

Drinking Water Source Assessment

Water System

Zone 7 Water Agency

Alameda County

Water Source

CHAIN OF LAKES WELL No. 1 (3S/1E 10 K3)-

Assessment Date

May, 2008

California Department of Health Services
Drinking Water Field Operations Branch
Zone 7 Water Agency

| | |
|---------------------|--------------------|
| District No. | B7 |
| System No. | 0110010 |
| Source No. | 023 |
| PS Code | 0110010-023 |

Assessment Summary

| | | | | | |
|----------------------|-------------------------------------|---------------------|----------------|----------------|------------------------------|
| District Name | <u>Zone 7 Water Agency</u> | District No. | <u>B7</u> | County | <u>Alameda</u> |
| System Name | <u>Zone 7 Water Agency</u> | System No. | <u>0110010</u> | | |
| Source Name | <u>GRAVEL PITS WELL 1 - PENDING</u> | Source No. | <u>023</u> | PS Code | <u>0110010-023</u> |
| Completed by | | | | | <u>James Witty</u> |
| | | | | | Date <u>May, 2008</u> |

According to DHS records, this Source is Groundwater. This Assessment was done using the Default Groundwater System Method.

Description of System and Source

The Zone 7 Water Agency (Zone 7) located in Alameda County supplies treated drinking water to retailers in Pleasanton, Livermore, Dublin, and the Dougherty Valley area. Zone 7 supplies drinking water to nearly 200,000 people in its service area.

The source water for Zone 7 is comprised of a mixture of surface water and groundwater. The surface water is comprised of State Water Project Water imported through the Sacramento and San Joaquin River Delta and local rain water captured and stored in Del Valle Reservoir. The groundwater source is the Livermore-Amador Valley Basin which is subdivided into fourteen (14) sub basins. The area of the Basin is approximately 42,000 acres. The Livermore-Amador Valley Basin stores natural recharge from precipitation and surface water courses in the valley that have head waters in the uplands surrounding the valley. Zone 7 currently employs artificial recharge to the basin by releasing surface water supplies into Arroyos in the basin. There are multiple land uses in the basin, including agricultural, industrial, municipal, and undeveloped. These land uses, and especially the water use associated with them, can affect groundwater quality and quantity.

The Chain of Lakes Well Field is located in the center of the Amador sub basin, a portion of the Main basin consisting of the highest quality most productive aquifers in the Livermore-Amador Valley Basin. The Chain of Lakes Well Field will be developed to assist in meeting future water demands and to minimize groundwater drawdown in sub basins currently being utilized for the regions water supply.

Assessment Procedures

ECO:LOGIC Engineering conducted the assessment of the source, Chain of Lakes Well No. 1, for the Zone 7 Water Agency. The assessment was based on multiple sources of information including the following:

Seasonal groundwater elevation contour maps of the Livermore-Amador Valley for the period of 2003 through 2007.

Lithologic cross sections developed from borehole logs.

Pumping Test data for the Gravel Pits Exploratory Well (No. 3S/1E 14 D2), Chain of Lakes Well No. 1 (3S/1E 10 K3), and Chain of Lakes Well No. 2 (3S/1E 11 M3).

Lithologic and Geophysical logs of the Gravel Pits Monitoring Well (No. 3S/1E 10 K2), Chain of Lakes Well No. 1 (3S/1E 10 K3), and Chain of Lakes Well No. 2 (3S/1E 11 M3).

Design Specifications for Chain of Lakes Well Numbers 1 and 2.

The Zone 7 Water Agency Well Master Plan.

The 2006 Zone 7 Water Agency Groundwater Management Plan.

Environmental Database Records Search, Conducted July 2007 by EDR, Inc.

Historical aerial photography .

Assessment Summary

District Name Zone 7 Water Agency District No. B7 County Alameda

System Name Zone 7 Water Agency System No. 0110010

Source Name GRAVEL PITS WELL 1 - PENDING Source No. 023 PS Code 0110010-023

Completed by James Witty Date May, 2008

Contents of this Assessment

- Yes No Assessment Summary
- Yes No Vulnerability Summary
- Yes No Source Location Form
- Yes No Delineation of Water Protection Zones
- 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 SummaryDistrict Name Zone 7 Water Agency District No. B7 County AlamedaSystem Name Zone 7 Water Agency System No. 0110010Source Name GRAVEL PITS WELL 1 - PENDING Source No. 023 PS Code 0110010-023Completed by James Witty Date May, 2008**THE FOLLOWING INFORMATION MUST BE INCLUDED IN THE SYSTEM CONSUMER CONFIDENCE REPORT**

