APPENDIX D

- Well V201 Drinking Water Source Assessment, Valencia Water Division, February 2017

15 February 2017 DWSAP V-201

Kennedy/Jenks Consultants

303 Second Street, Suite 300 South
San Francisco, California 94107
415-243-2150
FAX: 415-896-0999

Well V-201
City of Santa Clarita
Los Angeles County, CA

Drinking Water Source Assessment and Protection Program

Valencia Water Company

24631 Avenue Rockefeller
Valencia, CA 91355

K/J Project No. 1265013*01

Executive Summary

The United States Environmental Protection Agency (EPA) established the Drinking Water Source Assessment and Protection Program (DWSAP program) in 1999 to assess the vulnerability of the drinking water supply to contamination. The program is federally mandated, and is regulated in California by the State Water Resources Control Board, Division of Drinking Water (DDW).

This report includes DWSAP results for Well V-201, an existing water supply well that is currently offline. Well V-201 is completed within the Saugus Formation, with the perforated intervals screening the Saugus Formation. These well design features mean that the deeper Saugus Formation provides almost all the water being pumped from V-201. The surrounding and nearby land use is a mixture of single- and multi-family residential, commercial, and industrial. The sponsor of the Well V-201 Project is Valencia Water Company (VWC).

The DWSAP program for groundwater sources (wells) in California requires drinking water purveyors to assess local hydrogeology, well construction and production, and land use in the vicinity of water supply wells. These components are then used to delineate Groundwater Protection Zones for each well (Figure 1), which represent the area of groundwater that may be drawn to the well during two, five and ten years of pumping. Within these three Groundwater Protection Zones, Possible Contaminating Activities (PCAs) – such as road rights-of-way, irrigated crops, irrigation wells, etc. – are identified to distinguish the vulnerability of the well location to contamination. Figure 2 is generated from Google Earth and depicts the PCAs found from EDR's searches of several databases, as well as research from other resources. Figure 2 shows identified PCAs within the three Groundwater Protection Zones. PCAs were ranked according to their potential to contaminate the water supply well and results are summarized in the PCA Checklist in this document. The results of the DWSAP can then be used as a planning tool for land use development in the vicinity of water sources.

BACKGROUND

After its construction in 1989, Well V-201 was initially a significant source of water for the VWC. By the late 1990s, Well V-201 was pumped only infrequently, providing between 100 and 500 acre feet per year (AFY) of water supply. Under the current operating plan for the local groundwater basin (LSCE and GSI, 2009), Well V-201 was identified as providing a relatively small annual supply (approximately 300 AFY) and was expected to provide a significant supply (up to 3,777 AFY) during years that outside imported water supplies are curtailed. However, due to the detections of perchlorate, Well V-201 is offline at this time.

The elevated concentrations of perchlorate in the local groundwater stem from the Whittaker-Bermite site, which was a former munitions plant and is known to have historic releases of perchlorate and other substances that have impacted on-site soils and groundwater in the underlying aquifer zones, including the Alluvial Aquifer and Saugus Formation. Due to several

instances of perchlorate detection from 1997 to 2002, several affected water supply wells were shut down, losing a combined production of approximately 8,700 gallons per minute (gpm).

In the effort to restore Well V-201 as a drinking water source, the VWC has submitted a Draft Workplan for the Restoration of Well V-201 to the California Department of Public Health (CDPH; now DDW). To restore Well V-201 as a drinking water source, treatment to remove perchlorate is required. Treatment will be provided via a well head treatment system using single-pass ion exchange (IX). Two objectives can be achieved by returning this well to service:

1. An updated groundwater analysis of Saugus Formation pumping has indicated that returning well V-201 to service is an important component in minimizing the further spreading of the perchlorate plume in groundwater. In particular, pumping well V-201 on a sustained, continuous basis at close to its full capacity (up to 2,400 gpm), with an allowance for routine maintenance down-time each year can provide hydraulic containment of the perchlorate that is present in the Saugus Formation groundwater west of the Whittaker-Bermite site and provide protection of downgradient supply wells that currently are not impacted by perchlorate (GSI Water Solutions (GSI), 2013).

2. This project would also meet Saugus Formation groundwater pumping goals that are specified in the Groundwater Operating Plan (GSI, 2013) by adding treatment to Well V-201 so that it can be returned to service.

Well V-201 is located near 24078 Valencia Boulevard and is owned by VWC. The well site is bounded by commercial property in all directions, with residential property located nearby to the south and southeast.

METHODOLOGY

To prepare the DWSAP for V-201, Kennedy/Jenks Consultants (Kennedy/Jenks) reviewed regulatory agency database search report (compiled by EDR) to identify PCAs such as known contaminant plumes, leaking underground storage tanks, dry cleaners, gas stations, etc. within the Groundwater Protection Zones of the well (Figure 2). Kennedy/Jenks staff also reviewed available well construction information and local hydrogeologic data and reports, conducted a site inspection and visual inspection of surrounding area, and reviewed historical aerial photos to identify land use history at and in the vicinity of well V-201. It should be noted that the resolution and quality of the aerial photographs was variable and specific site features could not always be determined.

Kennedy/Jenks also reviewed information available from GeoTracker records (http://geotracker.waterboards.ca.gov/). Below is a list of the PCAs that were identified from GeoTracker within 1,600 feet of the well. This search radius is consistent with the Groundwater Protection Zone for Zone B10, as depicted on Figure 1. GeoTracker does not allow searches for PCAs based on the actual location of the site (i.e., spatial coordinates); thus, an approximate location of the site was used to identify these PCAs. Four GeoTracker sites are located within the search radius, which are as follows:

- A permitted underground storage tank (UST) site about 0.19 miles to the northeast (Santa Clarita City Hall – Valencia, Facility ID 21662)

- A closed leaking underground storage tank (LUST) case about 0.19 miles to the northeast (Newhall Land & Farming Co. - Valencia, GeoTracker ID T0603732554)
- A permitted UST site about 0.24 miles to the northeast (Newhall Land & Farming Co. – Valencia, Facility ID 25497)
- An open LUST case about 0.32 miles to the northeast. This LUST is currently in remediation (LA County Sheriff Station – Valencia, GeoTracker ID T0603704904)

This report contains information obtained from a variety of public and other sources reasonably available to Kennedy/Jenks. It should not be concluded from this report that additional information for the target and surrounding properties does not exist from other sources, and that the information provided by sources available to Kennedy/Jenks is complete and accurate.

Groundwater Protection Zones

The first step in the DWSAP program is the delineation of Groundwater Protection Zones (Figure 1), in this case performed using the Modified Calculated Fixed Radius method. The Modified Calculated Fixed Radius Method is utilized when the direction of groundwater flow is known, translating the radii found through the Calculated Fixed Radius Method one and a half times their distance upstream. The Groundwater Protection Zones are concentric circles that represent the areas of groundwater that may be drawn to the well during two, five and ten years of pumping. The size of each protection zone is determined by the pumping rate of the well, the effective porosity of the formation that the well is completed in, the interval of pumping (two, five and ten years), and the screened interval of the well. The pumping capacity of Well V-201 was used to calculate the protection zones. The DDW requires a minimum radius for each protection zone: 600 feet for Zone A, 1,000 feet for Zone B5, and 1,500 feet for Zone B10; if the calculated radii of the protection zones are less than the DDW minimums, the minimum values are used instead.

