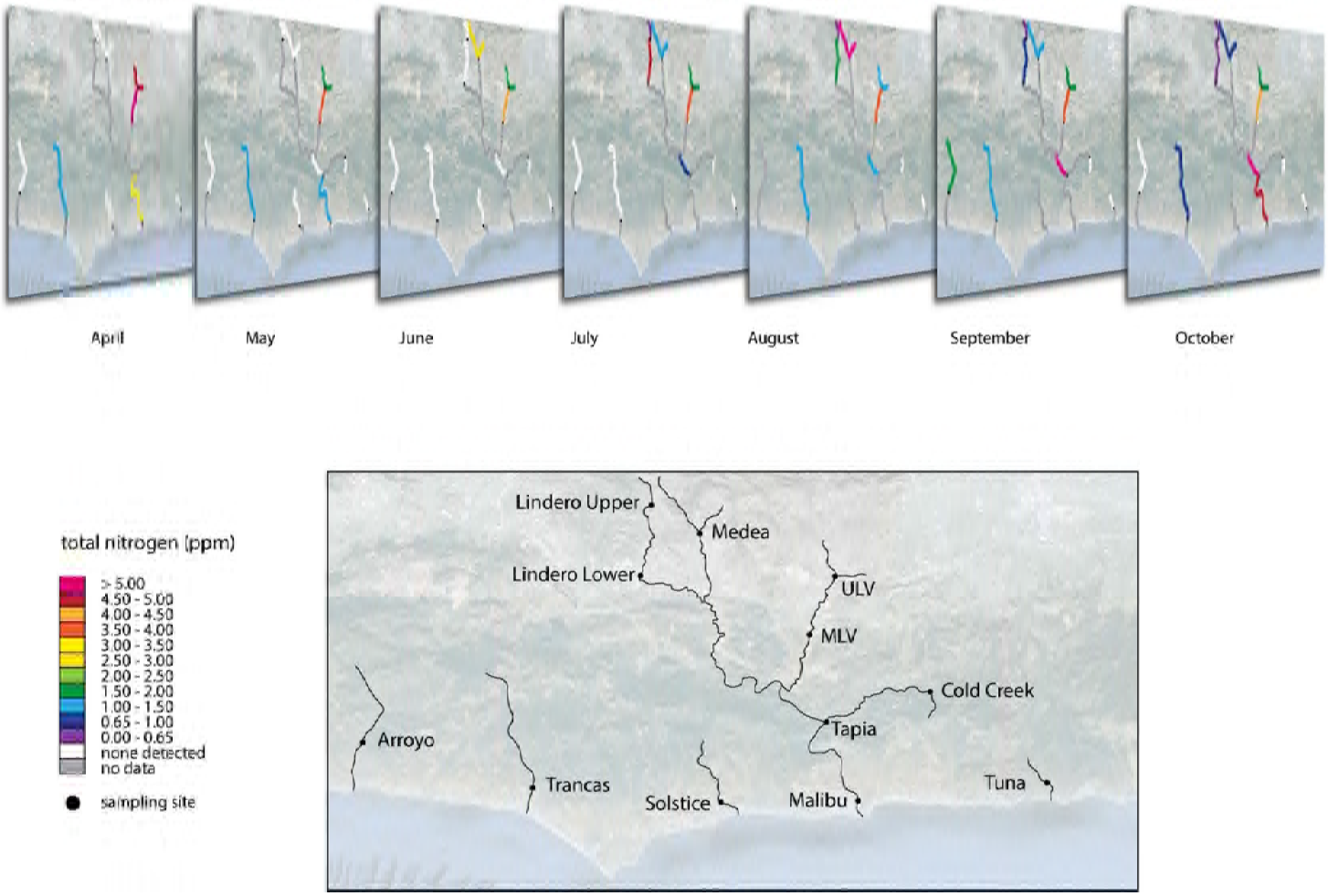

Figure 17. Total nitrogen concentrations measured at each stream site throughout the study period. Warmer stream colors on the map indicate greater TN concentrations (i.e. colors other than grey, white, or purple, indicate concentrations above TMDL targets). TN concentrations in the upper sections of the watershed (Lindero, Medea, ULV, MLV) were highest in the summer months, but tended to remain relatively low from May to September in the lower portion of the watershed (Malibu and Tapia, below the Tapia Water Reclamation Facility (TWRF)). TWRF began discharging September 16 (before our sampling for September and October), at which point TN concentrations greatly increased at Tapia.

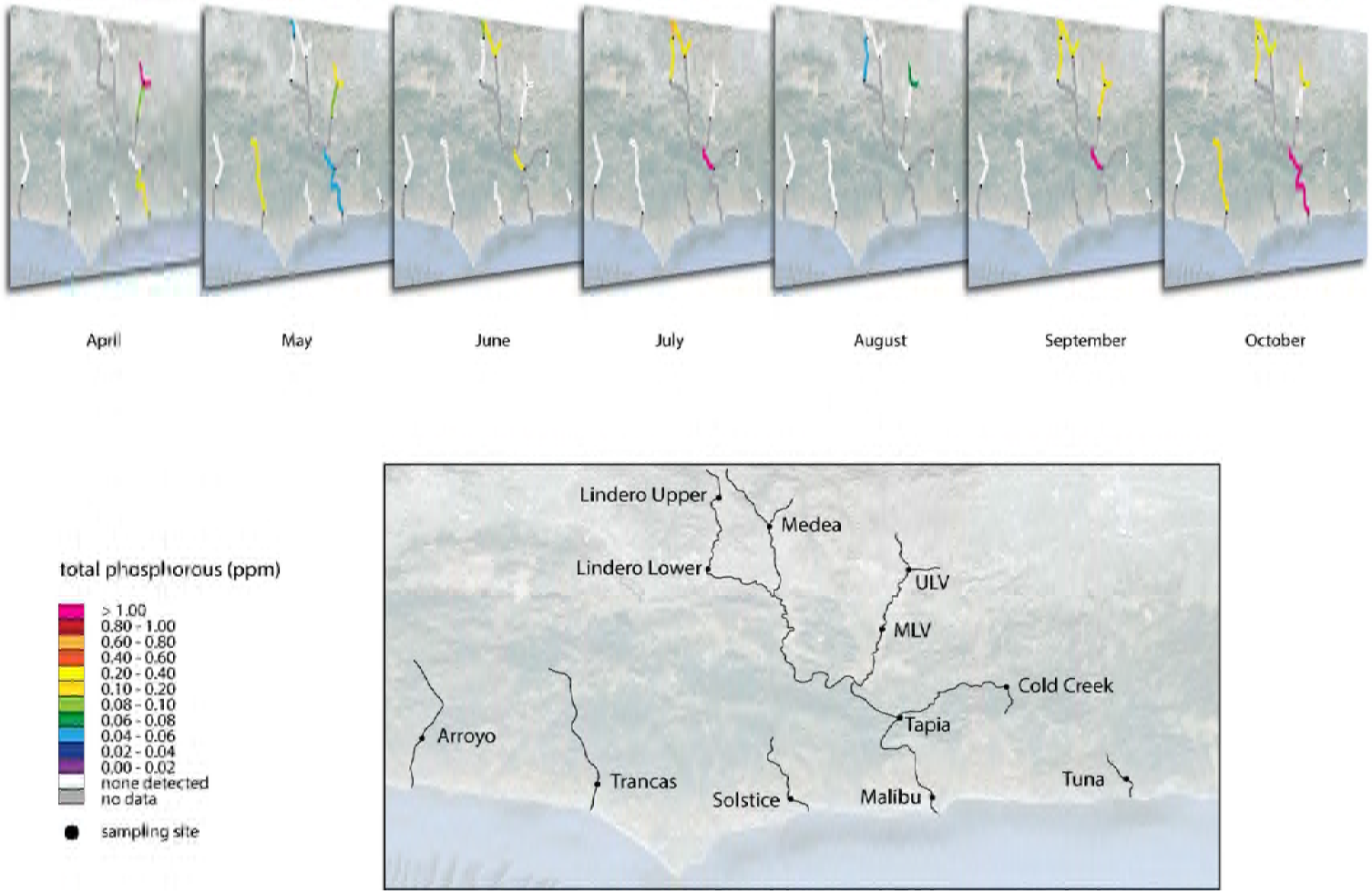

Figure 18. Total phosphorous concentrations measured at each stream site throughout the study period. Warmer stream colors on the map indicate greater TP concentrations (i.e. yellows oranges, and reds indicate concentrations above TMDL targets). TP concentrations in the upper sections of the watershed (Lindero, Medea, ULV, MLV) were regularly above TMDL targets from summer to our last sampling event in October. TP concentrations remained somewhat low in lower portions of the watershed (Malibu and Tapia, below the TWRF) from May to September, but exceeded TMDL targets in September and October when the TWRF began discharging (September 16).

site	latitude	longitude	elevation (m)	area (sq. km)
Arroyo	34.0660785	-118.93213	80	25.16
Cold Creek	34.0923212	-118.64775	397	1.43
Lindero Lower	34.1812608	-118.78897	340	4.07
Lindero Upper	34.192873	-118.78727	383	0.76
Malibu	34.0430146	-118.68425	7	282.53
Medea	34.1817032	-118.76987	317	3.12
MLV	34.1036635	-118.71293	169	50.40
Solstice	34.0374284	-118.74781	34	9.07
Tapia	34.081094	-118.70376	137	250.57
Trancas	34.0476123	-118.84654	46	19.07
Tuna	34.0466926	-118.59061	89	3.33
ULV	34.1494637	-118.69795	236	31.26

Table 1. Sampling site GPS coordinates, elevation, and catchment area. Malibu, Solstice, and Tapia sampling sites were chosen for long-term comparative purposes since previous BMI collections, water sampling, and physical habitat assessments have occurred at these localities.

Model	Predictors																											
	month	# of samples	partial sample	habitat	$\bar{x}$ width	$\bar{x}$ depth	substrate	bank	CPOM	TN	TP	NO	TKN	prior TN	prior TP	prior NO	prior TKN	invasive %	invasive % taxa	NZMS	# NZMS	crayfish	# crayfish	# crayfish removed	prior # crayfish removed	frogs observed	odonates observed	trap effort
All sites																												
Non-crayfish sites only																												
Crayfish sites only																												

Table 2. Model predictors used for tree regression and random forest analyses. The column box of a predictor that was used for a model is shaded grey. White boxes in a row indicate that the predictor was not used in that model.

TOTAL NITROGEN (ppm)

Site	April	May	June	July	August	September	October	2017 (May)
Arroyo (!)	-	-	-	-	*	1.55	-	1.27
Cold Creek (!)	-	*	-	-	-	-	-	0.95
Lindero Lower	-	-	-	4.75	1.97	1.00	0.50	1.73
Lindero Upper	-	-	-	0.57	0.60	0.58	0.58	0.775
Malibu	2.70	1.10	*	*	*	*	4.75	0.41
Medea	-	-	2.65	1.42	11.12	1.17	0.67	1.67
MLV	5.01	3.35	4.40	3.81	3.65	4.00	4.50	1.48
Solstice (!)	-	-	-	*	*	*	*	0.67
Tapia	*	-	-	1.00	1.19	6.00	11.75	0.36
Trancas	1.05	1.50	-	-	1.12	1.31	0.90	1.13
Tuna (!)	-	-	-	-	-	-	-	-
ULV	4.65	1.70	1.90	1.62	1.49	1.82	1.67	0.935

TOTAL PHOSPHOROUS (ppm)

Site	April	May	June	July	August	September	October	2017 (May)
Arroyo (!)	-	-	-	-	*	-	-	-
Cold Creek (!)	-	*	-	-	-	-	-	-
Lindero Lower	-	-	-	0.310	0.045	0.325	0.230	-
Lindero Upper	-	0.060	0.100	0.750	-	0.250	0.300	-
Malibu	0.230	0.050	*	*	*	*	2.020	0.32
Medea	-	-	0.240	0.130	-	0.350	-	-
MLV	0.095	0.085	-	-	-	0.135	-	-
Solstice (!)	-	-	-	*	*	*	*	-
Tapia	*	0.060	0.235	3.000	-	2.225	2.750	-
Trancas	-	0.285	-	-	-	-	0.150	-
Tuna (!)	-	-	-	-	-	-	-	-
ULV	1.500	0.285	-	-	0.061	0.127	0.240	-

NITRATE & NITRITES (ppm)

Site	April	May	June	July	August	September	October	2017 (May)
Arroyo (!)	-	-	-	-	*	-	-	-
Cold Creek (!)	-	*	-	-	-	-	-	-
Lindero Lower	-	-	-	2500	425	-	-	-
Lindero Upper	-	-	-	-	-	-	-	-
Malibu	2050	-	*	*	*	*	375	-
Medea	-	-	1150	-	-	-	-	-
MLV	4350	3350	3500	3154	2822	3250	3750	-
Solstice (!)	-	-	-	*	*	*	*	-
Tapia	*	-	-	-	-	4500	11500	-
Trancas	-	-	-	-	-	-	-	-
Tuna (!)	-	-	-	-	-	-	-	-
ULV	3800	-	-	450	282	575	525	-

TOTAL KJELDAHL NITROGEN (ppm)

Site	April	May	June	July	August	September	October	2017
Arroyo (!)	-	-	-	-	0.33	1.55	0.45	1.27
Cold Creek (!)	-	*	-	0.55	0.22	-	0.48	0.95
Lindero Lower	-	-	-	2.2	1.52	1.00	0.50	1.73
Lindero Upper	-	-	-	0.57	0.60	0.58	0.58	0.775
Malibu	0.65	1.10	*	*	*	*	4.50	0.41
Medea	-	-	1.55	1.42	11.12	1.17	0.67	1.67
MLV	0.75	-	0.90	0.73	0.86	0.80	0.77	1.48
Solstice (!)	-	-	-	*	*	*	*	0.67
Tapia	*	-	0.55	1.00	1.19	1.50	0.27	0.36
Trancas	1.05	1.50	-	0.75	1.12	1.31	0.90	1.13
Tuna (!)	-	-	-	-	0.30	-	-	0.233
ULV	0.85	1.70	1.90	1.20	1.21	1.25	1.15	0.935

Table 3. Nutrient concentrations by site during the 2016 study period and single 2017 sample. Sites with (!) indicate non-crayfish streams. Grey cells with dashes indicate a non-detectable quantity of the nutrient. Asterisks (*) indicate samples that were not collected, either because the site had dried (Malibu and Solstice) or the sample was destroyed (only Cold Creek in May and Tapia in April). Yellow cells indicate the measured concentration exceeded TMDL summer targets; blue cells indicate the measured concentration was below the TMDL summer target.

