

Drinking Water Source Assessment Potentially Contaminating Activity Update

Water System

Soquel Creek Water District

Water Source

San Andreas Well

Update Date

March, 2015

California SWRCB - DDW
Drinking Water Field Operations Branch
DDW Monterey District

District No.	05
System No.	4410017
Source No.	34
PS Code	4410017-034

Vulnerability Summary

District Name: DDW Monterey District	District No.: 05	County : Santa Cruz
System Name: Soquel Creek Water District	System No.: 4410017	
Source Name: San Andreas Well	Source No.: 034	PS Code: 4410017-034

Completed by: **Hydrometrics WRI**

Date: **March 25, 2015**

THE FOLLOWING INFORMATION MUST BE INCLUDED IN THE SYSTEM CONSUMER CONFIDENCE REPORT

A source water assessment was conducted for the San Andreas Well of the Soquel Creek Water District water system in March, 2015.

The source is considered most vulnerable to the following activities not associated with any detected contaminants:

- Chemical/petroleum processing/storage
- NPDES/WDR permitted discharges
- Drinking water treatment plants
- Storm water detention facility
- Schools
- Transportation Corridors- Roads/ Streets
- Transportation Corridors- Freeways/state highways
- Wells – water supply

The source is considered most vulnerable to the following activities associated with detected contaminants:

- Septic systems (nitrate)

Discussion of Vulnerability

Despite no other contaminants being detected in the water supply, the source is still considered vulnerable to some activities located above the drinking water source.

- On-site storage and use of sodium hypochlorite (12.5%) for chlorination at both the San Andreas and Bonita wells is a potential source of contamination. The sodium hypochlorite at both sites is stored in a double contained polyethylene tank, with issued HazMat permits from the County of Santa Cruz Environmental Health Services, who perform annual inspections of the tank. Additionally, the San Andreas well stores and uses ferric chloride and sodium bisulfite onsite to treat Chromium 6 at its demonstration plant. Diesel for a generator at the San

Drinking Water Source Assessment and Protection (DWSAP) Program

Andreas well is stored in a tank that is inspected annually by the County of Santa Cruz Environmental Health Services.

- Septic systems in unsewered area may introduce septage into the vadose zone that can infiltrate down to groundwater and may contain: coliform and non-coliform bacteria, viruses, nitrates, heavy metals, synthetic detergents, cooking and motor oils, bleach, pesticides, paints, paint thinner, swimming pool chemicals, septic tank cleaner chemicals, and elevated concentrations of chloride, sulfate, calcium, magnesium, potassium, and phosphate.
- NPDES discharges permitted for both the San Andreas and Bonita wells' pump to waste are identified as a PCA. The risk associated with these permitted discharge is very low because the water discharged is pumped directly from the underlying groundwater aquifer is generally high quality water.
- The San Andreas well's demonstration drinking water treatment plant uses treatment chemicals onsite that are potential contaminants. These chemicals are sodium hypochlorite (12.5%), ferric chloride and sodium bisulfite.
- The Bonita pond storm water detention facility poses a low risk to the San Andreas well's groundwater source. The pond collects surface water from the surrounding catchment which is mostly natural land.
- Schools can store and use gasoline and heating oils. Other contaminants include machinery/vehicle serving wastes, general building wastes, and pesticides.
- Emissions from exhausts, leaking hydrocarbons, chemical spills associated with accidents involving hazardous transportation vehicles, and flares used by law enforcement are potential contaminants that could be introduced into the environment along transportation corridors.
- A private well located within the 5-year capture zone, is a potential conduit for contamination to enter the underlying aquifers if not secured. The risk for contamination via this well is dependent on the well's sanitary seal.

Chromium 6 found in the San Andreas well is naturally occurring in the Aromas formation in which the well is screened. A number of other wells in the area have concentrations of Chromium 6 above the MCL.