A point-based system is used to evaluate the risk of each PCA that falls within the Groundwater Protection Zones. The total risk depends on the location of the PCA, the Physical Barrier Effectiveness, and the type of PCA; points are accrued for a PCA for how it rates in each of these three categories. Any PCA that falls within the two-year zone (Zone A) is assigned five points, those within the five-year zone (Zone B5) are assigned three points, and those within the ten-year zone (Zone B10) are assigned one point.

Physical Barrier Effectiveness

After the Groundwater Protection Zones are established, the local hydrogeology and the construction of each well are evaluated – confined or unconfined aquifer, sanitary seal depth, proximity to improperly abandoned or destroyed wells, static water level conditions, etc. – to determine how effective the well may be in preventing potential contamination in groundwater from entering the well. Each component of this Physical Barrier Effectiveness (PBE) survey is given a point value, with more points given to the options that more effectively protect the well from contamination. The resulting total point score is then categorized as the PBE of the well: low (0 to 35 points), moderate (36-69 points) or high (70-100 points). Each PBE category is then assigned a point value. A PBE category of low is assigned five points, moderate is assigned three points, and high is assigned one point. Wells in unconfined aquifers can score a maximum

of 70 PBE points, and wells completed in confined aquifers can score a maximum of 100 PBE points.

Possible Contaminating Activities Inventory and Vulnerability Ranking

Within each Groundwater Protection Zone, PCAs are identified. The DDW provides a PCA Inventory, and assigns each PCA type a risk ranking – VH (very high/seven points), H (high/five points), M (medium/three points), or L (low/one point) – based on the potential for that PCA to contaminate groundwater. For instance, the DDW ranks gas stations as VH (seven points), and schools as L (one point). Some PCAs have different risk rankings depending on the Groundwater Protection Zone in which they are located. For example, sewer collection systems are ranked H (five points) in Zone A, but only L (one point) in Zones B5 and B10. A total Vulnerability Score, ranging from three to 17, is calculated for each PCA:

(PCA Points – 7 (VH), 5 (H), 3 (M) or 1 (L))
+ (Groundwater Protection Zone Points – 5 (Zone A), 3 (Zone B5) or 1 (Zone B10))
+ (PBE Points – 5 (low), 3 (moderate) or 1 (high))
= Vulnerability Score

The PCAs located within the Groundwater Protection Zones are ranked by Vulnerability Score from highest to lowest – from the most likely to contaminate groundwater to the least likely. For example, for a well with a PBE of M, a gas station (VH) located in Zone A would have a Vulnerability Score of 15:

PCA of VH	7 points
+ Zone A	5 points
+ PBE of M	3 points
= Vulnerability Score	15 points

Only those PCAs with Vulnerability Scores of eight and higher are included in the Vulnerability Ranking Master List. Water supply/extraction wells are considered by the DDW to be vulnerable to those PCAs with a score of eight and higher, and most vulnerable to those PCAs associated with groundwater contamination.

DWSAP RESULTS

Groundwater Protection Zones-

Groundwater protection zones were calculated for Well V-201 based on the pumping capacity and screen interval at this location. The pumping capacity of Well V-201 is approximately 2,400 gallons per minute (gpm). Well V-201 is screened in several intervals: from 540 to 570 feet below ground surface (bgs), 610 to 690 feet bgs, 720 to 750 feet bgs, 780 to 940 feet bgs, 960 to 1,000 feet bgs, 1,060 to 1,160 feet bgs, 1,220 to 1,300 feet bgs, 1,350 to 1,380 feet bgs, 1,420 to 1,490 feet bgs, and 1,540 to 1,670 feet bgs.

The DWSAP requires that Groundwater Protection Zones be delineated at distances which approximate the two (2), five (5), and ten (10) year travel times for groundwater to reach the well. Zone A, Zone B5, and Zone B10 radii were calculated to be 689 feet, 1,090 feet, and 1,541 feet, respectively. Since the calculated radii for Zone A, Zone B5 and Zone B10 are greater than the DDW minimum values for groundwater protection zones, V-201 was assigned with the calculated radii for these zones. The groundwater protection zone data are shown below:

Well ID	Pumping Capacity ($feet^3$/year)	Well Screen Interval (feet)	Zone A Radius (2-year travel time) (feet)	Zone B5 Radius (5-year travel time) (feet)	Zone B10 Radius (10-year travel time) (feet)
V-201	168,640,800	1,130	689	1,090	1,541

Physical Barrier Effectiveness

The well design has the well screen completed in the confined Saugus Formation, which results in the well potentially receiving up to 100 PBE points. Points can be deducted from this maximum for various reasons, including the lack of a surface seal or site security. The PBE points for Well V-201 are listed below. The seal depth is approximately 460 feet.

Well ID	Seal Depth (feet)	Total PBE Points	PBE Ranking
V-201	460	70	High

Possible Contaminating Activities Inventory and Vulnerability Ranking

The PCAs to which Well V-201 is considered most vulnerable are shown below; a minimum cutoff of 11 was used for the vulnerability score, and the full PCA list (minimum vulnerability ranking of 8) can be found in the Vulnerability Ranking Master List. The PCAs shown below are those PCAs identified within the Groundwater Protection Zones; the highest vulnerability score is 13. The well is considered most vulnerable to PCAs within Zone A associated with the known chemical plume and PCAs associated with the presence of commercial and residential activities. Other PCAs of vulnerability ranking 8 and higher are included in the Vulnerability Ranking Master List. These PCAs are associated with the presence of the known contamination plume and commercial and residential activities within the Groundwater Protection Zones, or the potential presence of certain unknown or unknowable activities such as unregistered underground storage tanks.

Zone	Activity	Vulnerability Score
A	Known contaminant plumes (VH)	13
A	Chemical/petroleum pipelines (H)	11
A	Sewer collection systems - Comm/Indus (H, if in Zone A, otherwise L)	11
A	Sewer collection systems - Residential (H, if in Zone A, otherwise L)	11
B5	Known contaminant plumes (VH)	11

Water Quality

In 2014, raw water characterization was developed for Well V-201 in a draft 97-005 document prepared for CDPH (now DDW). The results of the analysis showed the water from Well V-201 is highly buffered (alkalinity 187 to 230 mg/L as $CaCO_3$). The perchlorate concentrations exceed the maximum contaminant level (MCL) (16 µg/l on 13 July 2012). The concentrations of most other constituents are below their MCLs. However, concentrations of total dissolved solids (average 816 mg/l), specific conductance (average 1,269 µmhos/cm) and sulfate (average 409 mg/l) exceed their respective secondary MCLs.

CONCLUSIONS

The vulnerability rankings calculated for the V-201 production well are defined by the PCAs found in commercial and residential areas, as well as the well's high PBE ranking, which is achieved by the well's construction in a relatively deep confined aquifer. The PCA that is present in the area by which Well V-201 is most susceptible is related to the perchlorate plume in groundwater emanating from the Whittaker-Bermite site. Water pumped from Well V-201 will be treated at the well head using single-pass ion exchange. Other PCAs in the area are mainly associated with the presence of parking lots/malls, commercial and residential sewer collection systems, high density housing, gas stations, hospitals, a leaking underground storage tank, and chemical/petroleum pipelines.