CSCI site score	April	May	June	July	August	September	October	2017 (May)
Arroyo (!)	0.41	0.30	0.30	0.29	*	0.20	0.34	0.66
Cold Creek (!)	0.80	*	0.55	0.44	0.50	0.47	0.36	0.94
Lindero Lower	0.52	0.36	0.21	0.27	0.22	-	0.17	0.58
Lindero Upper	0.51	0.45	-	0.26	0.25	-	-	0.54
Malibu	0.36	0.36	*	*	*	*	*	*
Medea	0.29	-	0.29	-	-	-	-	0.40
MLV	-	0.62	0.58	0.54	0.57	0.43	0.22	0.42
Solstice (!)	0.41	0.44	0.40	*	*	*	*	0.86
Tapia	0.48	0.37	-	-	-	0.25	0.27	0.73
Trancas	0.22	0.28	0.30	0.11	-	-	0.11	0.70
Tuna (!)	0.61	0.59	0.77	0.61	0.45	0.19	*	1.13
ULV	0.50	0.45	0.40	0.26	0.29	0.35	0.19	0.54

MMI Site Score	April	May	June	July	August	September	October	2017 (May)
Arroyo (!)	0.60	0.50	0.38	0.47	*	0.40	0.67	0.70
Cold Creek (!)	1.02	*	0.81	0.74	0.71	0.65	0.58	1.04
Lindero Lower	0.51	0.32	0.29	0.30	0.33	-	0.33	0.48
Lindero Upper	0.61	0.51	-	0.38	0.37	-	-	0.50
Malibu	0.32	0.32	*	*	*	*	*	*
Medea	0.28	-	0.28	-	-	-	-	0.35
MLV	-	0.78	0.62	0.62	0.77	0.58	0.34	0.48
Solstice (!)	0.57	0.62	0.54	*	*	*	*	0.82
Tapia	0.57	0.60	-	-	-	0.24	0.29	0.70
Trancas	0.33	0.32	0.24	0.22	-	-	0.22	0.58
Tuna (!)	0.77	0.72	0.94	0.77	0.59	0.38	*	0.96
ULV	0.47	0.44	0.43	0.32	0.31	0.40	0.29	0.53

IBI Site Score	April	May	June	July	August	September	October	2017 (May)
Arroyo (!)	23.51	27.80	19.23	20.66	*	20.66	52.09	32.10
Cold Creek (!)	73.51	*	69.23	50.66	49.23	40.66	56.37	76.40
Lindero Lower	16.37	12.09	22.09	22.09	22.09	22.09	22.09	14.90
Lindero Upper	22.09	19.23	13.51	22.09	16.37	14.94	22.09	14.90
Malibu	10.66	13.51	*	*	*	*	*	*
Medea	16.37	22.09	22.09	22.09	22.09	7.80	20.66	12.10
MLV	22.09	29.23	29.23	14.94	13.51	22.09	22.09	17.80
Solstice (!)	32.09	42.09	53.51	*	*	*	*	47.80
Tapia	10.66	10.66	19.23	7.80	7.80	7.80	16.37	24.90
Trancas	22.09	20.66	20.66	22.09	20.66	22.09	23.51	43.50
Tuna (!)	66.37	62.09	72.09	64.94	50.66	33.51	*	63.50
ULV	13.51	13.51	14.94	12.09	9.23	10.66	12.09	12.10

Table 4. CSCI, pMMI, and IBI scores by month for each sample collected in 2016 and the one sample from 2017. Grey boxes with dashes indicate that a score could not be calculated due to a lack of invertebrates used for analyses (i.e. samples were composed of only species such as *P. clarkii*, *P. antipodarum*, *Hyalella sp.*). Asterisks (*) indicate samples that were not collected, either because the site had dried (Malibu and Solstice) or could not be visited (Cold Creek May). Sites with (!) indicate non-crayfish streams.

ITEM 11A

INFORMATION ONLY

August 7, 2017 JPA Board Meeting

TO: JPA Board of Directors

FROM: General Manager

Subject : Surface Water Augmentation Regulations: Public Review

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SUMMARY:

On July 21, 2017, the State Water Resources Control Board (SWRCB) released its draft Surface Water Augmentation Regulations for public review. A public hearing will be conducted for the regulations on September 7, 2017, at 9:30 a.m. at the CalEPA Headquarters in Sacramento. The public comment period ends on September 12, 2017, at 12 noon.

The draft regulations are important to support the implementation of the Pure Water Project Las Virgenes-Triunfo, which is currently one of three proposed projects in California that involve surface water augmentation. As anticipated, the draft regulations include provisions to allow for a minimum theoretical retention time of 60 days, providing additional operational flexibility for agencies that seek to augment supplies stored in smaller reservoirs.

Staff will review the draft regulations and submit comments to the SWRCB prior to the deadline.

FISCAL IMPACT:

No

ITEM BUDGETED:

No

Prepared by: David W. Pedersen, Administering Agent/General Manager

ATTACHMENTS:

Draft Surface Water Augmentation Regulations

TITLE 22, CALIFORNIA CODE OF REGULATIONS

DIVISION 4, CHAPTER 3

ARTICLE 1. Definitions

Adopt Section 60301.120 as follows:

§60301.120. Augmented Reservoir.

"Augmented Reservoir" means a surface water reservoir used as a source of domestic drinking water supply that receives recycled municipal wastewater from a Surface Water Source Augmentation Project (SWSAP).

NOTE: Authority cited: Sections 13521 and 13562, Water Code; and Section 116271, Health and Safety Code. Reference: Sections 13520, 13522, 13522.5, 13523, 13523.1, 13524, 13560, 13561, 13564 and 13565, Water Code; and Section 116551, Health and Safety Code.

Amend Section 60301.450 as follows:

§60301.450. Indicator Compound.

“Indicator Compound” means an individual chemical in ~~a GRRP's~~ municipal wastewater that represents the physical, chemical, and biodegradable characteristics of a specific family of trace organic chemicals; is present in concentrations that provide information relative to the environmental fate and transport of those chemicals; may be used to monitor the efficiency of trace organic compound~~s~~ removal by treatment processes; and provides an indication of treatment process failure.

NOTE: Authority cited: Sections 13521, 13562 and 13562.5, Water Code; and Section~~s~~ ~~131052 and 131200~~116271, Health and Safety Code. Reference: Sections 13520, 13522, 13522.5, 13523, 13523.1, 13524, 13560, 13561 and 13562.5, Water Code.

Adopt Section 60301.850.5 as follows:

§60301.850.5. Surface Water.

As used in this Article and Article 5.3 of this Chapter, "Surface Water" has the same meaning as defined in section 64651.83 of Chapter 17.

NOTE: Authority cited: Sections 13521 and 13562, Water Code; and Section 116271, Health and Safety Code. Reference: Sections 13520, 13522, 13522.5, 13523, 13523.1, 13524, 13560, 13561, 13564 and 13565, Water Code; and Section 116551, Health and Safety Code.

Adopt Section 60301.851 as follows:

§60301.851. Surface Water Source Augmentation Project or SWSAP.

"Surface Water Source Augmentation Project" or "SWSAP" means a project involving the planned placement of recycled municipal wastewater into a surface water reservoir that is used as a source of domestic drinking water supply, for the purpose of supplementing the source of domestic drinking water supply.

NOTE: Authority cited: Sections 13521 and 13562, Water Code; and Section 116271, Health and Safety Code. Reference: Sections 13520, 13522, 13522.5, 13523, 13523.1, 13524, 13560, 13561, 13564 and 13565, Water Code; and Section 116551, Health and Safety Code.

Adopt Section 60301.852 as follows:

§60301.852. Surface Water Source Augmentation Project Public Water System or SWSAP PWS.

"Surface Water Source Augmentation Project Public Water System" or "SWSAP PWS" means a public water system that plans to utilize or is utilizing an augmented reservoir as a source of drinking water and is responsible for complying with the requirements of Chapter 17 and the applicable requirements of this Chapter.

NOTE: Authority cited: Sections 13521 and 13562, Water Code; and Section 116271, Health and Safety Code. Reference: Sections 13520, 13522, 13522.5, 13523, 13523.1, 13524, 13560, 13561, 13564 and 13565, Water Code; and Section 116551, Health and Safety Code.

Adopt Section 60301.853 as follows:

§60301.853. Surface Water Source Augmentation Project Water Recycling Agency or SWSAP WRA.

"Surface Water Source Augmentation Project Water Recycling Agency" or "SWSAP WRA" means an agency that is subject to a Regional Water Quality Board's (Regional Board's) water-recycling requirements applicable to a Surface Water Source Augmentation Project (SWSAP) and is, in whole or part, responsible for applying to the Regional Board for a permit, obtaining a permit, the operation of a SWSAP, and complying with the terms and conditions of the Regional Board permit and the requirements of this Chapter.

NOTE: Authority cited: Sections 13521 and 13562, Water Code; and Section 116271, Health and Safety Code. Reference: Sections 13520, 13522, 13522.5, 13523, 13523.1, 13524, 13560, 13561, 13564 and 13565, Water Code; and Section 116551, Health and Safety Code.

ARTICLE 5.3. Indirect Potable Reuse: Surface Water Augmentation

Adopt Section 64320.300 as follows:

Section 64320.300. Application.

The requirements of this Article apply to a Surface Water Source Augmentation Project Water Recycling Agency (SWSAP WRA) involved in the planned placement of recycled municipal wastewater into a surface water reservoir that is used, in whole or in part, as a source of domestic drinking water supply by a public water system pursuant to Article 9, Chapter 17, of this Division.

Adopt Section 60320.301 as follows:

§60320.301. General Requirements.

(a) Prior to augmentation of a surface water reservoir using a SWSAP, each SWSAP WRA and each SWSAP PWS participating in the SWSAP shall submit a joint plan to the State Board and Regional Board for review and written approval. At a minimum, the joint plan shall address the elements in paragraphs (1) and (2) below. The joint plan shall be signed by each person with authority or responsibility to operate the SWSAP, comply with the requirements of this Article, and ensure that each SWAP WRA and SWAP PWS implements the actions designated in the joint plan. In the event of any subsequent change in applicable authority, responsibility, operation, or ownership of a SWSAP WRA or SWSAP PWS, including the addition of any SWSAP WRA or SWSAP PWS participant in the SWSAP, a revised joint plan shall be submitted to the State Board and Regional Board for review and written approval, and the revised joint plan shall be signed by all participants. A revised joint plan shall also be submitted to reflect any change in the information provided pursuant to paragraphs (1) and (2) below, and to address any State Board or Regional Board concerns. A revised joint plan required by this section shall be submitted not less than sixty (60) days prior to the effective date of any change required by this section to be addressed in a revised joint plan.

(1) Corrective actions to be taken in the event that a delivery of recycled municipal wastewater from the SWSAP to an augmented reservoir fails to meet the water quality requirements of this Article.

(2) The procedures a SWSAP WRA will implement for notifying a SWSAP PWS, State Board, and Regional Board of:

(A) operational changes that may adversely affect the quality of the recycled municipal wastewater to be delivered to an augmented reservoir, and

(B) the events and corresponding corrective actions required to be identified in paragraph (1).

(b) Prior to design and operation of a SWSAP, a SWSAP WRA shall demonstrate to the State Board and Regional Board that the SWSAP WRA possesses adequate financial, managerial, and technical capability to assure compliance with this Article.

(c) Prior to augmentation of a surface water reservoir using a SWSAP, a SWSAP WRA shall demonstrate to the State Board and Regional Board that all treatment processes are installed and can be operated by the SWSAP WRA, as designed, to achieve their intended function. A protocol describing the actions to be taken to meet this subsection shall be included in the engineering report submitted pursuant to section 60323, Article 7 of Chapter 3.

(d) If a SWSAP WRA fails to complete compliance monitoring required by this Article, compliance may be determined by the State Board or Regional Board based on monitoring data available to, and assumptions made by, the State Board or Regional Board.

(e) A SWSAP WRA shall ensure that the recycled municipal wastewater used for a SWSAP is from a wastewater management agency that is not in violation of the effluent limits or water quality requirements that pertain to surface water augmentation pursuant to this Article, as incorporated in the wastewater management agency's Regional Board permit.

(f) When a SWSAP WRA has been required by this Article or directed by the State Board or Regional Board to suspend augmentation of a surface water reservoir for any reason, augmentation of the surface water reservoir shall not resume until the SWSAP WRA has obtained written authorization to resume augmentation of the reservoir from the State Board and Regional Board.

(g) Reports required by this Article to be submitted by a SWSAP WRA or SWSAP PWS to the Regional Board or State Board shall be in writing.

(h) Unless specified otherwise, the term "quarter", as used in this Article, refers to a calendar quarter.

NOTE: Authority cited: Sections 13521 and 13562, Water Code; and Section 116271, Health and Safety Code. Reference: Sections 13520, 13522, 13522.5, 13523, 13523.1, 13524, 13560, 13561, 13564 and 13565, Water Code; and Section 116551, Health and Safety Code.

Adopt Section 60320.302 as follows:

§60320.302. Advanced Treatment Criteria.

A SWSAP WRA shall ensure the continuous treatment, with full advanced treatment meeting the criteria in this section, of the entire recycled municipal wastewater stream prior to its delivery to an augmented reservoir. Full advanced treatment is the treatment of an oxidized wastewater, as defined in section 60301.650, using a reverse osmosis and an oxidation treatment process that, at a minimum, meets the criteria of this section.

(a) A SWSAP WRA shall select for use a reverse osmosis membrane such that:

(1) each membrane element used in the SWSAP has achieved a minimum rejection of sodium chloride of no less than 99.0 percent (99.0%) and an average (nominal) rejection of sodium chloride of no less than 99.2 percent (99.2%), as

demonstrated through Method A of ASTM International's method D4194-03 (2014) using the following substitute test conditions:

(A) a recovery of permeate of no less than 15 percent (15%);

(B) sodium chloride rejection is based on three or more successive measurements, after flushing and following at least 30 minutes of operation having demonstrated that rejection has stabilized;

(C) an influent pH no less than 6.5 and no greater than 8.0;

(D) an influent sodium chloride concentration of no greater than 2,000 mg/L, to be verified prior to the start of testing; and

(E) an applied pressure no greater than 225 pounds per square inch (psi); and

(2) during the first twenty weeks of full-scale operation the membrane produces a permeate with no more than five percent (5%) of the sample results having TOC concentrations greater than 0.25 mg/L (or an alternative surrogate parameter and corresponding limit approved by the State Board), as verified through monitoring no less frequent than weekly.