Drinking Water Source Assessment and Protection (DWSAP) Program

A copy of the complete assessment may be viewed at:

California DDW
Drinking Water Field Operations Branch
1 Lower Ragsdale, Building 1, Suite 120
Monterey, CA 93940

You may request a summary of the assessment be sent to you by contacting:

Kim Adamson, General Manager
Soquel Creek Water District
5180 Soquel Drive
PO Box 1550
Capitola, CA 95010-1550
(831) 475-8500

Drinking Water Source Assessment and Protection (DWSAP) Program

Vulnerability Ranking - Groundwater

District Name: **DDW Monterey District** District No.: **05** County : **Santa Cruz**
 System Name: **Soquel Creek Water District** System No.: **4410017**
 Source Name: **San Andreas Well** Source No.: **034** PS Code: **4410017-034**

Completed by: **Hydrometrics WRI** Date: **March 25, 2015**

Zone	PCA (Risk Ranking)	PCA Risk Points	Zone Points	PBE Points	Vulnerability Score
		VH = 7 H = 5 M = 3 L = 1	A = 5 B5 = 3 B10 = 1 Unknown=0	L = 5 M = 3 H = 1	Risk + Zone + PBE points
A	Chemical/petroleum processing/storage (VH)	7	5	3	15
A	Septic systems – low density (<1/acre) (H in Zone A, otherwise L)	5	5	3	13
A	NPDES/WDR permitted discharges (H)	5	5	3	13
A	Drinking water treatment plants (M)	3	5	3	11
A	Storm Water Detention Facilities (M)	3	5	3	11
A	Schools (L)	1	5	3	9
A	Transportation Corridors- Roads/ Streets (L)	1	5	3	9
B5	Wells – Water supply (M)	3	3	3	9
B5	Transportation Corridors- Freeways/state highways (M)	3	3	3	9
B5	Storm Water Detention Facilities (M)	3	3	3	9
B10	NPDES/WDR permitted discharges (H)	5	1	3	9
B5	Septic systems – low density (<1/acre) (H in Zone A, otherwise L)	1	3	3	7
B5	Transportation Corridors- Roads/ Streets (L)	1	3	3	7
B10	Septic systems - high density (>1/acre) (VH if in Zone A, otherwise M)	3	1	3	7
B10	Housing - high density (>1 house/0.5 acres) (M)	3	1	3	7
B10	Agricultural Drainage (H in Zone A, otherwise M)	3	1	3	7
B10	Crops, irrigated (M)	3	1	3	7
B10	Above ground storage tanks (M)	3	1	3	7
B10	Wells – Water supply (M)	3	1	3	7
B10	Transportation Corridors- Freeways/state highways (M)	3	1	3	7
B10	Sewer collection systems- Residential (H, if in Zone A, otherwise L)	1	1	3	5

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Zone	PCA (Risk Ranking)	PCA Risk Points	Zone Points	PBE Points	Vulnerability Score
		VH = 7 H = 5 M = 3 L = 1	A = 5 B5 = 3 B10 = 1 Unknown=0	L = 5 M = 3 H = 1	Risk + Zone + PBE points
B10	Septic systems – low density (<1/acre) (H in Zone A, otherwise L)	1	1	3	5
B10	Transportation Corridors- Roads/ Streets (L)	1	1	3	5
B10	Wells – monitoring, test holes (L)	1	1	3	5

Explanation of Source Water Assessments and Definition of Terms

A source water assessment was recently completed for this drinking water source. The assessment identifies the vulnerability of the drinking water supply to contamination from typical human activities. The assessments are intended to facilitate and provide the basic information necessary for a local community to develop a program to protect the drinking water supply.

A summary of the complete assessment is provided here. For more information, contact the agency or individual that prepared the assessment (shown in summary). You may also contact the local Department of Public Health Drinking Water Field Operations Branch district office (<http://www.cdph.ca.gov/programs/Documents/DDWEM/OriginalDistrictMapCDPH.pdf>).

Additional information about assessments can be found at: <http://www.cdph.ca.gov/certlic/drinkingwater/Pages/DWSAP.aspx>

Terms used in this summary:

Source Water Assessment: An assessment is an evaluation of a drinking water source to determine the "possible contaminating activities" (PCAs) to which the source is most vulnerable. The assessment includes: a delineation of protection zones around the source; an inventory of the types of PCAs within the source protection zones; and an analysis to determine the PCAs to which the source is most vulnerable. The information is compiled into a report that includes a map, calculations, checklists, and a summary of the findings.