VWC is committed to providing safe drinking water, and operates its drinking water supplies to ensure that the drinking water it delivers meets all State and Federal drinking water standards.

Drinking Water Source Assessment

Water System

Valencia Water Company

Water Source

Well V-201
City of Santa Clarita, Los Angeles County, CA

Assessment Date
August 2016

California Department of Public Health
Drinking Water Field Operations Branch
Los Angeles Central District

District No.	16
System No.	1910240
Source No.	020
PS Code	1910240-020

Checklist for Drinking Water Source Assessment – Ground Water Source

District Name Los Angeles Central District **District No.** 16 **County** Los Angeles

System Name Valencia Water Company **System No.** 1910240

Source Name V-201 **Source No.** 020 **PS Code** 1910240-020

Completed by Kennedy/Jenks Consultants **Date** August 2016

The following information should be contained in the drinking water source assessment submittal.

__X__ Cover Page

__X__ Checklist (*this form*)

__X__ Assessment Summary

__X__ Vulnerability Summary

_____ Source Location Form *(not currently available, contact DPH for information)*

__X__ Delineation of groundwater protection zones

__X__ Source Data Sheet (select appropriate form)

- __X__ Well Data Sheet
- _____ Spring Data Sheet
- _____ Horizontal Well Data Sheet

__X__ Physical Barrier Effectiveness Checklist

__X__ Possible Contaminating Activities (PCA) inventory form

__X__ Vulnerability Ranking

__X__ Assessment map with source location and protection zone (Figure 1)

__X__ Additional maps (optional) (e.g. local maps of zones and PCAs, recharge area maps, or maps indicating direction of ground water flow) (Figure 2)

__X__ Minimum Horizontal Distance

__X__ Means of Public Availability of Report (indicate those that will be used)

- __X__ Notice in the Consumer Confidence Report* (minimum)
- __X__ Copy in regulatory agency (DPH or LPA) office (minimum)
- __X__ Copy in public water system office (recommended)
- _____ Copy in public library/libraries
- _____ Internet (indicate Internet address: _____)
- _____ Other (describe)

*The CCR should indicate where customers can review the assessments.

Assessment Summary

District Name Los Angeles Central District **District No.** 16 **County** Los Angeles

System Name Valencia Water Company **System No.** 1910240

Source Name V-201 **Source No.** 020 **PS Code** 1910240-020

Completed by Kennedy/Jenks Consultants **Date** August 2016

Description of System and Source

The drinking water source for the Valencia Water Company Well V-201 is groundwater recharged via the South Fork of the Santa Clara River. The well is located in the Saugus Formation and Alluvial Aquifer, within which land use is primarily residential with some multi-residential, commercial, and industrial. The pump, although vertically set within the Alluvial Aquifer, is designed for its sanitary seal and perforations to be located below the Aquifer. These well design features mean that the deeper Saugus Formation provides almost all the water being pumped from V-201.

Assessment Procedures

The assessment of the source V-201 well was conducted by Kennedy/Jenks Consultants. The following sources of information were used in the assessment: environmental records, site survey, previous studies and reports.

Procedures used to conduct the assessment include: file review, calculations, site visit, and Google Earth search.

Contents of this Assessment

Yes ☒	No ☐	Assessment Summary
Yes ☒	No ☐	Vulnerability Summary
Yes ☐	No ☒	Source Location Form
Yes ☒	No ☐	Delineation of Water Protection
Yes ☒	No ☐	Physical Barrier Effectiveness Checklist
Yes ☒	No ☐	Source Data Sheet
Yes ☒	No ☐	Inventory of Possible Contaminating Activities
Yes ☒	No ☐	Vulnerability Ranking
Yes ☒	No ☐	Assessment Map

Vulnerability Summary

District Name Los Angeles Central District **District No.** 16 **County** Los Angeles

System Name Valencia Water Company **System No.** 1910240

Source Name V-201 **Source No.** 020 **PS Code** 1910240-020

Completed by Kennedy/Jenks Consultants **Date** August 2016

THE FOLLOWING INFORMATION MUST BE INCLUDED IN THE SYSTEM CONSUMER CONFIDENCE

A source water assessment was conducted for the V-201 well

of the Valencia Water Company water system in August 2016 .

Based on the highest vulnerability score in Zone A, the source is considered most vulnerable to the following activities:

Known Contamination Plume

The contamination plume stems from a location known as the Whittaker-Bermite site, which was a former munitions plant and is known to have historic chemical releases containing perchlorate and other substances that have impacted on-site soils and groundwater in the underlying aquifer zones, including the Alluvial Aquifer and Saugus Formation. Upon its restoration, Well V-201 will require perchlorate treatment to treat the existing perchlorate concentrations, which will be provided through a single-pass ion exchange system located at the well head.

Discussion of Vulnerability

Well V-201 is considered vulnerable to activities located near the drinking water source. The groundwater source is considered most vulnerable to the following activities within Zone A, for which no associated contaminants have been detected: chemical/petroleum pipelines, parking lots/malls, hospitals, commercial sewer collection systems, high density housing, and residential sewer collection systems.

The PCAs found in Zones B5 and B10, for which no associated contaminants have been detected, are: chemical/petroleum pipelines, high density housing, a gas station, a historic gas station, and a confirmed leaking tank. The leaking tank is located at the local sheriff's office, and is suspected to be a fuel tank, which is under remediation at this time.

The water supply is protected against contamination by the construction of an annular seal composed of sand/cement grout extending from the ground surface to 460 feet below ground surface.

The pumping rate of Well V-201 (2,400 gallons per minute) was used to delineate the groundwater protection zones. This assessment presents the current view of the well's vulnerability.

Delineation of Water Protection Zones

District Name Los Angeles Central District **District No.** 16 **County** Los Angeles

System Name Valencia Water Company **System No.** 1910240

Source Name V-201 **Source No.** 020 **PS Code** 1910240-020

Completed by Kennedy/Jenks Consultants **Date** August 2016

Indicate the method used to delineate the zones:

(For more information refer to the Drinking Water Source Assessment and Protection document)

__X__ Calculated Fixed Radius (Default) (Show calculations below)

_____ Modified Calculated Fixed Radius (Show calculations below and attach documentation for direction of ground water flow)

_____ More detailed methods

Type used (i.e., analytical methods, hydrogeologic mapping, modeling):

_____ Arbitrary Fixed Radius (For use only by or with permission of DHS—use minimum distances shown below)

Calculated Fixed Radius Equation

The equation for the calculated fixed radius (R) is $Rt = \sqrt{Q\ t / \pi\ \eta\ H}$

Rt = R2, R5, or R10 corresponding to t (Calculate R for each travel time)
Q = maximum pumping capacity of well
(ft^3/year = 2,400 gpm * 70,267): 168,640,800
t = time of travel (years), 2, 5 and 10 years
π = 3.1416
η = effective porosity (decimal percent) (If unknown, assume 0.2):
0.2

H = screened interval of well (feet) (If unknown, assume 10% of Q gpm, 10 ft minimum):
1,130

Specific methods follow on next page

Calculated Fixed Radius Delineation Method (Default)

Using the equation presented above, calculate the size of zones for the appropriate aquifer setting of the source.