(b) For the reverse osmosis treatment process, a SWSAP WRA shall propose, for State Board review and written approval, on-going performance monitoring (e.g., conductivity, TOC, etc.) that indicates when the integrity of the process has been compromised. The proposal shall include at least one form of continuous monitoring, as well as the associated surrogate and/or operational parameter limits and alarm settings that indicate when the integrity has been compromised.

(c) To demonstrate a sufficient oxidation treatment process has been designed for implementation, the SWSAP WRA shall conduct testing demonstrating that an oxidation treatment process will provide no less than 0.5-$\log_{10}$ (69 percent) reduction of 1,4-dioxane.

(1) A SWSAP WRA shall submit a testing protocol, as well as the subsequent results, to the State Board for review and written approval. The testing shall include challenge or spiking tests, using 1,4-dioxane, to demonstrate the proposed oxidation

treatment process will achieve the minimum 0.5-$\log_{10}$ reduction under the proposed oxidation treatment process's normal full-scale operating conditions.

(2) A SWSAP WRA shall establish, and submit to the State Board for review and written approval, surrogate and/or operational parameters that indicate whether the minimum 0.5-$\log_{10}$ 1,4-dioxane reduction design criterion is being met. At least one surrogate or operational parameter shall be capable of being monitored continuously, recorded, and have associated alarms that indicate when the process is not operating as designed.

(d) During full-scale operation of the oxidation treatment process designed pursuant to subsection (c), a SWSAP WRA shall continuously monitor the surrogate and/or operational parameters established pursuant to subsection (c)(2). A SWSAP WRA shall implement, in full-scale operation, the oxidation treatment process as designed pursuant to subsection (c).

(e) Within sixty (60) days after completing the first 12-months of full-scale operational monitoring pursuant to subsection (d), a SWSAP WRA shall submit a report to the State Board and Regional Board that includes:

(1) results of surrogate and/or operational parameter monitoring conducted pursuant to subsection (d);

(2) a description of the efficacy of the surrogate and/or operational parameters to reflect the reduction criterion for 1,4-dioxane; and

(3) a description of actions taken, or yet to be taken, if any of the following occurred during the first 12 months of operation:

(A) the 1,4-dioxane reduction did not meet the associated design criteria in subsection (c), as indicated by the on-going continuous operational surrogate and/or operational parameter monitoring;

(B) if 1,4-dioxane was present, the continuous surrogate and/or operational parameter monitoring failed to correspond to the reduction criterion for 1,4-dioxane; and

(C) any failure, interruption, or other incident that may have resulted in insufficient oxidation treatment having occurred.

(f) Within sixty (60) days after completing the initial 12 months of operation of the reverse osmosis process (or alternative process approved pursuant to 60320.330), a SWSAP WRA shall submit a report to the State Board and Regional Board describing the effectiveness of the treatment, process failures that occurred, and actions taken in the event the on-going monitoring, conducted pursuant to subsection (b), indicated that process integrity was compromised.

(g) Each quarter, a SWSAP WRA shall calculate what percent of results of the quarter's monitoring, conducted pursuant to subsections (b) and (d), did not meet the surrogate and/or operational parameter limits established to assure proper on-going performance of the reverse osmosis and oxidation processes. If the percent is greater than ten, within forty-five (45) days after the end of the quarter a SWSAP WRA shall:

(1) submit a report to the State Board and Regional Board that identifies the reason(s) for the failure, if known, and describes the corrective actions planned or taken to reduce the percent to ten percent (10%) or less; and

(2) consult with the State Board and Regional Board and, if directed by the State Board or Regional Board, comply with an alternative monitoring plan approved by the State Board and Regional Board.

(h) Each month a SWSAP WRA shall collect samples representative of the effluent of the advanced treatment process under normal operating conditions and have the samples analyzed for contaminants having MCLs and notification levels (NLs). After 12 consecutive months with no results exceeding an MCL or NL, a SWSAP WRA may apply to the State Board and Regional Board for a reduced monitoring frequency. The reduced monitoring frequency shall be no less than quarterly. Monitoring conducted pursuant to this subsection may be used in lieu of the monitoring (for the same contaminants) required pursuant to sections 60320.312 and 60320.320. The effluent of the advanced treatment process may not exceed an MCL.

NOTE: Authority cited: Sections 13521 and 13562, Water Code; and Section 116271, Health and Safety Code. Reference: Sections 13520, 13522, 13522.5, 13523, 13523.1, 13524, 13560, 13561, 13564 and 13565, Water Code; and Section 116551, Health and Safety Code.

Adopt Section 60320.304 as follows:

§60320.304. Lab Analyses.

(a) An analysis for a contaminant having a primary or secondary MCL shall be performed using a drinking water method approved by the State Board for the contaminant, by a laboratory that at the time of the analysis has a valid certificate from the State Board for the analytical method used.

(b) Analyses for chemicals other than those having primary or secondary MCLs shall be described in the SWSAP WRA's Operation Plan prepared pursuant to section 60320.322.

NOTE: Authority cited: Sections 13521 and 13562, Water Code; and Section 116271, Health and Safety Code. Reference: Sections 13520, 13522, 13522.5, 13523, 13523.1, 13524, 13560, 13561, 13564 and 13565, Water Code; and Section 116551, Health and Safety Code.

Adopt Section 60320.306 as follows:

§60320.306. Wastewater Source Control.

A SWSAP WRA shall ensure that the recycled municipal wastewater used for a SWSAP shall be from a wastewater management agency that:

(a) administers an industrial pretreatment and pollutant source control program; and

(b) implements and maintains a source control program that includes, at a minimum;

(1) an assessment of the fate of State Board-specified and Regional Board-specified chemicals and contaminants through the wastewater and recycled municipal wastewater treatment systems,

(2) chemical and contaminant source investigations and monitoring that focuses on State Board-specified and Regional Board-specified chemicals and contaminants,

(3) an outreach program to industrial, commercial, and residential communities within the portions of the sewage collection agency's service area that flows into the water reclamation plant subsequently supplying the SWSAP, for the purpose of managing and minimizing the discharge of chemicals and contaminants at the source, and

(4) a current inventory of chemicals and contaminants identified and evaluated pursuant to this section, including new chemicals and contaminants resulting from new sources or changes to existing sources, that may be discharged into the wastewater collection system.

NOTE: Authority cited: Sections 13521 and 13562, Water Code; and Section 116271, Health and Safety Code. Reference: Sections 13520, 13522, 13522.5, 13523, 13523.1, 13524, 13560, 13561, 13564 and 13565, Water Code; and Section 116551, Health and Safety Code.

Adopt Section 60320.308 as follows:

§60320.308. Pathogenic Microorganism Control.

(a) A SWSAP WRA shall design and operate SWSAP treatment processes such that the recycled municipal wastewater delivered to an augmented reservoir for use by a SWSAP PWS receives treatment as follows:

(1) For a SWSAP PWS implementing the requirements of section 64668.30(c)(1) of Chapter 17, the treatment train shall reliably achieve at least 8-$\log_{10}$ enteric virus reduction, 7-$\log_{10}$ *Giardia* cyst reduction, and 8-$\log_{10}$ *Cryptosporidium* oocyst reduction, consisting of at least two separate treatment processes for each pathogen (i.e., enteric virus, *Giardia* cyst, or *Cryptosporidium* oocyst). A separate treatment process may be

credited with no more than 6-log_{10} reduction, with at least two processes each being credited with no less than 1.0-log_{10} reduction.

(2) For a SWSAP PWS implementing the requirements of section 64668.30(c)(2) of Chapter 17, the treatment train shall reliably achieve at least 9-log_{10} enteric virus reduction, 8-log_{10} *Giardia* cyst reduction, and 9-log_{10} *Cryptosporidium* oocyst reduction, consisting of at least three separate treatment processes for each pathogen (i.e., enteric virus, *Giardia* cyst, or *Cryptosporidium* oocyst). A separate treatment process may be credited with no more than 6-log_{10} reduction, with at least three processes each being credited with no less than 1.0-log_{10} reduction.

(3) The State Board may increase the minimum enteric virus, *Giardia* cyst, and *Cryptosporidium* oocyst log_{10} reductions required in paragraphs (1) and (2) as a result of a SWSAP PWS relying on additional treatment to obtain State Board approval of an alternative minimum theoretical retention time pursuant section 64668.30(b) of Chapter 17.

(b) The SWSAP WRA shall validate each of the treatment processes used to meet the requirements in subsection (a) for their log reduction by submitting a report for the State Board's review and written approval, or by using a challenge test approved by the State Board, that provides evidence of the treatment process's ability to reliably and consistently achieve the log reduction. The report and/or challenge test shall be prepared by engineer licensed in California with at least five years of experience, as a licensed engineer, in wastewater treatment and public water supply, including the evaluation of treatment processes for pathogen control. The SWSAP WRA shall propose and include in its Operations Plan prepared pursuant to section 60320.322, on-going monitoring using the pathogenic microorganism of concern or a microbial, chemical, or physical surrogate parameter(s) that verifies the performance of each treatment process's ability to achieve its credited log reduction.

(c) If the applicable pathogen reduction in subsection (a) is not met based on the on-going monitoring required pursuant to subsection (b), within 24 hours of its knowledge of an occurrence, the SWSAP WRA shall investigate the cause and initiate corrective

actions. If there is a failure to meet the pathogen reduction criteria longer than 4 consecutive hours or more than a total of 8 hours during any 7-day period, the SWSAP WRA shall, within 24 hours of its knowledge of such a failure, notify the State Board, Regional Board, and each SWSAP PWS utilizing the augmented reservoir. Failures of shorter duration shall be reported to the Regional Board no later than 10 days after the month in which the failure occurred.

(d) The SWSAP WRA shall, within 24 hours of its knowledge, notify the State Board, Regional Board, and each SWSAP PWS utilizing the augmented reservoir and, unless directed otherwise by the State Board and the Regional Board, discontinue delivery of recycled municipal wastewater to the SWSAP augmented reservoir if:

(1) pursuant to the pathogen reduction requirements in subsection (a)(1), the effectiveness of the treatment train to reduce enteric virus is less than 6-$\log_{10}$, *Giardia* cysts reduction is less than 5-$\log_{10}$, or *Cryptosporidium* oocysts reduction is less than 6-$\log_{10}$,

(2) pursuant to the pathogen reduction requirements in subsection (a)(2), the effectiveness of the treatment train to reduce enteric virus is less than 7-$\log_{10}$, *Giardia* cysts reduction is less than 6-$\log_{10}$, or *Cryptosporidium* oocysts reduction is less than 7-$\log_{10}$, or

(3) effectiveness of the treatment train to reduce enteric virus, *Giardia* cysts, or *Cryptosporidium* oocysts is less than a $\log_{10}$ reduction value derived from deducting 2-$\log_{10}$ from each of the minimum enteric virus, *Giardia* cyst, and *Cryptosporidium* oocyst $\log_{10}$ reductions required pursuant to subsection (a)(3).

NOTE: Authority cited: Sections 13521 and 13562, Water Code; and Section 116271, Health and Safety Code. Reference: Sections 13520, 13522, 13522.5, 13523, 13523.1, 13524, 13560, 13561, 13564 and 13565, Water Code; and Section 116551, Health and Safety Code.

Adopt Section 60320.312 as follows:

§60320.312. Regulated Contaminants and Physical Characteristics Control.

(a) Each quarter a SWSAP WRA shall collect samples (grab or 24-hour composite) representative of the recycled municipal wastewater delivered to the augmented reservoir and have the samples analyzed for:

(1) the inorganic chemicals in Table 64431-A, Chapter 15;

(2) the radionuclide chemicals in Tables 64442 and 64443, Chapter 15;

(3) the organic chemicals in Table 64444-A, Chapter 15;

(4) the disinfection byproducts in Table 64533-A, Chapter 15.5; and

(5) lead and copper.

(b) Each year, in the same quarter, the SWSAP WRA shall collect at least one representative sample (grab or 24-hour composite) of the recycled municipal wastewater delivered to the augmented reservoir and have the sample(s) analyzed for the secondary drinking water contaminants in Tables 64449-A and 64449-B of Chapter 15.

(c) If a result of the monitoring performed pursuant to subsection (a) exceeds a contaminant's MCL or action level (for lead and copper), the SWSAP WRA shall collect another sample within 72 hours of notification of the result and have it analyzed for the contaminant as confirmation.

(1) For a contaminant whose compliance with its MCL or action level is not based on a running annual average, if the average of the initial and confirmation sample exceeds the contaminant's MCL or action level, or the confirmation sample is not collected and analyzed pursuant to this subsection, the SWSAP WRA shall notify the State Board and Regional Board within 24 hours and initiate weekly monitoring until four consecutive weekly results are below the contaminant's MCL or action level. If at any time a result causes, or would cause, a running four-week average of weekly results to exceed the contaminant's MCL or action level, the SWSAP WRA shall notify the State Board, each SWSAP PWS utilizing the augmented reservoir, and Regional Board within

24 hours and immediately suspend delivery of the recycled municipal wastewater to the augmented reservoir.

(2) For a contaminant whose compliance with its MCL is based on a running annual average, if the average of the initial and confirmation sample exceeds the contaminant's MCL, or a confirmation sample is not collected and analyzed pursuant to this subsection, the SWSAP WRA shall initiate weekly monitoring for the contaminant until the running four-week average of results no longer exceeds the contaminant's MCL.

(A) If the running four-week average exceeds the contaminant's MCL, a SWSAP WRA shall describe the reason(s) for the exceedance and provide a schedule for completion of corrective actions in a report submitted to the State Board and Regional Board no later than 45 days following the quarter in which the exceedance occurred.

(B) If the running four-week average exceeds the contaminant's MCL for sixteen consecutive weeks, a SWSAP WRA shall notify the State Board, Regional Board, and each SWSAP PWS utilizing the augmented reservoir within 48 hours of knowledge of the exceedance and, if directed by the State Board or Regional Board, suspend delivery of the recycled municipal wastewater to the augmented reservoir.

(d) If the annual average of the results of the monitoring performed pursuant to subsection (b) exceeds a contaminant's secondary MCL in Table 64449-A or the upper limit in Table 64449-B, the SWSAP WRA shall initiate quarterly monitoring of the recycled municipal wastewater for the contaminant and, if the running annual average of quarterly-averaged results exceeds a contaminant's secondary MCL or upper limit, describe the reason(s) for the exceedance and any corrective actions taken a report submitted to the Regional Board no later than 45 days following the quarter in which the exceedance occurred, with a copy concurrently provided to the State Board. The annual monitoring in subsection (b) may resume if the running annual average of quarterly results does not exceed a contaminant's secondary MCL or upper limit.