Possible Contaminating Activity (PCA): A PCA is a current or historic human activity that is an actual or potential origin of contamination for a drinking water source. PCAs include activities that use, store, produce or dispose of chemicals that have the potential to contaminate drinking water supplies. There are 110 types of PCAs in the California DWSAP program.

PCA Risk Ranking: Each type of PCA is assigned a risk ranking (Very High, High, Moderate, or Low). The risk ranking is based on the contaminant(s) typically associated with that PCA, the likelihood of release from that type of facility based on historical experience, and the mobility of the contaminant(s).

PCA Inventory: The PCA inventory is a review using local knowledge, databases, and on-site evaluations to identify the occurrence and approximate location of PCAs in the source water zones. The inventory for the basic DWSAP assessments is a presence-absence review. If a type of PCA occurs in a zone, a "Yes" is noted in the inventory for that zone, regardless of whether there is one or many of that type of facility within the zone. If a PCA has been associated with a contaminant detected in the water supply, a notation is made in the PCA inventory.

Source Water Zones or Areas: These are areas located around and typically adjacent to a drinking water source that have been identified as initial protection areas.

For groundwater sources, there are typically three concentric circular zones around a source (Zones A, B5 and B10). The sizes of the are determined based on characteristics of the source. PCAs located in the inner Zone A are considered more of a risk to the water supply than PCAs located in the middle Zone B5. Similarly, PCAs located in Zone B5 are considered more of a risk than PCAs located in the outer Zone B10.

For surface water sources, the watershed is defined as the overall protection area, and as an option, zones are defined closer to the source. Two types of zones are typically established. Zone A is the area within and near the surface water body and its tributaries. Zone B is an area within 2,500 feet of the intake, not including areas in Zone A. For surface water sources, PCAs located in Zone A are considered a greater threat than PCAs located in Zone B. PCAs located on the watershed outside of the zones are considered to be of less risk to the water supply. If zones have not been defined, PCAs are considered to be of equal risk regardless of location on the watershed.

Physical Barrier Effectiveness (PBE): The PBE for a source is an evaluation of the ability of the source and the surrounding area to prevent the movement of contaminants into the source. The PBE is based on the construction and operation features of the source, and the characteristics of the surrounding area. A source is assigned a PBE of Low, Moderate or High, where High indicates that the physical barriers of the source and site are very effective in preventing the movement of contaminants. By design, typical groundwater sources will have Moderate PBE, while typical surface water sources will have Low PBE. This is due to the greater exposure of surface water sources to contamination.

Vulnerability Ranking: The vulnerability ranking is a summary of the PCAs identified in the assessment prioritized by the risk that they pose to the water supply. The prioritization is based on the risk associated with a PCA, the zone in which it occurs, and the PBE of the source. In the vulnerability ranking, points are assigned as follows:

PCA risk ranking	Very High = 7	High = 5	Moderate = 3	Low = 1	Unknown in any zone = 0
Zone (Groundwater)	A = 5	B5 = 3	B10 = 1		
Zone (Surface water with zones)	A = 5	B = 3	Watershed = 1		
Zone (Surface water without zones)	Watershed = 5				
Physical Barrier Effectiveness	Low = 5	Moderate = 3	High = 1		

The points for each type of PCA in each zone are totaled to give a vulnerability score, and the PCAs are ranked in order from the highest score to the lowest score. PCAs associated with detected contaminants are ranked at the top, regardless of vulnerability score. By definition, groundwater sources are not considered vulnerable to PCAs with scores less than 8, and surface water sources are not considered vulnerable to PCAs with scores less than 11. It should be noted that the vulnerability ranking scores do not have a direct quantitative value. Rather, the points are used only to relatively rank the types of PCAs for an individual source.

Note: Some of the summaries do not include a vulnerability ranking. If the assessment was done on paper and the details were not entered into the database, the vulnerability ranking is not available here. In addition, alternate methods of determining vulnerability were allowed in some cases, and the vulnerability ranking is not in the database.

Vulnerability Summary: The source is considered most vulnerable to the PCAs with the highest score, and to PCAs associated with detected contaminants. These PCAs are noted in the vulnerability summary. Further details or discussion may be provided in the vulnerability discussion.