Porous Media Aquifer

Zone A (2 year TOT) R2 = 689 ft, minimum = 600 ft —use larger: 689 ft

Zone B5 (5 year TOT) R5 = 1,090 ft, minimum = 1,000 ft —use larger: 1,090 ft

Zone B10 (10 year TOT) R10 = 1,541 ft, minimum = 1,500 ft —use larger: 1,541 ft

Fractured Rock Aquifer

(Increase size of zones by 50%)

Zone A (2 year TOT) 1.5R2 = _____ft, minimum = 900 ft—use larger: _____ft

Zone B5 (5 year TOT) 1.5R5 = _____ft, minimum = 1,500 ft—use larger:_____ ft

Zone B10 (10 year TOT) 1.5R10 = _____ft, minimum = 2,250 ft—use larger:_____ ft

Modified Calculated Fixed Radius Delineation Method

In porous media aquifers, if the direction of ground water flow is known (see Section 6.2.3), the default zone circle may be shifted upgradient by 0.5Rt. The upgradient and downgradient limits of the zone are determined below.

Zone A (2-year TOT)

upgradient distance = 1.5R2 = 1,034 ft, minimum = 900 ft, use larger: 1,034 ft
downgradient distance = 0.5R2 = 345 ft, minimum = 300 ft, use larger: 345 ft

Zone B5 (5-year TOT)

upgradient distance = 1.5R5 = 1,635 ft, minimum = 900 ft, use larger: 1,635 ft
downgradient distance = 0.5R5 = 545 ft, minimum = 300 ft, use larger: 545 ft

Zone B10 (10-year TOT)

upgradient distance = 1.5R10 = 2,312 ft, minimum = 900 ft, use larger: 2,312 ft
downgradient distance = 0.5R10 = 771 ft, minimum = 300 ft, use larger: 771 ft

WELL DATA SHEET (Page 1 of 3)

Complete as much information as possible. Leave blank if information is not available, use N.A. if not applicable.		
** Indicates items required for Source Water Assessment*		
*** Indicates additional items required for assessments and Ground Water Rule*		
	(separate multiple entries in field with semi-colon)	Actual, Estimated or Default?
DATA SHEET GENERAL INFORMATION		
System Name	Valencia Water Company	Actual
System Number	1910240	Actual
Source of Information *(well log, DHS/County files, system, etc)*	CDPH Records/System	Actual
Organization Collecting Information *(DHS, County, System, other)*	System	Actual
Date Information Collected/Updated	Nov-2016	Actual
WELL IDENTIFICATION		
* Well Number or Name	Well 201	Actual
* DHS Source Identification Number (**FRDS ID No.**)	1910240-020	Actual
DWR Well Log on File? ("YES" or "NO")	YES	Estimate
State Well Number (from DWR)	04N/16W-21J01 S	Actual
Well Status (Active, Standby, Inactive)	Inactive	Actual
WELL LOCATION		
Latitude	34.412693	Actual
Longitude	-118.555498	Actual
Ground Surface Elevation (ft above Mean Sea Level)	1152	Estimate
Street Address	24050 Valencia Boulevard	Actual
Nearest Cross Street	McBean Parkway	Actual
City	Valencia	Actual
County	Los Angeles	Actual
* Neighborhood/Surrounding Area *(see Note 1)*	Co, Re	Actual
Site plan on file? ("YES" or "NO")	YES	Estimate
DWR Ground Water Basin	Santa Clara River Valley	Actual (TurboSWAP)
DWR Ground Water Sub-basin	Santa Clara River Valley East	Actual (TurboSWAP)
SANITARY CONDITIONS		
** Distance to closest Sewer Line, Sewage Disposal, Septic Tank (ft)	118	Estimate
Distance to Active Wells (ft)	~2,000	Estimate
Distance to Abandoned Wells (ft)	~1,850	Estimate
Distance to Surface Water (ft)	~2,800	Estimate
** Size of controlled area around well (square feet)	10,000	Estimate
* Type of access control to well site *(fencing, building, etc)*	Fencing/Block Wall	Estimate
* Surface Seal? (Concrete slab)("YES", "NO" or "UNKNOWN")	YES	Estimate
* Dimensions of concrete slab: Length(ft)/ Width(ft)/ Thick(in)	50'x30'x6"	Estimate
* Within 100 year flood plain? ("YES", "NO" or "UNKNOWN")	NO	Actual
* Drainage away from well? ("YES" or "NO")	YES	Estimate
ENCLOSURE/HOUSING		
Enclosure Type *(building, vault, none, etc.)*	Fence/Block Wall	Estimate
Floor material	Concrete; Compacted Aggregate	Estimate
Located in Pit? ("YES" or "NO")	NO	Estimate
Pit depth (feet) (if applicable)	N/A	Estimate
WELL CONSTRUCTION		
Date drilled	1989	Estimate
Drilling Method	Mud Rotary	Estimate
Depth of Bore Hole (feet below ground surface)	1,690	Actual
Casing Beginning Depth/Ending Depth(ft below surface); 2nd Casing Beginning Depth/Ending Depth; 3rd Casing, etc.	0-480; 480-1,690	Actual
Casing Diameter (inches); 2nd Casing Diameter; 3rd Casing, etc.	18; 16	Actual
Casing Material; 2nd Casing Material; 3rd Casing, etc.	5/16" Steel	Actual

WELL DATA SHEET (Page 2 of 3)