(e) If four consecutive quarterly results for asbestos are below the detection limit in Table 64432-A for asbestos, monitoring for asbestos may be reduced to one sample every three years. Quarterly monitoring shall resume if asbestos is detected.

NOTE: Authority cited: Sections 13521 and 13562, Water Code; and Section 116271, Health and Safety Code. Reference: Sections 13520, 13522, 13522.5, 13523, 13523.1, 13524, 13560, 13561, 13564, 13565 and 13567, Water Code; and Section 116551, Health and Safety Code.

Adopt Section 60320.320 as follows:

§60320.320. Additional Chemical and Contaminant Monitoring.

(a) Each quarter, a SWSAP WRA shall sample and analyze the recycled municipal wastewater delivered to the augmented reservoir, for the following:

(1) Priority Toxic Pollutants (chemicals listed in 40 CFR section 131.38, "Establishment of numeric criteria for priority toxic pollutants for the State of California", as the foregoing may be amended) specified by the State Board, based on the State Board's review of the SWSAP engineering report; and

(2) Chemicals specified by the State Board, based on its review of the SWSAP engineering report, the results of the augmented reservoir monitoring conducted pursuant to section 60320.326, and the results of the assessment performed pursuant to section 60320.306(b)(1).

(b) Each quarter, a SWSAP WRA shall sample and analyze the recycled municipal wastewater delivered to the augmented reservoir for State Board-specified chemicals having notification levels (NLs). If a result exceeds an NL, within 72 hours of notification of the result the SWSAP WRA shall collect another sample and have it analyzed for the contaminant as confirmation. If the average of the initial and confirmation sample exceeds the contaminant's NL, or a confirmation sample is not collected and analyzed pursuant to this subsection, the SWSAP WRA shall initiate weekly monitoring for the contaminant until the running four-week average of results does not exceed the NL and the State Board and Regional Board determine weekly monitoring may cease.

(1) If a running four-week average exceeds the contaminant's NL, the SWSAP WRA shall describe the reason(s) for the exceedance and provide a schedule for completion of corrective actions in a report submitted to the Regional Board no later than 45 days following the quarter in which the exceedance occurred, with a copy concurrently provided to the State Board.

(2) If a running four-week average exceeds the contaminant's NL for sixteen consecutive weeks, the SWSAP WRA shall notify the State Board, Regional Board, and each SWSAP PWS utilizing the augmented reservoir within 48 hours of knowledge of the exceedance.

(c) A SWSAP WRA may reduce monitoring for the chemicals in this section to once each year following State Board written approval based on the State Board's review of no less than the most recent two years of results of the monitoring performed pursuant to this section.

(d) Each year, the SWSAP WRA shall monitor the recycled municipal wastewater delivered to the augmented reservoir for indicator compounds specified by the State Board or Regional Board based on the following:

(1) a review of the SWSAP WRA's engineering report;

(2) the inventory developed pursuant to section 60320.306(b)(4);

(3) an indicator compound's ability to characterize the performance of the treatment processes for removal of chemicals; and

(4) the availability of a test method for a chemical.

(e) A chemical or contaminant detected as a result of monitoring conducted pursuant to this section shall be reported to the State Board and Regional Board no later than the end of the quarter following the quarter in which the SWSAP WRA is notified of the results. If directed by the State Board or Regional Board, the SWSAP WRA shall monitor the recycled municipal wastewater delivered to the augmented reservoir for chemicals or contaminants detected pursuant to section 60320.326.

NOTE: Authority cited: Sections 13521 and 13562, Water Code; and Section 116271, Health and Safety Code. Reference: Sections 13520, 13522, 13522.5, 13523, 13523.1, 13524, 13560, 13561, 13564 and 13565, Water Code; and Section 116551, Health and Safety Code.

Adopt Section 60320.322 as follows:

§60320.322. SWSAP Operation Plan.

(a) Prior to operation of a SWSAP, a SWSAP WRA shall submit an Operation Plan to the State Board and Regional Board and receive written approval of the plan from the State Board and Regional Board. At a minimum, the Operation Plan shall identify and describe the operations, maintenance, analytical methods, monitoring necessary for the SWSAP to meet the requirements of this Article, and the reporting of monitoring results to the State Board and Regional Board. The plan shall also identify an on-going training program that includes the elements of the training required pursuant to subsection (b) of this section. A SWSAP WRA shall implement the Operation Plan and update the Operation Plan to ensure that the Operation Plan is, at all times, representative of the current operations, maintenance, and monitoring of the SWSAP. The SWSAP WRA shall make the Operation Plan immediately available to the State Board or Regional Board for review upon request.

(b) Prior to operation of a SWSAP, a SWSAP WRA shall, at a minimum, demonstrate to the State Board and Regional Board that the personnel operating and overseeing the SWSAP operations have received training in the following:

(1) The proper operation of the treatment processes utilized pursuant to sections 60320.302 and 60320.308;

(2) The California Safe Drinking Water Act and its implementing regulations; and

(3) The potential adverse health effects associated with the consumption of drinking water that does not meet California drinking water standards.

(c) At all times recycled municipal wastewater is delivered to the augmented reservoir, the SWSAP WRA shall ensure that all treatment processes are operated in a manner that provides optimal reduction of all chemicals and contaminants including:

(1) microbial contaminants;

(2) regulated contaminants identified in section 60320.312; and

(3) chemicals and contaminants required pursuant to section 60320.320.

(d) Within six months following the first year of optimizing treatment processes pursuant to subsection (c) and anytime thereafter operations are optimized that result in a change in operation, the SWSAP WRA shall update the SWSAP Operation Plan to include the changes in operational procedures and submit the Operation Plan to the State Board and Regional Board for review.

NOTE: Authority cited: Sections 13521 and 13562, Water Code; and Section 116271, Health and Safety Code. Reference: Sections 13520, 13522, 13522.5, 13523, 13523.1, 13524, 13560, 13561, 13564 and 13565, Water Code; and Section 116551, Health and Safety Code.

Adopt Section 60320.326 as follows:

§60320.326. Augmented Reservoir Monitoring.

(a) Prior to augmentation of a surface water reservoir using a SWSAP, the SWSAP WRA, in coordination with the SWSAP PWS, shall identify monitoring locations in the augmented reservoir, for State Board review and written approval. The identified monitoring locations must be representative, throughout the volume of the surface water reservoir impacted by the SWSAP, at a minimum, of the following:

(1) Differing water quality conditions across the horizontal extent of the surface water reservoir;

(2) Each level in the surface water reservoir corresponding to the depths in which water may be withdrawn; and

(3) The surface water reservoir's epilimnion and hypolimnion.

(b) Prior to augmentation of a surface water reservoir using a SWSAP, each month, the SWSAP WRA shall collect samples for no less than 24 consecutive months, from the monitoring locations established pursuant to subsection (a). The samples shall be analyzed for the contaminants in tables 64449-A and B of Chapter 15, total organic carbon (TOC), total nitrogen, total coliform bacteria, temperature, dissolved oxygen, chlorophyll a, total and dissolved phosphorus, and other State Board-specified chemicals and contaminants based on a review of the SWSAP WRA's engineering report and the results of the assessment performed pursuant to section 60320.306(b)(1).

(c) The SWSAP WRA shall continue to conduct monthly monitoring pursuant to subsection (b) for no less than the initial 24 months a SWSAP WRA is delivering recycled municipal wastewater to an augmented reservoir. In addition, the on-going monitoring required by this section shall include State Board-specified chemicals and contaminants based on SWSAP operations and the results of recycled municipal wastewater monitoring conducted pursuant to this Article.

(d) After completion of the 24-months of monthly monitoring conducted pursuant to subsection (c), a SWSAP WRA may apply to the State Board for reduced on-going monitoring. The SWSAP WRA shall obtain State-Board written approval prior to implementation of the reduced monitoring. The reduced on-going monitoring frequency may be no less than once every 12 months.

(e) Notwithstanding subsection (b), (c), and (d), a SWSAP WRA shall monitor for any State Board-specified chemicals or contaminants, at the locations and frequencies specified by the State Board.

NOTE: Authority cited: Sections 13521 and 13562, Water Code; and Section 116271, Health and Safety Code. Reference: Sections 13520, 13522, 13522.5, 13523, 13523.1, 13524, 13560, 13561, 13564 and 13565, Water Code; and Section 116551, Health and Safety Code.

Adopt Section 60320.328 as follows:

§60320.328. Reporting.

(a) By July 1st of each year, a SWSAP WRA shall provide a report to the State Board and Regional Board, and make a copy of the report available to each SWSAP PWS affected by the SWSAP. Each SWSAP PWS shall be notified by direct mail and/or electronic mail of the availability of the report. The report shall be prepared by an engineer licensed in California and experienced in the fields of wastewater treatment and public water supply. The report shall include the following:

(1) A summary of the SWSAP compliance status with the monitoring requirements and criteria of this Article during the previous calendar year;

(2) For any violations of this Article during the previous calendar year;

(A) the date, duration, and nature of the violation,

(B) a summary of any corrective actions and/or suspensions of delivery of recycled municipal wastewater to an augmented reservoir resulting from a violation, and

(C) if uncorrected, a schedule for and summary of all remedial actions;

(3) Any detections of monitored chemicals or contaminants, and any observed trends in the monitoring results of the augmented reservoir required pursuant to section 60320.326;

(4) A description of any changes in the operation of any unit processes or facilities;

(5) A description of any anticipated changes, along with an evaluation of the expected impact of the changes on subsequent unit processes;

(6) The estimated quantity and quality of the recycled municipal wastewater to be delivered for the next calendar year, as well as the quantity delivered during the previous three years; and

(7) A summary of the measures taken to comply with section 60320.306 and 60320.301(e), and the effectiveness of the implementation of the measures.

(b) No less frequently than every five years from the date of the initial approval of the engineering report required pursuant to section 60323, Article 7 of Chapter 3, the

SWSAP WRA shall update the engineering report to address any SWSAP changes from the previous engineering report, and submit the report to the State Board and Regional Board. The update shall include, but not be limited to, the anticipated increases in delivery of recycled municipal wastewater and a description of the expected impact the increase will have on the SWSAP WRA's ability to meet the requirements of this Article.

NOTE: Authority cited: Sections 13521 and 13562, Water Code; and Section 116271, Health and Safety Code. Reference: Sections 13520, 13522, 13522.5, 13523, 13523.1, 13524, 13560, 13561, 13564 and 13565, Water Code; and Section 116551, Health and Safety Code.

Adopt Section 60320.330 as follows:

§60320.330. Alternatives.

(a) A SWSAP WRA may use an alternative to a requirement in this Article if the SWSAP WRA:

(1) demonstrates to the State Board that the proposed alternative provides an equivalent or better level of performance with respect to the efficacy and reliability of the removal of contaminants of concern to public health, and ensures at least the same level of protection to public health;

(2) receives written approval from the State Board prior to implementation of the alternative; and

(3) if required by the State Board or Regional Board, conducts a public hearing on the proposed alternative, disseminates information to the public, and receives public comments.

(b) The demonstration in subsection (a)(1) shall include the results of a review of the proposed alternative by an independent scientific advisory panel, approved by the State Board, that includes, but is not limited to, a toxicologist, a limnologist, an engineer licensed in California with at least three years of experience in wastewater treatment and public drinking water supply, a microbiologist, and a chemist.

NOTE: Authority cited: Sections 13521 and 13562, Water Code; and Section 116271, Health and Safety Code. Reference: Sections 13520, 13522, 13522.5, 13523, 13523.1, 13524, 13560, 13561, 13564 and 13565, Water Code; and Section 116551, Health and Safety Code.

DIVISION 4, CHAPTER 17

ARTICLE 9. Indirect Potable Reuse: Surface Water Augmentation

Adopt Section 64668.05 as follows:

Section 64668.05. Application.

In addition to meeting the applicable requirements of this Chapter, a water supplier whose approved surface water source of supply is augmented utilizing a Surface Water Source Augmentation Project (SWSAP) shall meet the requirements of this Article and the applicable requirements of Article 5.3 of Chapter 3. For the purpose of this Article, the water supplier shall be referred to as a Surface Water Source Augmentation Project Public Water System (SWSAP PWS).

Adopt Section 64668.10 as follows:

Section 64668.10. General Requirements and Definitions.

(a) Unless noted otherwise, as used in this Article, the following terms are defined as follows:

(1) “Augmented Reservoir” has the same meaning as defined in section 60301.120, Article 1, Chapter 3.

(2) “Surface Water Source Augmentation Project” or “SWSAP” has the same meaning as defined in section 60301.851, Article 1, Chapter 3.

(3) “Surface Water Source Augmentation Project Public Water System” or “SWSAP PWS” has the same meaning as defined in section 60301.852, Article 1, Chapter 3.

(4) "Surface Water Source Augmentation Project Water Recycling Agency” or “SWSAP WRA" has the same meaning as defined in section 60301.853, Article 1, Chapter 3.

(b) Prior to using an augmented reservoir as a source of supply, a SWSAP PWS shall submit an application for a domestic water supply permit or permit amendment, and have an approved joint plan with a SWSAP WRA, as required pursuant to section

60320.301(a) of Article 5.3, Chapter 3. The SWSAP PWS shall revise its emergency plan and operations plan required pursuant to sections 64660(c)(2) and 64661 to include the elements of the joint plan and, at a minimum, include the means of providing an alternative source of domestic water supply, a State Board-approved treatment mechanism, or other actions to be taken, to ensure a reliable supply of water is delivered that meets all drinking water standards, in the event that the surface water from the augmented reservoir, as a result of a SWSAP:

(1) Could not be or has not been treated to meet California drinking water standards;

(2) Has been degraded to the degree that it is no longer a safe source of drinking water, as determined by the State Board; or

(3) Receives water that fails to meet the requirements of section 60320.308(d) of Article 5.3, Chapter 3.

(c) A SWSAP PWS shall demonstrate to the State Board and Regional Board that the SWSAP PWS has sufficient control over the operation of an augmented reservoir to ensure its ability to comply with the requirements of this Article and the applicable requirements in Article 5.3 of Chapter 3.

(d) A SWSAP PWS with knowledge of a SWSAP WRA failing to meet a requirement of the SWSAP WRA's permit or a requirement of Chapter 3, Article 5.3, shall immediately notify the State Board.