Complete as much information as possible. Leave blank if information is not available, use N.A. if not applicable.		
** Indicates items required for Source Water Assessment*		
*** Indicates additional items required for assessments and Ground Water Rule*		
	(separate multiple entries in field with semi-colon)	Actual, Estimated or Default?
WELL CONSTRUCTION (continued)		
Conductor casing used? ("YES", "NO" or "UNKNOWN") *(See Note 2)*	YES	Actual
Conductor casing removed? ("YES", "NO" or "UNKNOWN")	NO	Actual
* Depth to highest perforations/screens (ft below surface) (or "UNKNOWN")	540	Actual
Screened Interval Beginning Depth/Ending Depth (ft below surface); 2nd Screened Interval Beg. Depth/Ending Depth; 3rd Screened Interval, etc.	540-570; 610-690; 720-750; 780-940; 960-1,000; 1,060-1,160; 1,220-1,300; 1,350-1,380; 1,420-1,490; 1,540-1,670	Actual
* Total length of screened interval (ft) *(default = 10% pump capacity in gpm)* (or "UNKNOWN")	1,130	Actual
* Annular Seal?("YES", "NO" or "UNKNOWN") *(See Note 3)*	YES	Actual
* Depth of Annular Seal (ft)	460	Actual
Material of Annular Seal *(cement grout, bentonite, etc.)*	Cement Grout	Actual
Gravel pack, Depth to top (ft below ground surface)	460	Actual
Total length of gravel pack (ft)	1,248	Actual
AQUIFER		
* Aquifer Materials *(list all that apply: sand, silt, clay, gravel, rock, fractured rock)*	Sands, silts, clays, and gravels	Estimate
* Effective porosity (decimal percent) *(default = 0.2)* (or "UNKNOWN")	0.2	Actual
* Confining layer (Impervious Strata) above aquifer? ("YES", "NO" or "UNKNOWN")	YES	Actual
Thickness of confining layer, if known (ft)	100-300	Estimate
Depth to confining layer, if known (ft below ground)	200-400	Estimate
* Static water level (ft below ground surface)	136	Estimate
Static water level measurement: Date/Method	Feb. 2016/Monitoring Well	Actual
Pumping water level (ft below ground surface)	Unknown	
Pumping water level measurement: Date/Method	Unknown	
WELL PRODUCTION		
Well Yield (gpm)	2,400	Estimate
Well Yield Based On (i.e., pump test, etc.)	Operating Plan	Estimate
Date measured	N/A	Estimate
Is the well metered? ("YES" or "NO")	YES	Estimate
Production (gallons per year)	946,000,000	Estimate
Frequency of Use (hours/year)	6,570	Estimate
Typical pumping duration (hours/day)	24	Estimate
PUMP		
Make	US Motor	Actual
Type	Deep Well Turbine	Actual
Size (hp)	300	Actual
* Capacity (gpm)	2,400	Actual
Depth to suction intake (ft below ground surface)	360	Actual
Lubrication Type	Water	Actual
Type of Power: *(i.e., electric, diesel, etc.)*	Electric	Actual
Auxiliary power available? ("YES" or "NO")	No	Actual
Operation controlled by: *(i.e., level in tank, pressure, etc.)*	Level in Tank	Actual
Pump to Waste capability? ("YES" or "NO")	Yes	Actual
Discharges to: *(i.e., distribution system, storage, etc.)*	Distribution System	Actual
REMARKS AND DEFECTS (use additional sheets as necessary)		

WELL DATA SHEET (Page 3 of 3)

Complete as much information as possible. Leave blank if information is not available, use N.A. if not applicable.		
** Indicates items required for Source Water Assessment*		
*** Indicates additional items required for assessments and Ground Water Rule*		
NOTES:		
1. Neighborhood/Surrounding Area (list all that apply): A= Agricultural, Ru = Rural, Re = Residential, Co = Commercial, I = Industrial, Mu = Municipal, P = Pristine, O = Other		
2. Conductor Casing - Oversized casing used to stabilize bore hole during well construction. Should be removed during installation of annular seal.		
3. Annular Seal - Seal of grout in the space between the well casing and the wall of the drilled hole. Sometimes called "sanitary seal".		
Please Note:		
The information on this Well Data Sheet is considered confidential. To allow the information to be included		
in the permit report, or made available subject to a public information act request, the waiver clause below has		
to be signed and dated by the owner (public water system). In lieu of this signature, the WDS has to be		
retained in a confidential file, or the information shown in the shaded rows has to be "blacked out."		
I/We, *(Name)*_____, ***certify that I/We am/are the present owners of the well described on this well data sheet. I/We have reviewed the information presented on this well data sheet and I/We take no exception to having the information included in the Department of Health Services' Engineering Report. I/We understand that by including the well data sheet in the Engineering Report, it will be part of a public document that can be reviewed and copied subject to the public information act request.***		
_____ _____		
(Signature) (Date)		

Drinking Water Source Assessment and Protection (DWSAP) Program

Physical Barrier Effectiveness Checklist - Groundwater Source

District Name Los Angeles Central District **District No.** 16 **County** Los Angeles

System Name Valencia Water Company **System No.** 1910240

Source Name V-201 **Source No.** 020 **PS Code** 1910240-020

Completed by Kennedy/Jenks Consultants **Date** August 2016

Parameter		Possible Points	This Source	Score
A. Type of Aquifer **Confinement**				
1. Unconfined, Semi-confined, Fractured Rock, Unknown Aquifer		0		
2. Confined		50	X	**50**
B. Aquifer Material (Unconfined Aquifers) (N/A) **Type of material within aquifer**				
1. Porous Media (Interbedded sands, silts, clays, gravels) with continuous clay layer minimum 25' thick above water table within Zone A		20		
2. Porous Media (Interbedded sands, silts, clays, gravels)		10		
3. Fractured rock (Low Physical Barrier Effectiveness - no further questions required)		0		
C. Pathways of Contamination (All Aquifers) **Presence of Abandoned or Improperly Destroyed Wells**				
1. Present within Zone A (2 year TOT distance)	Yes	0		
	No	5		
	Unknown	0	X	**0**
2. Present within Zone B5 (2 -5 year TOT distance)	Yes	0		
	No	3		
	Unknown	0	X	**0**
3. Present within Zone B10 (5-10 year TOT distance)	Yes	0		
	No	2		
	Unknown	0	X	**0**
D. Static Water Conditions (Unconfined Aquifers) (N/A)				
Depth to Static Water (DTW) **N/A** feet	0 to 20 feet	0		
	20 to 50 feet	2		
	50 to 100 feet	6		
	Greater than 100 feet	10		
	Unknown	0		
E. Well Operation (Unconfined Aquifers) (N/A)				
Depth to Uppermost Perforations (DUP) **540** feet				
Maximum Pumping Rate of Well (Q) **2,400** gallons/minute				
Length of Screened Interval (H) **1,130** feet				
	Less than 5	0		
[(DUP – DTW) / (Q/H)] **N/A**	Between 5 and 10	5		
	Greater than 10	10		
	Unknown	0		

Physical Barrier Effectiveness (PBE)

District Name Los Angeles Central District **District No.** 16 **County** Los Angeles

System Name Valencia Water Company **System No.** 1910240

Source Name V-201 **Source No.** 020 **PS Code** 1910240-020

Completed by Kennedy/Jenks Consultants **Date** August 2016

Parameter		Possible Points	This Source	Score
G. Well Construction (All Aquifers)				
Sanitary Seal (Annular Seal) Depth **460** feet	None or less than 20 feet	0		
	Between 20 and 50 feet	6		
	50 feet or greater	10	X	**10**
	Unknown	0		
Surface Seal (concrete cap)	Not present or improperly constructed	0		
	Watertight, slopes away from well at least 2' laterally in all directions	4	X	**4**
	Unknown	0		
Flooding potential at well site	Subject to localized flooding (i.e. in low area or unsealed pit or vault) or within 100 year flood plain	0		
	Not subject to flooding	1	X	**1**
	Unknown	0		
Security at well site	Not secure	0		
	Secure	5	X	**5**
	Unknown	0		

Maximum Score = 70

Score **70**

Physical Barrier Effectiveness SCORE INTERPRETATION

Point Total	Effectiveness
0 to 35 = Low	(includes all sources in Fractured Rock)
36 to 69 = Moderate	
X 70 to 100 = High	

Possible Contaminating Activities (PCA) Inventory Form – Ground Water

District Name Los Angeles Central District **District No.** 16 **County** Los Angeles

System Name Valencia Water Company **System No.** 1910240

Source Name V-201 **Source No.** 020 **PS Code** 1910240-020

Completed by Kennedy/Jenks Consultants **Date** August 2016

Check the PCA tables that will be used for this drinking water source (assessment must include the "Other" checklist and at least one of the remaining three checklists):

Commercial/Industrial X

Residential/Municipal X

Agricultural/Rural X

Other (required for all) X

Proceed to appropriate checklist or checklists. Indicate whether the PCA is located in the zone by placing a Y (yes), N (no), or U (unknown) in the appropriate boxes.
Example:

Zone A	Zone B5	Zone B10
Y	N	N
N	**Y**	**U**
U	N	N

Risk Ranking of PCAs, where VH = Very High Risk, H = High Risk, M = Moderate Risk, L = Low Risk

PCA Checklist COMMERCIAL/INDUSTRIAL

PCA (Risk Ranking)	PCA in Zone A	PCA in Zone B5	PCA in Zone B10	Comments
Automobile- Body shops (H)	N	N	N	
Automobile- Car washes (M)	N	N	N	
Automobile- Gas stations (VH)	N	N	Y	Sheriff Station
Automobile- Repair shops (H)	N	Y	Y	Sears Auto Center
Boat services/repair/ refinishing (H)	N	N	N	
Chemical/petroleum pipelines (H)	Y	Y	Y	ARCO, Four Corners
Chemical/petroleum processing/storage (VH)	N	N	N	
Dry cleaners (VH)	N	N	N	
Electrical/electronic manufacturing (H)	N	N	N	
Fleet/truck/bus terminals (H)	N	N	N	
Furniture repair/ manufacturing (H)	N	N	N	
Home manufacturing (H)	N	N	N	
Junk/scrap/salvage yards (H)	N	N	N	
Machine shops (H)	N	N	N	
Metal plating/ finishing/fabricating (VH)	N	N	N	
Photo processing/printing (H)	N	N	Y	Picture People
Plastics/synthetics producers (VH)	N	N	N	
Research laboratories (H)	N	N	N	
Wood preserving/treating (H)	N	N	N	
Wood/pulp/paper processing and mills (H)	N	N	N	
Lumber processing and manufacturing (H)	N	N	N	
Sewer collection systems (H, if in Zone A, otherwise L)	Y	Y	Y	
Parking lots/malls (>50 spaces) (M)	Y	Y	Y	Westfield Valencia
Cement/concrete plants (M)	N	N	N	
Food processing (M)	N	N	N	
Funeral services/graveyards (M)	N	N	N	
Hardware/lumber/parts stores (M)	N	N	N	
Appliance/Electronic Repair (L)	N	N	N	
Office buildings/complexes (L)	N	N	N	
Rental Yards (L)	N	N	N	
RV/mini storage (L)	N	N	N	

Note: Additional searches from Google Earth.

PCA Checklist RESIDENTIAL/MUNICIPAL

PCA (Risk Ranking)	PCA in Zone A	PCA in Zone B5	PCA in Zone B10	Comments
Airports - Maintenance/ fueling areas (VH)	N	N	N	
Landfills/dumps (VH)	N	N	N	
Railroad yards/ maintenance/ fueling areas (H)	N	N	N	
Septic systems - high density (>1/acre) (VH if in Zone A, otherwise M)	N	N	N	
Sewer collection systems (H, if in Zone A, otherwise L)	Y	Y	Y	
Utility stations - maintenance areas (H)	N	N	N	
Wastewater treatment plants (VH in Zone A, otherwise H)	N	N	N	
Drinking water treatment plants (M)	N	N	N	
Golf courses (M)	N	N	N	
Housing - high density (>1 house/0.5 acres) (M)	Y	Y	Y	
Motor pools (M)	N	N	N	
Parks (M)	N	N	N	
Waste transfer/recycling stations (M)	N	N	N	
Apartments and condominiums (L)	N	N	N	
Campgrounds/ Recreational areas (L)	N	N	N	
Fire stations (L)	N	Y	N	LA County Fire Station #126
RV Parks (L)	N	N	N	
Schools (L)	N	N	N	
Hotels, Motels (L)	N	N	N	

Note: Additional searches from Google Earth.

PCA Checklist OTHER ACTIVITIES

PCA (Risk Ranking)	PCA in Zone A	PCA in Zone B5	PCA in Zone B10	Comments
NPDES/WDR permitted discharges (H)	N	N	Y	Sheriff's Station
Underground Injection of Commercial/Industrial Discharges (VH)	N	N	N	
Historic gas stations (VH)	N	N	Y	Corner of Valencia Blvd and Magic Mtn Pkwy
Historic waste dumps/ landfills (VH)	N	N	N	
Illegal activities/ unauthorized dumping (H)	U	U	U	
Injection wells/ dry wells/ sumps (VH)	N	N	N	
Known Contaminant Plumes (VH)	Y	Y	Y	
Military installations (VH)	N	N	N	
Mining operations - Historic (VH)	N	N	N	
Mining operations - Active (VH)	N	N	N	
Mining - Sand/Gravel (H)	N	N	N	
Wells - Oil, Gas, Geothermal (H)	N	N	N	
Salt Water Intrusion (H)	N	N	N	
Recreational area - surface water source (H)	N	N	N	
Underground storage tanks - Confirmed leaking tanks (VH)	U	U[1]	Y	Sheriff's Station (In Remediation – RB# R-10092), [1]Newhall Land and Farming (Closed 2009)
Underground storage tanks - Decommissioned - inactive tanks (L)	U	U	U	
Underground storage tanks - Non-regulated tanks (tanks smaller than regulatory limit) (H)	U	U	U	
Underground storage tanks - Not yet upgraded or registered tanks (H)	U	U	U	
Underground storage tanks - Upgraded and/or registered - active tanks (L)	N	Y	Y	City Hall, Newhall Land and Farming
Above ground storage tanks (M)	N	N	N	
Wells - Water supply (M)	N	N	Y	Former Well V-157
Construction/demolition staging areas (M)	N	N	N	
Contractor or government agency equipment storage yards (M)	N	N	N	
Dredging (M)	N	N	N	
Transportation corridors - Freeways/state highways (M)	N	N	N	
Transportation corridors - Railroads (M)	N	N	N	
Transportation corridors - Historic railroad right-of-ways (M)	N	N	N	
Transportation corridors - Road Right-of-ways (herbicide use areas) (M)	N	N	N	
Transportation corridors - Roads/ Streets (L)	Y	Y	Y	
Hospitals (M)	Y	Y	N	Children's Hospital LA, Santa Clarita Pediatrics
Storm Drain Discharge Points (M)	N	N	N	
Storm Water Detention Facilities (M)	N	N	N	

Note: Additional searches from Google Earth

PCA Checklist OTHER ACTIVITIES (continued)

PCA (Risk Ranking)	PCA in Zone A	PCA in Zone B5	PCA in Zone B10	Comments
Artificial Recharge Projects - Injection wells (potable water) (L)	N	N	N	
Artificial Recharge Projects - Injection wells (non-potable water) (M)	N	N	N	
Artificial Recharge Projects - Spreading Basins (potable water) (L)	N	N	N	
Artificial Recharge Projects - Spreading Basins (non-potable water) (M)	N	N	N	
Medical/dental offices/clinics (L)	N	N	N	
Veterinary offices/clinics (L)	N	N	N	
Surface water - streams/ lakes/rivers (L)	N	N	N	
Wells - monitoring, test holes (L)	N	N	N	

Note: Additional searches from Google Earth.