NOTE: Authority cited: Sections 13521 and 13562, Water Code; and Sections 116271 and 116375, Health and Safety Code. Reference: Sections 13520, 13522, 13522.5, 13523, 13523.1, 13524, 13560, 13561, 13564, 13565 and 13567, Water Code; and Sections 116275, 116365, 116375, 116385, 116390, 116400, 116525, 116530, 116535, 116540, 116550, 116551, and 116735, Health and Safety Code.

Adopt Section 64668.20 as follows:

§64668.20. Public Hearings.

A SWSAP PWS may not use an augmented reservoir without a domestic water supply permit or permit amendment for the use of the augmented reservoir as an approved surface water source, and unless the SWSAP PWS facilitates at least three public hearings held by the State Board and the SWSAP PWS does the following:

(a) In coordination with and with the assistance of the SWSAP WRA, develop information to be provided to the public at the public hearings and on the SWSAP PWS's Internet Web site. The information shall include, but not be limited to:

(1) descriptions of the SWSAP;

(2) identification of the municipal wastewater source for the SWSAP;

(3) descriptions of the treatment processes, monitoring, contingency plans; and

(4) the anticipated State Board and Regional Board permit provisions applicable to the SWSAP.

(b) Provide the State Board, for its review and written approval, the information the SWSAP PWS develops pursuant to subsection (a). Following the State Board's approval of the information, the SWSAP PWS shall place the information on a Web site managed and operated by the SWSAP PWS, and in a repository (such as a local public library) in a manner that provides at least 30 days of public access to the information prior to each public hearing. For each of the public hearings, the SWSAP PWS shall make copies of the information available to the public.

(c) No less than 30 days prior to placing the information required pursuant to subsections (a) and (b) in a repository, notify its customers and all public water systems that may receive drinking water impacted by the SWSAP of the following;

(1) the location and hours of operation of the repository,

(2) the Internet address where the information may be viewed,

(3) the purpose of the public hearing and the repository, along with a brief description of the project,

(4) the manner in which the public can provide comments, and

(5) the date, time, and location of the public hearing; and

(d) Deliver the public notification required pursuant to subsection (c), in a manner to reach all public water systems and persons whose source of drinking water may be impacted by the SWSAP. The manner of delivery shall be by direct mail and using one or more of the following methods:

(1) local newspaper(s) publication of general circulation; and/or

(2) television and/or radio broadcast locally.

NOTE: Authority cited: Sections 13521 and 13562, Water Code; and Sections 116271 and 116375, Health and Safety Code. Reference: Sections 13520, 13522, 13522.5, 13523, 13523.1, 13524, 13560, 13561, 13564, 13565 and 13567, Water Code; and Sections 116275, 116365, 116375, 116385, 116390, 116400, 116530, 116535, 116550, 116551, and 116735, Health and Safety Code.

Adopt Section 64668.30 as follows:

§64668.30. SWSAP Augmented Reservoir Requirements.

(a) The SWSAP PWS shall ensure that prior to augmentation of a surface water reservoir by a SWSAP, the surface water reservoir to be used as an augmented reservoir was in operation as an approved surface water supply pursuant to this Chapter for a period of time sufficient to establish a baseline record of the surface water reservoir's raw water quality, including but not limited to the monitoring required pursuant to section 60320.326 of Chapter 3, and treated drinking water quality. A surface water reservoir shall have been operating as an approved surface water source for at least five years prior to receiving recycled municipal wastewater from a SWSAP, unless approved otherwise in writing by the State Board, but in no case less than two years.

(b) The SWSAP PWS shall ensure that a surface water reservoir used as an augmented reservoir has a minimum theoretical retention time of no less than that which has been approved by the State Board. Monthly, the SWSAP PWS shall calculate and record the theoretical retention time. The theoretical retention time shall be the value (in units of days) resulting from dividing the volume of water in the surface water reservoir at the end of each month, by the total outflow from the surface water reservoir during the corresponding month. The total outflow shall include, but not be limited to, all outflows and withdrawals from the surface water reservoir. An initial approved minimum theoretical retention time may be no less than 180 days.

(1) If a month's theoretical retention time is determined to be less than its approved theoretical retention time, the SWSAP PWS shall, by the end of the subsequent month, submit a report to the State Board and Regional Board describing the corrective actions to be taken to ensure future theoretical retention times will be no less than its approved theoretical retention time.

(2) A SWSAP PWS may apply to the State Board, for written approval, for a reduced on-going alternative minimum theoretical retention time of less than 180 days, but no less than 60 days. The SWSAP PWS's application shall include all information requested by the State Board for its consideration of a proposed alternative minimum theoretical retention time, including the following:

(A) Evidence that the SWSAP PWS and SWSAP WRA have reliably and consistently met the requirements of this Article and Article 5.3, Chapter 3, under varying operating conditions;

(B) At the proposed alternative minimum theoretical retention time; the maximum anticipated recycled municipal wastewater flow to the surface water reservoir, the total anticipated outflows from the reservoir, and the total available flows of approved reservoir sources of supply;

(C) The maximum percent, by volume, of recycled municipal wastewater that will be delivered to the surface water reservoir during any 24-hour period, in accordance with subsection (c), at the proposed alternative minimum theoretical retention time;

(D) A description of total proposed treatment and total $\log_{10}$ reduction for enteric virus, *Giardia* cysts, and *Cryptosporidium* oocysts. For proposed alternative

minimum theoretical retention times less than 120 days, no less than one log_{10} reduction of such pathogens beyond that otherwise required pursuant to this Article and Article 5.3, Chapter 3, shall be provided;

(E) The ability to adequately respond to potential SWSAP treatment failures in a timely manner, such that there is no interruption of drinking water, meeting all applicable standards, supplied to customers; and

(F) A demonstration that the alternative minimum theoretical retention time provides, based on information provided pursuant to this paragraph (paragraph (2)), an equivalent or better level of protection of public health than otherwise required pursuant to this Article and Article 5.3, Chapter 3. If required by the State Board, the SWSAP PWS's demonstration shall include a review by an independent scientific advisory panel approved by the State Board.

(c) Prior to augmentation and whenever requested to do so by the State Board, the SWSAP PWS shall demonstrate to the State Board, utilizing tracer studies and hydrodynamic modeling, that at all times under all operating conditions, the volume of water withdrawn from the augmented reservoir to be ultimately supplied for human consumption contains no more than:

(1) one percent, by volume, of recycled municipal wastewater that was delivered to the surface water reservoir during any 24-hour period, or

(2) ten percent, by volume, of recycled municipal wastewater that was delivered to the surface water reservoir during any 24-hour period, with the recycled municipal wastewater delivered by the SWSAP WRA having been subjected to additional treatment producing no less than a 1-log_{10} reduction of enteric virus, *Giardia* cysts, and *Cryptosporidium* oocysts, as noted pursuant to section 60320.308(a)(2). With regard to the additional treatment:

(A) The additional treatment need not be a unique type of process from other treatment processes utilized by the SWSAP WRA to meet the requirements of section 60320.308, but shall be independent of and not reliant on the other treatment processes.

(B) The SWSAP PWS, in consultation with the SWSAP WRA, shall obtain the additional treatment process information necessary for demonstrating that the requirements of section 60320.308(a)(2) of Chapter 3 and this paragraph will be met.

(d) To verify that the requirements of subsection (c) are being met, within the first six months of operation, under hydraulic conditions representative of normal SWSAP operations, the SWSAP PWS shall initiate a tracer study utilizing an added tracer. The results of the tracer study shall be used to validate the hydrodynamic modeling required in subsection (c). Prior to performing the tracer study, the SWSAP PWS shall submit a tracer study protocol for State Board review and written approval. The SWSAP PWS shall perform the verification required by this subsection whenever requested by the State Board.

(e) Notwithstanding a change in operation allowed pursuant to the SWSAP PWS's domestic water supply permit, prior to initiating a change in operation, including physical changes to the surface water reservoir, that may impact the hydraulic characterization utilized to determine compliance with the requirements of this section, the SWSAP PWS shall notify the State Board and;

(1) demonstrate that the hydraulic characterization used to comply with this section remains valid under the changed operation, or

(2) if requested by the State Board, demonstrate compliance pursuant to this section under the new hydraulic conditions.

(f) Unless directed otherwise by the State Board, a SWSAP PWS shall utilize an independent scientific advisory panel to meet the requirements of this section pertaining to the hydraulic characterization of the reservoir, including tracer study verifications and hydraulic modeling used to demonstrate compliance with subsection (c). The independent scientific advisory panel shall be approved by the State Board and include, at a minimum, a limnologist with experience modelling the hydraulic characterization of surface water reservoirs, or a limnologist and an individual with experience modelling the hydraulic characterization of surface water reservoirs. The SWSAP PWS shall allow

State Board representatives, as guests, to join all independent scientific advisory panel meetings and discussions.

(g) Prior to augmentation of a surface water reservoir using a SWSAP, a SWSAP PWS shall submit a plan, for State Board review and approval, describing the actions the SWSAP PWS will take to assess and address potential impacts resulting from the introduction of advanced treated water into the SWSAP PWS's surface water treatment plant and, indirectly, into the drinking water distribution system. At a minimum, the plan shall address:

(1) maintaining chemical and microbial stability in the drinking water distribution system as the drinking water quality changes with anticipated increasing fractions of advanced treated water;

(2) maintaining treatment effectiveness throughout the surface water treatment plant as the source water quality changes with anticipated increasing fractions of advanced treated water in the reservoir;

(3) assessments to be performed prior to and during operation of the SWSAP with respect to paragraphs (1) and (2); and

(4) assessment outcomes of which the SWSAP PWS will notify the State Board.

NOTE: Authority cited: Sections 13521 and 13562, Water Code; and Sections 116271 and 116375, Health and Safety Code. Reference: Sections 13520, 13522, 13522.5, 13523, 13523.1, 13524, 13560, 13561, 13564, 13565 and 13567, Water Code; and Sections 116275, 116365, 116375, 116385, 116390, 116400, 116530, 116535, 116550, 116551, and 116735, Health and Safety Code.

ITEM 11B

INFORMATION ONLY

August 7, 2017 JPA Board Meeting

TO: JPA Board of Directors

FROM: General Manager

Subject : Planned Potable Reuse Projects in California

SUMMARY:

Attached is a summary of the major planned potable reuse projects in California. As work continues on the Pure Water Project Las Virgenes-Triunfo, staff will monitor the progress of these other active projects to garner "lessons learned." Also attached are copies of the brochures or information sheets for each project.

FISCAL IMPACT:

No

ITEM BUDGETED:

No

Prepared by: David W. Pedersen, Administering Agent/General Manager

ATTACHMENTS:

Summary of Planned Potable Reuse Projects in California
Brochures for Planned Potable Reuse Projects

Planned Potable Reuse Projects in California

August 1, 2017

- Pure Water Project Las Virgenes-Triunfo, Agoura Hills, CA
  Lead Agency: Las Virgenes-Triunfo Joint Powers Authority
  Website: http://www.lvmwd.com/about-us/joint-powers-authority/pure-water-project-las-virgenes-triunfo
  Type: Surface water augmentation (Las Virgenes Reservoir)
  Capacity: 6 MGD

- Pure Water San Diego, San Diego, CA

  Lead agency: City of San Diego
  Website: https://www.sandiego.gov/water/purewater/purewatersd
  Type: Surface water augmentation (Miramar Reservoir)
  Capacity: 30 MGD (Phase 1)
  83 MGD (Phases 2 and 3)

- East County Advanced Water Purification Program, Santee, CA

  Lead agency: Padre Dam Municipal Water District
  Website: http://eastcountyawp.com/
  Type: Surface water augmentation (Lake Jennings) and groundwater replenishment (Santee Groundwater Basin)
  Capacity: 3.5 MGD (Phase 1)
  10.5 MGD (Phase 2)
  15.5 MGD (Phase 3)

- Groundwater Reliability Improvement Project (GRIP), Pico Rivera, CA

  Lead agency: Water Replenishment District of Southern California
  Website: http://www.gripproject.org/
  Type: Groundwater replenishment (Central Basin)
  Capacity: 10,000 AF/year

- Regional Recycled Water Project, Carson, CA

  Lead agency: Metropolitan Water District of Southern California
  Website: http://www.mwdh2o.com/AboutYourWater/regional-recycled-water
  Type: Groundwater replenishment (multiple basins)
  Capacity: 150 MGD

- Pure Water Monterey, Marina, CA
  Lead agency: Monterey Regional Water Pollution Control Agency and Monterey Peninsula Water Management District
  Website: http://purewatermonterey.org/
  Type: Groundwater replenishment (Seaside Groundwater Basin)
  Capacity: 3,500 AF/year

- Silicon Valley Advanced Water Purification Center, San Jose, CA

  Lead Agency: Santa Clara Valley Water District
  Website: http://purewater4u.org.cp14.ezhostingserver.com/advanced-water-treatment-facility
  Type: To be determined
  Capacity: 8 MGD

SUSTAINABLE WATER AND ENVIRONMENTAL STEWARDSHIP IN THE REGION

PURE WATER PROJECT LAS VIRGENES-TRIUNFO

Bringing Our Water Full Circle

A New Source of Water for Southern California

The Las Virgenes-Triunfo Joint Powers Authority (JPA) is undertaking a visionary project to improve local water supply reliability and drought resilience, and effectively eliminate discharges to Malibu Creek, a current practice that is costly due to new regulations without commensurate public benefit.

The Pure Water Project relies on indirect potable reuse, a water supply strategy now adopted by many cities and water agencies in California and across the United States to provide local, reliable water supplies. The project involves the development of necessary infrastructure to provide for the delivery of recycled water to a proposed advanced water treatment facility where proven technology will be used to purify the water. In addition to stopping the unsustainable practice of discharging recycled water to Malibu Creek in the winter, the Pure Water Project provides an affordable, local water supply that will be cost-competitive with imported water supplies over the long-term. This important effort will require public understanding, regional leadership, and funding to move from concept to reality.

Las Virgenes Reservoir

The environmentally sensitive Malibu Creek Watershed and Las Virgenes – Triunfo Joint Powers Authority communities will benefit from the proposed Pure Water Project Las Virgenes – Triunfo, which will provide a new, local water supply for the region and eliminate discharges of recycled water to Malibu Creek.

Infrastructure for Indirect Potable Reuse

The Pure Water Project will use proven technology to provide safe water through construction of an advanced water purification plant that will treat recycled water from the JPA's Tapia Water Reclamation Facility.