PCA Checklist AGRICULTURAL/RURAL

PCA (Risk Ranking)	PCA in Zone A	PCA in Zone B5	PCA in Zone B10	Comments
Grazing (> 5 large animals per acre) (H in Zone A, otherwise M)	N	N	N	
CAFOs (VH in Zone A, otherwise H)	N	N	N	
Animal Feeding Operations (VH in Zone A, otherwise H)	N	N	N	
Other Animal operations (H in Zone A, otherwise M)	N	N	N	
Farm chemical distributor/ application service (H)	N	N	N	
Farm machinery repair (H)	N	N	N	
Septic systems – low density (<1/acre) (H in Zone A, otherwise L)	N	N	N	
Lagoons / liquid wastes (H)	N	N	N	
Machine shops (H)	N	N	N	
Pesticide/fertilizer/ petroleum storage & transfer areas (H)	N	N	N	
Agricultural Drainage (H in Zone A, otherwise M)	N	N	N	
Wells - Agricultural/ Irrigation (H)	N	N	N	
Managed Forests (M)	N	N	N	
Crops, irrigated (M)	N	N	N	
Fertilizer, Pesticide/ Herbicide Application (M)	N	N	N	
Sewage sludge/biosolids application (M)	N	N	N	
Crops, nonirrigated (L) (includes drip-irrigated crops)	N	N	N	

Note: Additional searches from Google Earth.

VULNERABILITY RANKING MASTER LIST - Ground Water					
District Name:	Los Angeles Central	District No.	16	County	Los Angeles
System Name:	Valencia Water Company	System No.	1910240		
Source Name:	V-201	Source No.	20	PS Code:	1910240-020
	PCA	PCA Risk Points	Zone Points	PBE Points	Vulnerability Score
		VH = 7	A = 5	L = 5	
		H = 5	B5 = 3	M = 3	Risk + Zone + PBE points
		M = 3	B10 = 1	H = 1	
Zone	PCA (Risk)	L = 1	Unknown = 0		
A	Known Contaminant Plumes (VH)	7	5	1	13
A	Chemical/petroleum pipelines (H)	5	5	1	11
A	Sewer collection systems- Comm/Indus (H, if in Zone A, otherwise L	5	5	1	11
A	Sewer collection systems- Residential (H, if in Zone A, otherwise L)	5	5	1	11
B5	Known Contaminant Plumes (VH)	7	3	1	11
A	Parking lots/malls (>50 spaces) (M)	3	5	1	9
A	Housing - high density (>1 house/0.5 acres) (M)	3	5	1	9
A	Hospitals (M)	3	5	1	9
B5	Chemical/petroleum pipelines (H)	5	3	1	9
B10	Automobile- Gas stations (VH)	7	1	1	9
B10	Historic gas stations (VH)	7	1	1	9
B10	Known Contaminant Plumes (VH)	7	1	1	9
B10	USTs- Confirmed leaking tanks (VH)	7	1	1	9
Unknown	USTs- Confirmed leaking tanks (VH)	7	0	1	8

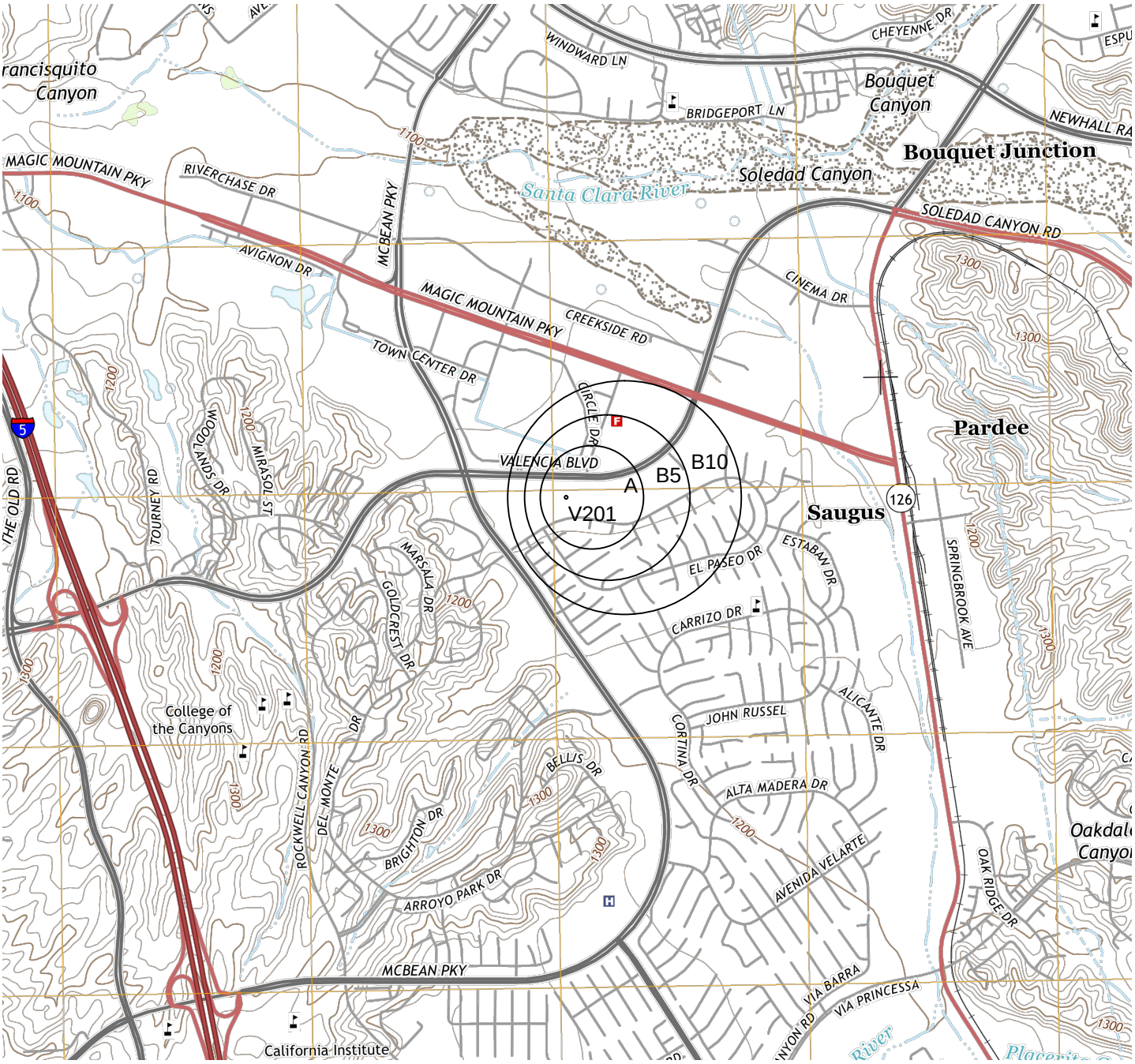
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH
DIVISION OF DRINKING WATER

MINIMUM HORIZONTAL DISTANCE

System Name: Valencia Water Company **System No**.: 1910240
Well Name: V201
Source of Information: System Records, FEMA, Field Survey
Date collected: October 2016

1. SEWERAGE FACILITIES	**MINIMUM FEET**	**ACTUAL FEET**
a. Sanitary Sewer and House Laterals	50	None within 50
b. Sewer Manhole	100	None within 100
c. Sewage Pump Station	100	None within 100
d. Sewage Treatment Plant	150	None within 150
e. Sewage Lagoons	500	None within 500
f. Lined Effluent Discharge Channel	200	None within 200
g. Sewage Irrigation Areas	500[2]	None within 500
h. Sewage Spreading Areas	500	None within 500
i. Sewage Percolation/Evaporation Ponds	500	None within 500
j. Watertight Septic Tank	100	None within 100
k. Horizontal Leach Lines	100	None within 100
l. Seepage Pit and Cesspool	150[1]	None within 150
m. Pit Privy	50	None within 50
n. Vault Privy (Pumpout)	50	None within 50
o. Storm sewers	50	None within 50
p. Drainage Channel	50	None within 50
q. Flood Plain (100-year flood)	Above high water line	Not within 100-yr Flood Plain
2. INDUSTRIAL FACILITIES		
a. Barnyard, feedlot, stable and pasture areas	100	None within 100
b. Industrial waste sewers, holding tanks, ponds and storage areas	*	None identified
c. Petroleum storage tanks (sub-surface)	100[3]	None within 100
d. Petroleum transmission mains	500[3]	None identified within 500
3. SOLID WASTE DISPOSAL SITE		
Class 1	*	None identified
Class 2	2,000	None identified
Class 3	500	None identified
4. OTHER		
a. Dwelling	25	None within 25
b. Pond, Lake, Stream	50-100	None within 100
c. Cathodic Protection Well:		
- Cased	50	None identified
- No casing	200	None identified
g. Abandoned & Destroyed Wells per DWR Bulletins 74-81 and 74-90	None required	None identified
Remarks:	* Facilities must be identified & evaluated on a case by case basis	

1. Bottom of pit shall be more than 10 feet above groundwater level.
2. The sewage-irrigated area from well shall be plainly marked preferably by a fence.
3. Underground storage and transmission facilities shall be pressure tested annually.



SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2

1000 500 0 METERS 1000 2000

1 0.5 0 1

MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

FEET

N

Kennedy/Jenks Consultants

STATE WATER CONTROL BOARD
DIVISION OF DRINKING WATER
DWSAP

GROUNDWATER PROTECTION ZONES V201

FIGURE 1

Q:\SanFrancisco\IS-Proj\2012\1265013.01_VWC-V201\dwsap\Reference\USGS.dwg 8/19/2016 2:53 PM ALEXANDRA MCMATH

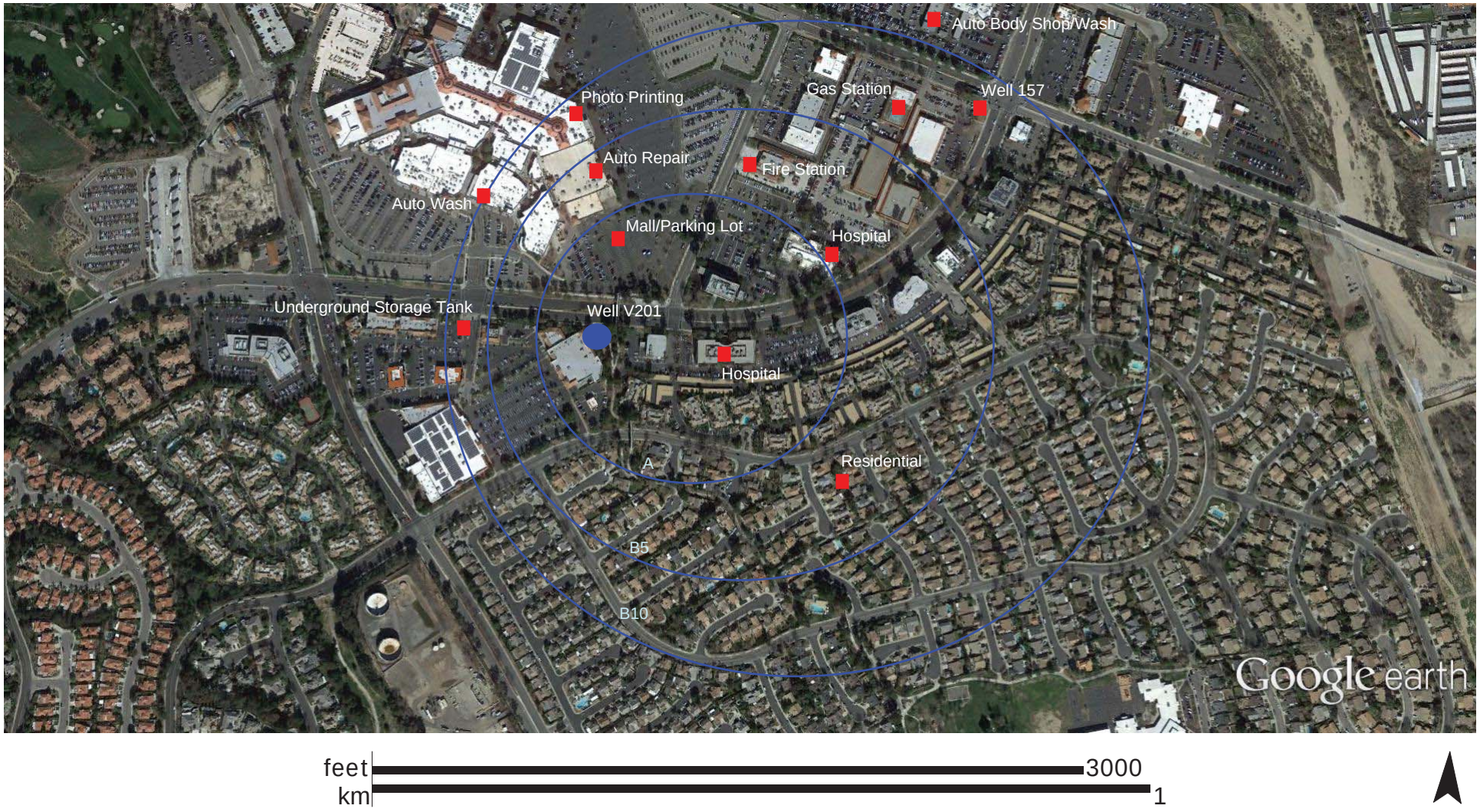

Auto Body Shop/Wash
Photo Printing
Gas Station
Well 157
Auto Repair
Fire Station
Auto Wash
Mall/Parking Lot
Hospital
Underground Storage Tank
Well V201
Hospital
A
Residential
B5
B10
Google earth
feet
3000
km
1

Figure 2