The purified water will be conveyed through a newly-constructed pipeline to the Las Virgenes Reservoir where it will blend with the water stored there. All reservoir water will be retreated to drinking water standards at the Westlake Filtration Plant before it is safely delivered to homes and businesses. A method for brine disposal will also be included in the project. The effort will require public understanding, regional leadership, and funding to move from concept to reality.

Tapia Water Reclamation Facility

Built in 1965, each day the Tapia Water Reclamation Facility treats upward of nine million gallons to Title 22-Tertiary Treated Recycled Water standards.

Long-Term Effort to Bring Our Water Full Circle

Years 1 – 5

- Demonstration Project
- Regulatory/Environmental Compliance
- Financing and Funding
- Pre-Design
- Land Acquisition
- Public Outreach

Years 6 – 8

- Final Design
- Construction Permitting
- Equipment Procurement
- Public Outreach

A Collaborative Approach

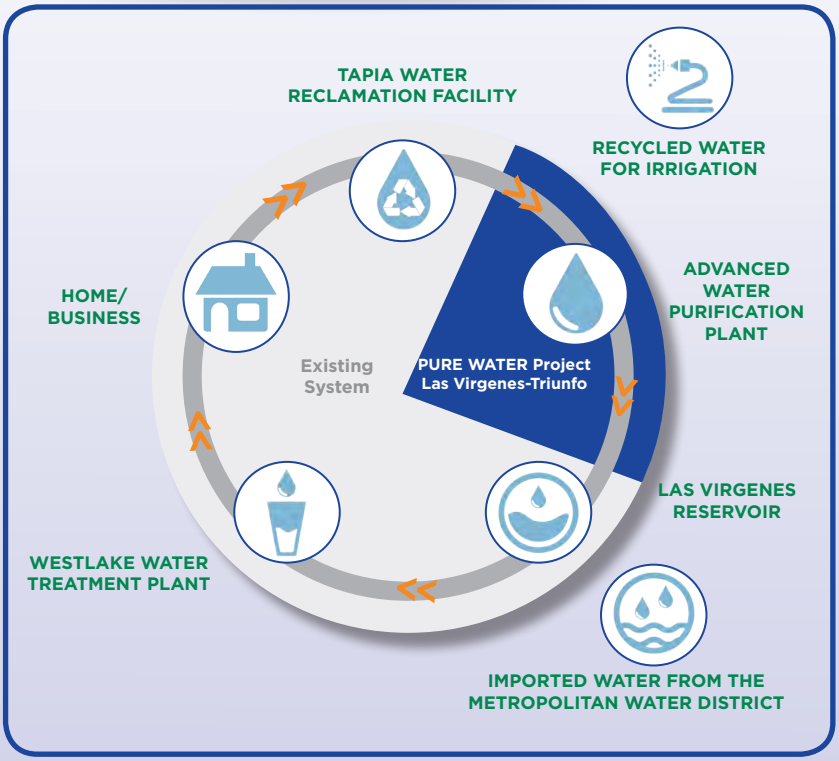
The proposed project stems from the recommendations of a stakeholder group that explored ways to maximize the beneficial use of the region's recycled water. The stakeholders, representing various interested parties in the watershed, conducted an intensive 18-month collaborative process to evaluate the political, economic, social, technical, legal and environmental aspects of a number of alternatives. Of the two options recommended by the stakeholders, the JPA selected ADVANCED WATER TREATMENT for indirect potable reuse over the Encino Reservoir Seasonal Storage alternative.

Advantages

- Reduces demand for imported potable water
- Makes use of an underutilized local resource
- Takes advantage of existing infrastructure
- Is a multi-agency and multi-county collaborative project
- Provides long-term cost benefits

Challenges

- Brine disposal
- Construction cost: $95 million
  (seeking State, Federal and local assistance)
- Pipeline construction in urbanized areas
- Public acceptance



Years 9 – 11

- Construction of Pipelines and Advanced Water Treatment Facility
- Public Outreach

Years 11 – 13 1/2

- Project Start-Up
- Regulatory Compliance
- Public Outreach

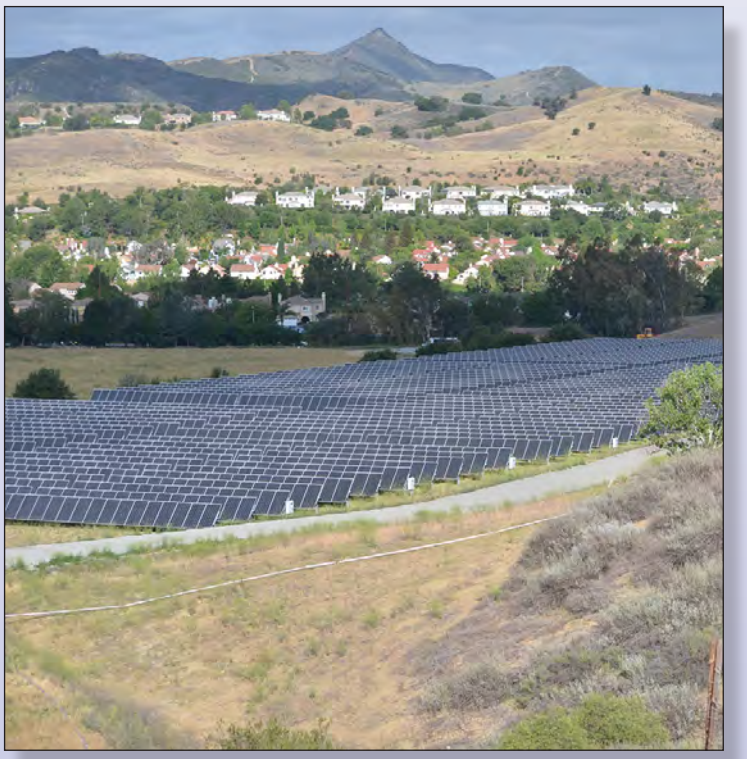
Serving Southern California

The Las Virgenes – Triunfo Joint Powers Authority *(JPA), a partnership between Las Virgenes Municipal Water District and Triunfo Sanitation District, established to cooperatively treat wastewater for these two bordering areas that share the Malibu Creek Watershed.*

JPA's Environmental Stewardship

The Las Virgenes – Triunfo JPA has demonstrated its long-term commitment to a stewardship role in the Malibu Creek Watershed:

- A leader in developing recycled water as a resource since the early 1970s.
- Built $50 million in watershed improvements including a composting facility to eliminate land application of biosolids.
- Maintains stream flow for endangered species protection.
- Invested over $12 million in nutrient reduction facilities.
- Avoids creek discharge for seven months each year at a cost of $1 million per year.
- Contracted for 20 years of solar power to pump recycled water and reduce greenhouse gases.
- Funded creek monitoring and the compilation of 40 years of water quality data.
- Representation in the Santa Monica Bay Restoration Commission.
- Conducts tours and educational programs for elected officials, residents and students on their respective roles.



One megawatt solar power facility used to pump recycled water in Calabasas, CA.

For More Information

David W. Pedersen P.E. *Administering Agent/General Manager | dpedersen@lvmwd.com*

David R. Lippman P.E. *Director of Facilities and Operations | dlippman@lvmwd.com*

Las Virgenes - Triunfo JPA 4232 Las Virgenes Road, Calabasas, CA 91302 818-251-2200

www.LVMWD.com/Pure-Water-Project

PURE WATER PROJECT
LAS VIRGENES-TRIUNFO

Bringing Our Water Full Circle

Pure Water San Diego Miramar Reservoir FAQ

The City of SAN DIEGO



Completing our Water Cycle, Securing our Future

What is Pure Water San Diego?

Pure Water San Diego is the City's phased, multi-year program that will provide one-third of San Diego's water supply locally by 2035. The Pure Water Program uses proven technology to clean recycled water to produce safe, high-quality drinking water.

Why does the purified water need to be stored in a surface water reservoir?

For protection of public health, regulatory agencies require the purified water has detention time in an environmental buffer, either a groundwater basin or a surface water reservoir, prior to being blended into the drinking water system. San Diego does not have viable groundwater basins, which is why it will be sent to a surface water reservoir.

Why was Miramar Reservoir selected to store the purified water?

Miramar Reservoir was selected because it is the most cost-effective option. By sending the purified water to Miramar Reservoir, Phase 1 will be completed and operational by 2021, two years sooner than initially planned.

The length of the pipeline from the North City Pure Water Facility to Miramar Reservoir will be eight miles instead of 28 miles if the water was sent to San Vicente Reservoir. The route of the pipeline to Miramar Reservoir will also have fewer environmental impacts to the surrounding communities during construction. Additionally, the water pumped to Miramar Reservoir will be powered with renewable energy, which provides significant environmental benefits and reduces energy costs and usage.

How much purified water will be stored in Miramar Reservoir?

Thirty million gallons of purified water per day will be piped to Miramar Reservoir.

How will purified water affect the quality of water in the Miramar Reservoir?

The addition of the purified water to the Miramar Reservoir will meet all regulatory requirements for dilution in the reservoir. It is anticipated to improve the reservoir's water quality.

What is being done to evaluate potential environmental impacts?

The City is in the process of analyzing potential environmental impacts on the region, the fishery, and the wildlife at Miramar Reservoir as part of the Pure Water San Diego Program, North City Environmental Impact Report/Environmental Impact Statement (EIR/EIS). The draft report is expected to be available for public review and comment in July 2017. The City continues to work closely with stakeholders representing various community interests to obtain their input.

Will there be minerals added to the purified water before putting it in the reservoir?

Yes. The purified water will be re-mineralized by adding calcium and carbonate, and the pH will be adjusted, before being conveyed through a pipeline to Miramar Reservoir.

What will be the effects on nutrient levels in the reservoir?

The purified water will have low levels of phosphorus, which is a nutrient for algae and plants. However, there are other sources of phosphorus in the reservoir, including the sediment and detritus on the bottom, deposition from the atmosphere, and the rooted plants growing in shallow water. The other key nutrient is nitrogen, which will be present in purified water at levels similar to the imported that has historically filled the reservoir. Studies are underway to determine if there will be any change in the overall balance of nutrients in the reservoir.

Will the amount of purified water coming in and out of the reservoir remain balanced and consistent?

The inflow rate of purified water will vary about 10% on an annual cycle – less in the summer and more in the winter. The outflow from the reservoir to the water treatment plant will remain in balance with the inflows such that the reservoir level will not vary appreciably.

How will the purified water affect the turnover rate of water at the reservoir?

Like nearly all reservoirs in Southern California, Miramar Reservoir experiences "stratification," with warm water near the surface and colder water deep. In mid-winter the reservoir mixes to be uniform temperature top-to-bottom – an event called "turnover." The introduction of purified water in Miramar Reservoir will not change this pattern of stratification and turnover.

When will the purified water start being sent to Miramar Reservoir and become part of the drinking water supply?

The North City Pure Water Facility is scheduled to come online and begin producing water that will be sent to Miramar Reservoir in 2021. From Miramar Reservoir, the purified water will be blended with imported and local water supplies and cleaned again at the nearby drinking water plant before being sent to taps.

What construction will take place at Miramar Reservoir?

A one-mile-long underwater pipeline that will be located along the bottom of the reservoir will be constructed on site. The pipeline will release the purified water into the reservoir via various ports.

How will recreational activities at Miramar Reservoir be impacted during construction?

The City is currently evaluating the specific impacts construction will have on recreation at the reservoir and will mitigate impacts as much as possible. The public will be given advanced notice of construction impacts.

What is the current status of implementation of the Pure Water Program? Has City Council approved the Program?

The Phase 1 projects are currently in design and construction is expected to start in late 2018. In 2016, City Council approved the Pure Water Program and funding for the design of the Phase 1 projects. Additional approvals are needed from City Council prior to construction of the Phase 1 projects.

How much is the Program going to cost?

Phase 1 has an estimated cost of $1.2 billion. The estimated cost of converting the Point Loma Wastewater Treatment Plant (Point Loma) if the City does not reduce ocean discharges through the Pure Water Program is $1.8 billion, and would provide no new water. Investing in the Pure Water Program and seeking federal legislation to allow San Diego to meet modified secondary standards would eliminate the necessity for costly construction to Point Loma and create more local water for San Diego.

With the current cost of imported water ($1,200 to $1,400) expected to double in the next ten years, investing in the Pure Water Program is ultimately a more cost-effective option.

Local **residents**, community **groups**, environmental **organizations** and local **businesses** support the **Pure Water Program.**

Do you **support Pure Water?** Like us, follow us:

@PureWaterSD

Want to Know **More?**

Visit www.purewatersd.org to sign up for a free tour of the Pure Water Facility or request a presentation for your organization.

Pure Water San Diego

The City of SAN DIEGO

Completing our Water Cycle, Securing our Future

Pure Water San Diego at Miramar Reservoir

Why is Pure Water San Diego Being Implemented?

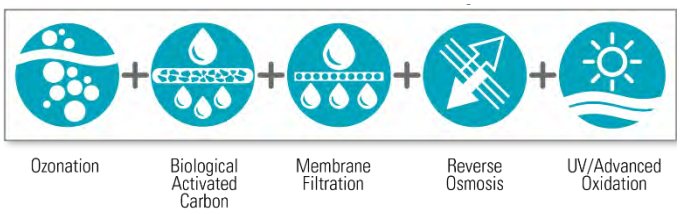
San Diego relies on importing 85% of its water supply from the Colorado River and Northern California Bay Delta. The cost of this imported water has tripled in the last 15 years and continues to rise. With limited local control over its water supply, the City of San Diego is more vulnerable to droughts, climate change and natural disasters.

What is Pure Water San Diego?

Pure Water San Diego is a phased, multi-year program that will provide 1/3 of San Diego's water supply locally by 2035. The Pure Water Program:

- Uses proven technology to clean recycled water to produce *safe*, *high-quality* drinking water
- Provides a *reliable*, *sustainable*, water supply
- Offers a *cost-effective* investment for San Diego's water needs

Water Purification Process



Why was Miramar Reservoir Selected?

For protection of public health, regulatory agencies require the purified water has detention time in an environmental buffer, either a groundwater basin or a surface water reservoir, prior to being blended into the drinking water system. San Diego does not have viable groundwater basins, which led to the selection of a surface water reservoir.

Miramar Reservoir was selected to receive the purified water produced in Phase 1 of the Pure Water Program because it is the most cost-effective option and achieves the goals of City leadership to expedite the implementation schedule – providing San Diego with more local water, sooner.

By sending the purified water to Miramar Reservoir, Phase 1 will be completed and operational by 2021, two years sooner than initially planned.

The length of the pipeline from the North City Pure Water Facility to Miramar Reservoir will be eight miles instead of 28 miles if the water was sent to San Vicente Reservoir. The route of the pipeline to Miramar Reservoir will also have fewer environmental impacts to the surrounding communities during construction. Additionally, the water pumped to Miramar Reservoir will be powered with renewable energy, which provides significant environmental benefits and reduces energy costs and usage.

Water Quality Objectives

Phase 1 of the Pure Water Program will convey 30 million gallons (mgd) of purified water per day to Miramar Reservoir. The purified water will be re-mineralized before being conveyed through a pipeline to Miramar Reservoir.

State regulations of the Division of Drinking Water and the Regional Water Quality Control Board require that the purified water meets specific water quality standards. More than 28,000 water quality tests at the City's demonstration Pure Water Facility have confirmed that the purified water meets or exceeds these standards, along with all federal and state drinking water standards.

Additionally, the regulations will require that the purified water meet dilution and retention criteria in Miramar Reservoir, and will require that existing beneficial uses at the reservoir be sustained.

Recreation Opportunities at **Miramar Reservoir**

Miramar reservoir has a five-mile-long paved service road that encircles the reservoir and is very popular for bicycling, jogging, walking, picnicking and other outdoor activities. Recreational users are permitted on this road seven days a week during normal operating days and hours. Also around the lake are 18 barbecues and 48 picnic tables where visitors can enjoy a picnic with friends or family.

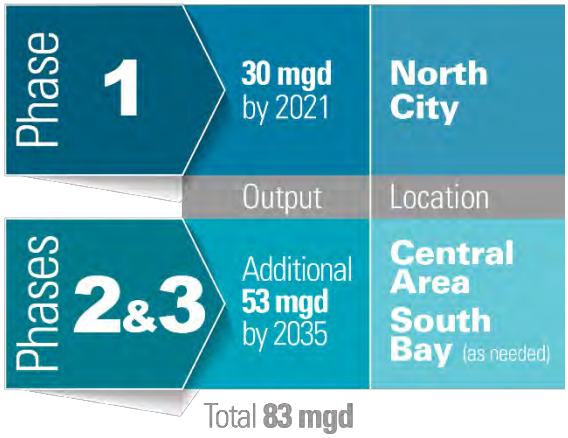
Fishing is also permitted at Miramar Reservoir. With a proper fishing license and a daily City fishing permit, patrons can fish from boats, use float tubes, waders, or simply fish from shore.

Environmental Impact Analysis

With the introduction of purified water at Miramar Reservoir, the City anticipates there will be improvements to the water quality and potential changes to the aquatic community. The City continues to work closely with stakeholders representing various community interests to obtain their input.

The City is in the process of analyzing potential environmental impacts on the region, the fishery, and the wildlife at Miramar Reservoir as part of the Pure Water San Diego Program, North City Environmental Impact Report/Environmental Impact Statement (EIR/EIS). The draft report is expected to be available for public review and comment in September 2017.

Schedule



Phase 1 of the Pure Water Program will be operational in 2021, with construction anticipated to start in late 2018.

Local **residents**, community **groups**, environmental **organizations** and local **businesses** support the **Pure Water Program.**

Do you **support Pure Water?** Like us, follow us:

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Want to Know **More?**

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Pure Water San Diego

Advanced Water Purification
East County

EAST COUNTY PROGRAM

NEW, LOCAL DRINKING WATER SUPPLY

The Advanced Water Purification Program will create a new, local, sustainable and drought proof drinking water supply using state-of-the-art technology to purify East County's recycled water.

This water recycling opportunity would diversify East County's water supply and reduce our dependence on imported water. If the program moves forward, it will meet up to 30 percent of East County's current drinking water demands.

The program is the result of many years of strategic, long-term planning and provides numerous benefits, as well as serving as a model of sustainable water supply for other water agencies throughout California and the nation.

The Advanced Water Purification Program is a potential new source of water that would be locally controlled, reliable, drought proof and environmentally sound.

A PROGRAM WITH MANY BENEFITS

- Creates a new, local, reliable and drought proof drinking water supply.
- Reduces East County's reliance on the City of San Diego's Metropolitan Wastewater System and minimizes discharges into the ocean.
- Produces up to 30 percent of East County's drinking water supply.
- Costs are competitive with imported water by 2021.
- Repurposes water treatment byproducts for beneficial use, including electricity generation and dust control.
- Sustains East County's economy and quality of life.

A REGIONAL SOLUTION

The program is a collaborative partnership between Padre Dam Municipal Water District, Helix Water District, County of San Diego and the City of El Cajon.

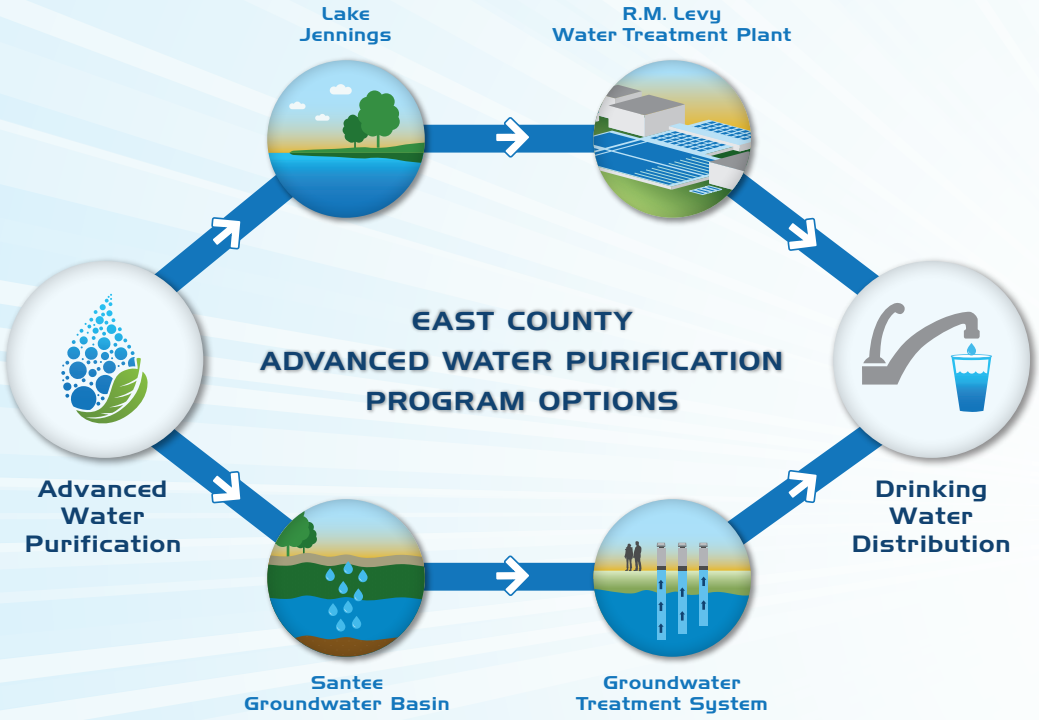
The partners for the East County Advanced Water Purification Program currently collect 15 million gallons per day of wastewater. Most of this wastewater is transported to the City of San Diego's Metropolitan Wastewater System in Point Loma to be treated and disposed into the ocean.

Instead of relying on the City of San Diego to treat and discharge East County's wastewater, this program would treat the water locally and recycle the water using state-of-the-art technology to create a safe, sustainable supply of drinking water.

By providing East County with local control and increased independence of both water and wastewater, the program secures a long term solution for increased sustainability in our communities and safeguards the vitality of East County's economy and quality of life.

For more information and to sign up to receive updates about this project, please call (619) 258-4613 or visit www.EastCountyAWP.com.

Advanced Water Purification
East County



The East County Advanced Water Purification Program will augment current water supplies and the water will be treated one last time before distributing to the public. Current storage options being explored include Lake Jennings and the Santee Groundwater Basin. The distributed water will be a mix of imported and purified water, containing up to 30 percent purified water.

FUNDING

The partners are working diligently to secure state and federal funding for this program. As of early 2017, the program has been awarded $10.7 million. The State Water Resources Control Board awarded $6 million as part of Proposition 84 earlier this year, $240,000 was awarded from the U.S. Bureau of Reclamation for additional program testing and $4.5 million from the Title XVI U.S. Efforts to obtain more funding are ongoing.

PROGRAM PHASES

The East County Advanced Water Purification Program will be constructed in phases to expand water treatment capacities and meet East County's economic needs through 2035 and beyond.

Phase 1

- Scheduled completion in **2020-2021.**
- Will purify 2.2-3.5 million gallons of water each day – enough to serve 6,000 households per year.
- Up to 30 percent of Padre Dam's drinking water supply.

Phase 2

- Scheduled completion in **2023-2025.**
- Expansion includes additional wastewater from the City of El Cajon and County of San Diego.
- Will purify 10.5 million gallons of water each day – enough to serve 26,000 households per year.
- Up to 30 percent of East County's drinking water supply.

SEE FOR YOURSELF!

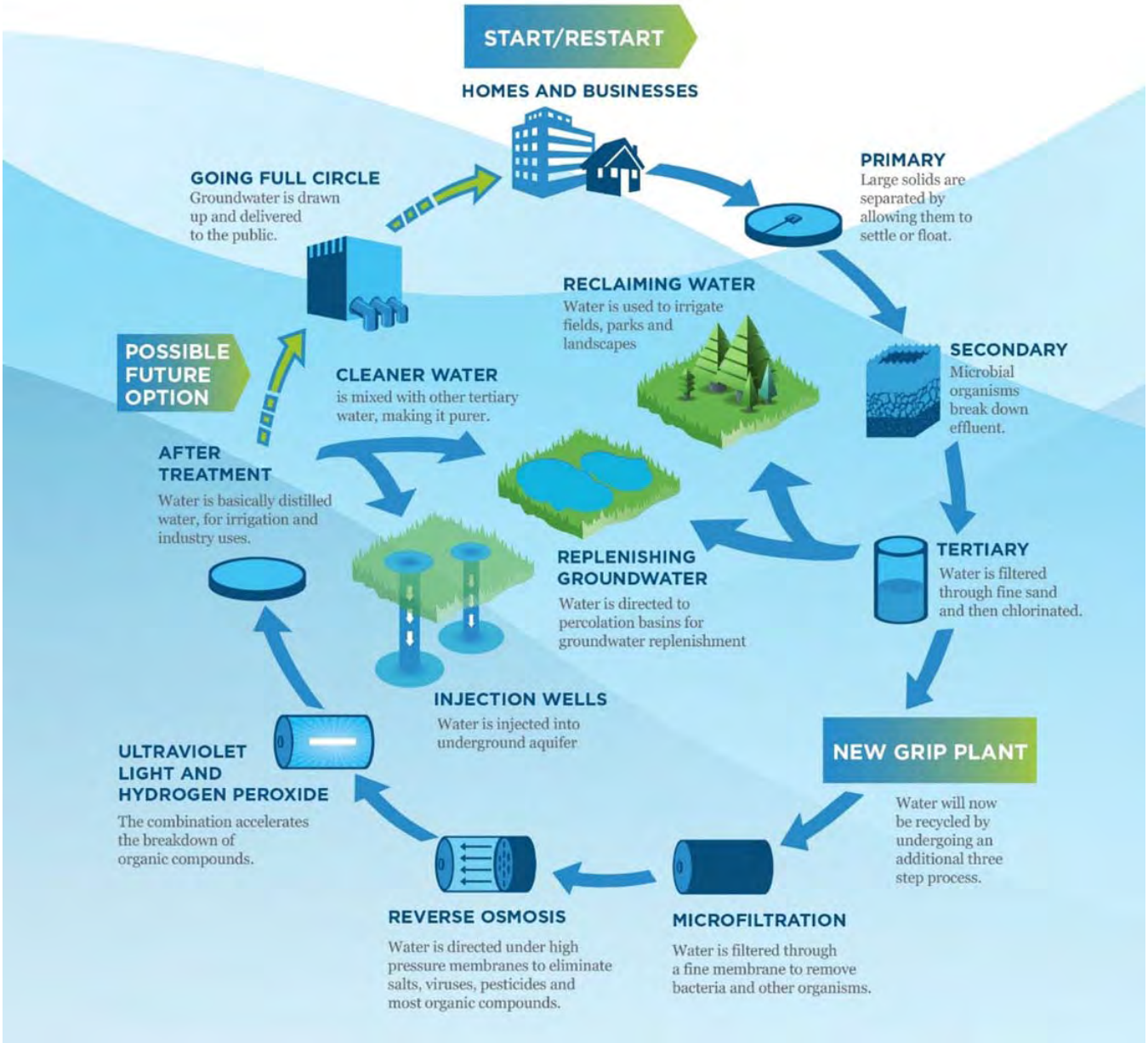
Guided tours and videos of the Advanced Water Purification Demonstration Facility are available to

- *See* first-hand how technology is used to recycle and purify water
- *Learn* why the program is needed in East County
- *Discover* the benefits of this potential new water supply

Visit **www.EastCountyAWP.com** to sign up for a tour and view the virtual tour.

P.O. Box 719003, Santee, CA 92072 | info@eastcountyawp.com | (619) 258-4613

HOW GRIP WORKS



SANITATION DISTRICTS OF LOS ANGELES COUNTY

Regional Recycled Water Program

The Metropolitan Water District of Southern California is exploring the potential of a water purification project to beneficially reuse water currently discharged to the Pacific Ocean to recharge regional groundwater basins. Under a partnership with the Sanitation Districts of Los Angeles County, Metropolitan would build a new purification plant and distribution lines to groundwater basins in Los Angeles and Orange counties. The program would represent the first in-region production of water by Metropolitan. Diversifying the region's water supply sources, advancing conservation and maintaining imported supplies are all part of Metropolitan's long-term Integrated Water Resources Plan.

Program at a Glance

Under the current program configuration, Metropolitan would purify water at the Sanitation District's Joint Water Pollution Control Plant in Carson, and replenish groundwater basins in Los Angeles and Orange counties. The initial program activities call for construction of a 500,000 gallon-per-day demonstration project at the plant site and feasibility studies. The operational phase(s) of the program call for deliveries of up to 150 MGD (168,000 ac-ft per year) of purified water and the construction of up to 60 miles of distribution lines to convey the water to spreading basins and/or injection well sites in both counties. The program is being configured to ensure delivery flexibility to groundwater basins to meet the needs of Metropolitan's Member Agencies, groundwater basin managers and pumpers. The potential for shared use of public and private rights-of-way and operational facilities is also under consideration.

Proven Safe Techniques

The project involves use of established technologies to purify non-nitrified secondary effluent and turn it into a supply that is suitable for indirect potable reuse through groundwater replenishment. These technologies include reverse osmosis membrane treatment followed by ultraviolet light and other processes. The water would be purified, injected or spread onto groundwater basins as another "barrier" of safety, pumped out and re-treated as necessary before entering the drinking water system.

Sanitation Districts' Joint Water Pollution Control Plant in Carson

Groundwater Basins: Dependent on Metropolitan

Groundwater basins produce about a third of Southern California's overall water needs thanks in part to replenishment supplies from Metropolitan. Along with Metropolitan's imported supplies, this purified water would represent a new, drought-proof supply for groundwater replenishment.

Key Milestones

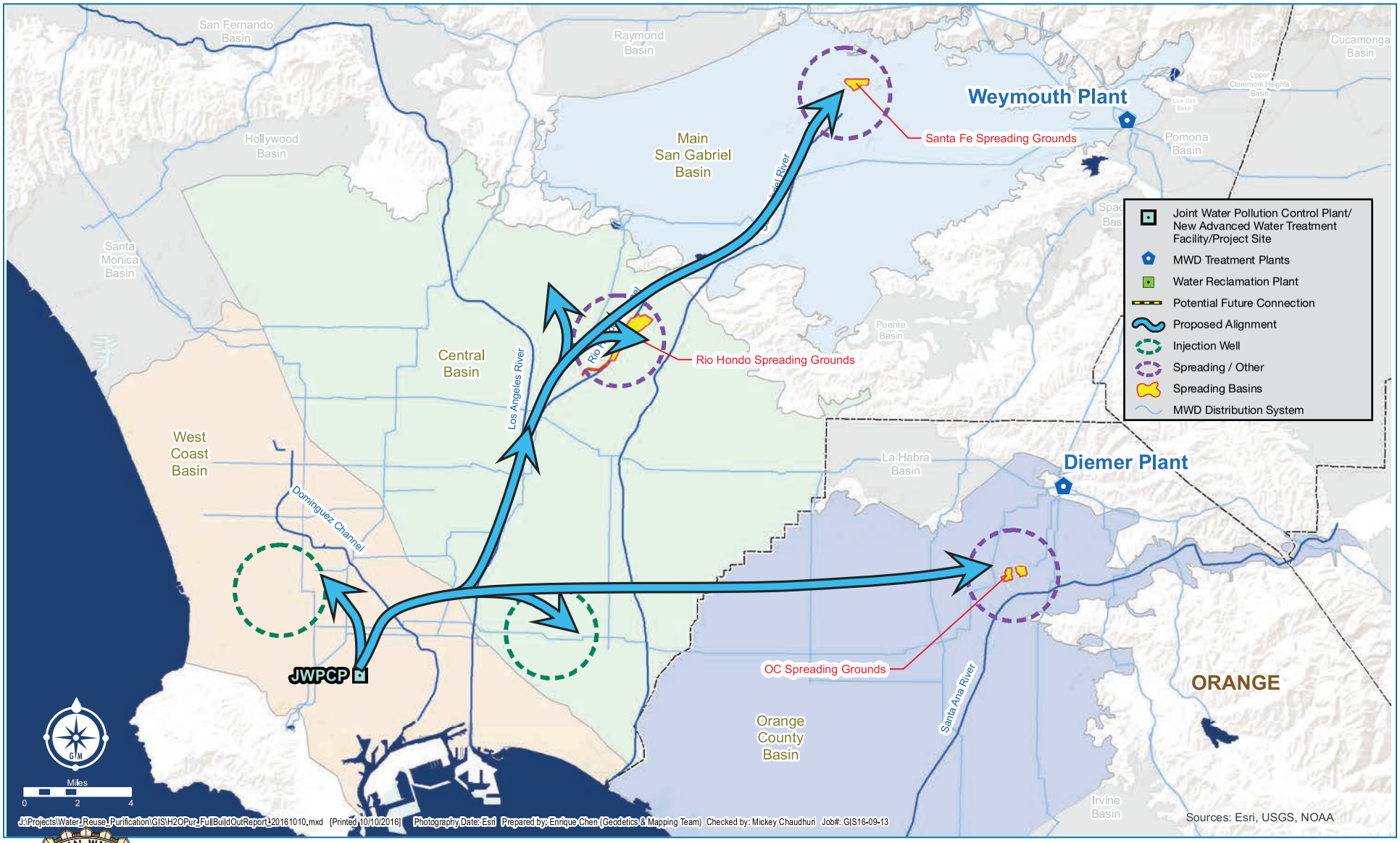
November 2015

- Metropolitan and Sanitation Districts boards approved agreement for demonstration project and feasibility studies.
- Metropolitan board authorized $15 million for demonstration-scale recycled water treatment plant and studies.

2016-2017

- Design and construct demonstration-scale plant.
- Both boards review feasibility studies and consider recommended next steps.

Regional Recycled Water Program



J:\Projects\Water_Reuse_Purification\GIS\H2OPur_FullBuildOutReport\20161010.mxd [Printed 10/10/2016] Photography Date: Esri Prepared by: Enrique Chen (Geodetics & Mapping Team) Checked by: Mickey Chaudhuri Job#: GIS16-09-13

The mission of the Metropolitan Water District of Southern California is to provide its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way.

The Metropolitan Water District of Southern California: 700 N. Alameda St., Los Angeles, CA 90012 P.O. Box 54153, Los Angeles, CA 90054-0153 (213) 217-6000/(800) call-mwd (255-5693)

Monterey Regional Water Pollution Control Agency

"Dedicated to meeting the wastewater and reclamation needs of our member agencies, while protecting the environment."

Administration Office:
5 Harris Court, Bldg. D, Monterey, CA 93940-5756
(831) 372-3367 or 422-1001, FAX: (831) 372-6178
Website: www.mrwpca.org

Pure Water Monterey Groundwater Replenishment Project Public Hearing

The public is invited to attend a public hearing on the Pure Water Monterey Groundwater Replenishment (PWM) Project. The hearing is being held in accordance with Title 22, Division 4, Chapter 3, section 60320.202 of the California Code of Regulations (Title 22).

Project: The PWM Project would create a reliable source of water supply from 1) 3,500 acre-feet per year of advanced treated recycled water for recharge of the Seaside Groundwater Basin, and 2) up to approximately 4,500 acre-feet per year of "disinfected tertiary recycled water" to augment the existing Castroville Seawater Intrusion Project's agricultural irrigation supply. Water supplies proposed to be recycled and reused by PWM Project include municipal wastewater, agricultural wash water, urban stormwater runoff and surface water diversions. After primary and secondary treatment at the MRWPCA's Regional Wastewater Treatment Plant, the water for groundwater recharge would be recycled using a new state-of-the-art advanced water treatment plant, including four-stages of treatment: ozonation, membrane filtration, reverse osmosis and advanced oxidation using ultraviolet light and hydrogen peroxide. The final product water would be stabilized to prevent pipeline corrosion and mineral mobilization prior to distribution and injection into the Seaside Groundwater Basin. The additional water for agricultural irrigation would be treated with existing facilities at the Regional Wastewater Treatment Plant, including primary, secondary, and tertiary (Salinas Valley Reclamation Plant) processes prior to distribution for agricultural irrigation. The PWM Project would be located within northern Monterey County and would include new facilities located within unincorporated areas of the Salinas Valley and the Cities of Salinas, Marina, and Seaside.

Available Information: A copy of the Pure Water Monterey Project Title 22 Engineering Report may be viewed online at the Pure Water Monterey website www.purewatermonterey.org. In addition, a hardcopy is available at the MRWPCA main administration office in Ryan Ranch (5 Harris Court building D, Monterey, CA 93940) through August 22, 2016. Hours at the Ryan Ranch Administration Office are Monday – Friday, 7:30 a.m. – 5:30 p.m. Any questions regarding this project may be directed to Bob Holden at (831)645-4634 or bobh@mrwpca.com

Public Hearing: The State Water Resources Control Board, Division of Drinking Water (DDW) and MRWPCA will conduct the public hearing as part of the Title 22 approval process. The hearing will begin with a brief presentation about the project, followed by opportunity for public comments and questions.

Location: MRWPCA Administration Building
2nd Floor Board Room
5 Harris Court Building D, Monterey, CA 93940

Date: August 22, 2016
Time: 2:00 – 3:30 p.m.

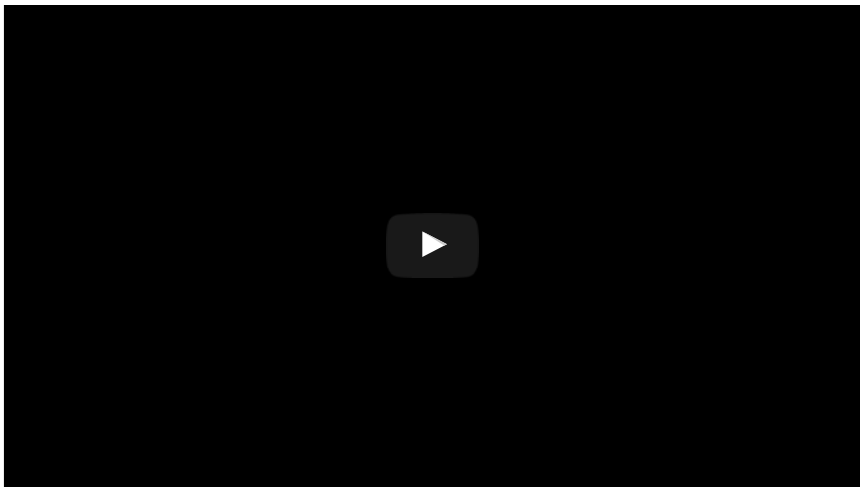
Specific language translators can be made available at the hearing. For individuals with disabilities, assistive services such as sign-language interpretation, real-time captioning, note-takes, reading or writing assistance, training/meeting materials in Braille, large print, audio cassette, or computer disk will be provided. To obtain services or copies in one of these alternate formats, please contact Yohana Vargas at (831) 645-4605 or Yohana@mrwpca.com no later than (10) working days prior to the hearing.

Public Comments: All public comments on the Pure Water Monterey Groundwater Replenishment Project must be submitted in writing and received no later than 5:00 p.m. on September 1, 2016 {10 calendar days after the hearing}, via mail, fax, or email to:

Yohana Vargas, Contracts Administrator
5 Harris Court, Building D
Monterey, CA 93940
Fax Number: (831) 372-6178
Email: Yohana@mrwpca.com

Tours of Silicon Valley Advanced Water Purification Center

Location of Purification Center: 4190 Zanker Road, San Jose CA 95134



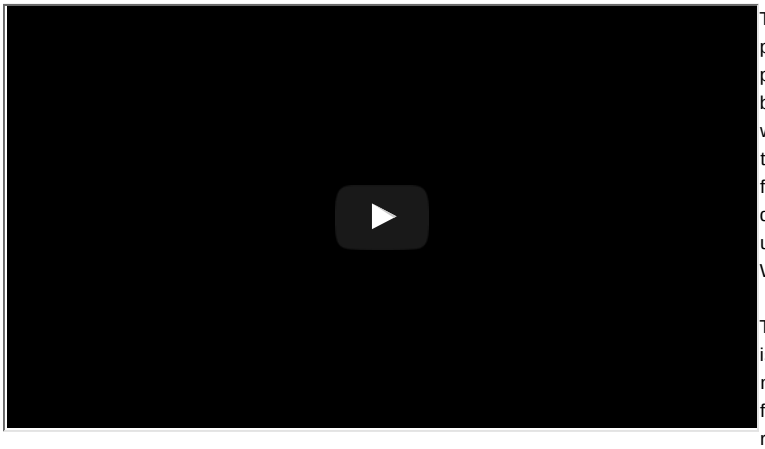
Innovation for Future Water Supply

The Silicon Valley Advanced Water Purification Center, the largest plant of its kind in northern California, is the focal point of the Santa Clara Valley Water District's recycled water expansion.

The $72 million state-of-the-art facility receives secondary-treated effluent from the neighboring San José-Santa Clara Regional Wastewater Facility and purifies it to a very high quality using proven purification processes—microfiltration, reverse osmosis and ultraviolet disinfection.

The result is 8 million gallons a day of highly purified water that is expected to match California drinking water quality standards.

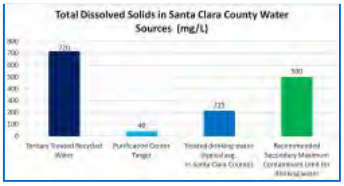
(Watch this short video on the Oct. 24, 2015 Community Open House)



The highly purified water produced at the new purification center is blended with the recycled water supply produced at the regional wastewater facility to enhance its quality and expand its usage via the South Bay Water Recycling system.

Total dissolved solid (TDS) is a good water quality marker and it's the key factor that non-potable recycled water users are concerned with. The highly purified water produced at the purification center has an average TDS concentration of around 40 milligrams per liter.

The addition of this purified water to recycled water reduces the recycled water TDS levels from the 2013 average of 750 ppm to the targeted 500 ppm, thus making a good product even better. This enhancement in water quality will allow for a wider use of recycled water for a variety of purposes, such as irrigation, commercial and industrial. For example, with lower TDS industrial customers would require less pre-treatment to avoid scaling, while landscape users would see reduction in leaching to remove excess salt from the soil. *(Click thumbnail to enlarge chart)*



(/sites/default/files/imagepicker/6/TDS-chart-Feb2014_0.jpg) The center will demonstrate proven technologies to produce highly purified water that can be used for a variety of purposes, including potentially expanding Silicon Valley's future drinking water supplies.

The water district, which is the largest funder with $47.5 million, will own and operate the new facility. The City of San José has provided $11 million. The purification center has received $8.25 million from the federal American Recovery and Reinvestment Act and $5.25 million from the California Department of Water Resources.

Purifying water for a sustainable tomorrow.

- Visit the Purification Center and take a public tour (http://purewatersv.org/tour-schedule)
- Take a virtual tour of the Purification Center (/SVAWPC-Tour)
- Learn about the Advanced Water Purification Processes (/advanced-water-purification-processes)

Silicon Valley Advanced Water Purification Center partners

Santa Clara Valley Water District

San José-Santa Clara Regional Wastewater Facility

RECOVERY.GOV

U.S. DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION

DEPARTMENT OF WATER RESOURCES STATE OF CALIFORNIA