A source water assessment was conducted for the GRAVEL PITS WELL 1 - PENDING
of the Zone 7 Water Agency water system in May, 2008

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

- Mining operations - Active
- Mining operations - Historic

Discussion of Vulnerability

Although no contaminants have been detected in the groundwater in the vicinity of the Chain of Lakes Wells, the source is vulnerable to activities in the area. The greatest risk to the source are the historic and active mining operations in the area. Since the mining operations are for sand and gravel, there is minimal introduction of contaminants to produce the final product. However, the processing of the aggregates could concentrate existing elements in wash water and tailings that could pose a threat to water quality. The source is also susceptible to wells in the capture zone which may provide conduits for surface contamination to reach the underlying aquifer. The majority of the wells in the vicinity have been installed relatively recent and are expected to have been installed in compliance with the California Well Standards. Some wells were completed prior to 1970 and may not have been completed to these standards. The source is also susceptible to underground petroleum storage tanks, and some older tanks have leaked polluting the groundwater. The older tanks responsible for leaks have been closed. Tanks in use are registered and actively monitored.

A copy of the complete assessment may be viewed at:

Zone 7 Water Agency
100 North Canyons Parkway
Livermore, CA 94551

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

Gurpal Deol
Zone 7 Water Quality Manager
(925) 447-0533

Delineation of Water Protection Zones

District Name Zone 7 Water Agency District No. B7 County Alameda

System Name Zone 7 Water Agency System No. 0110010

Source Name GRAVEL PITS WELL 1 - PENDING Source No. 023 PS Code 0110010-023

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Method Used to Delineate Protection Zones

1. Calculated Fixed Radius
- X** 2. **Modified Calculated Fixed Radius** (Attach documentation for direction of ground water flow.)
3. More Detailed Methods
4. Arbitrary Fixed Radius (For use only by or permission of DHS)

| | | |
|----------------------------------|--------------------|---|
| Maximum Pumping Rate of Well (Q) | <u>2,200</u> | gallons/minute |
| | <u>3,549</u> | acre feet/year |
| | <u>154,587,400</u> | cubic feet/year |
| Effective Porosity | <u>0.20</u> | <input checked="" type="checkbox"/> Default Value |
| Screened Interval of Well | <u>265</u> | feet <input type="checkbox"/> Default Value |

| | | |
|--------------------------------|---------------|---------|
| Direction of Ground Water Flow | <u>250.00</u> | degrees |
|--------------------------------|---------------|---------|

| Protection Zone | Calculated Value | Minimum Value | Base Radius | Direction | Modified Distance |
|-------------------------|------------------|---------------|-------------|--------------|-------------------|
| Zone A - 2 Year TOT* | 1,363 Feet | 600 Feet | 1,363 Feet | upgradient | 2,044 Feet |
| | | | | downgradient | 681 Feet |
| Zone B5 - 5 Year TOT* | 2,155 Feet | 1,500 Feet | 2,155 Feet | upgradient | 3,232 Feet |
| | | | | downgradient | 1,077 Feet |
| Zone B10 - 10 Year TOT* | 3,047 Feet | 0 Feet | 3,047 Feet | upgradient | 4,571 Feet |
| | | | | downgradient | 1,524 Feet |

*TOT = Time of Travel

Physical Barrier Effectiveness (PBE)

District Name Zone 7 Water Agency District No. B7 County Alameda

System Name Zone 7 Water Agency System No. 0110010

Source Name GRAVEL PITS WELL 1 - PENDING Source No. 023 PS Code 0110010-023

Completed by James Witty Date May, 2008

| Parameter | Possible Points | This Source | Score |
|---|-----------------------|-------------|-------|
| Type of Aquifer Confinement | | | |
| 1. Unconfined, Semi-confined, Fractured Rock, Unknown Aquifer | 0 | X | 0 |
| 2. Confined | 50 | | |
| Aquifer Material (Unconfined Aquifers) | | | |
| 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 | X | 10 |
| 3. Fractured rock (Low Physical Barrier Effectiveness - no further questions required) | 0 | | |
| 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 | X |
| | Unknown | 0 | |
| 2. Present within Zone B5 (2-5 year TOT distance) | Yes | 0 | X |
| | No | 3 | |
| | Unknown | 0 | |
| 3. Present within Zone B10 (5-10 year TOT distance) | Yes | 0 | X |
| | No | 2 | |
| | Unknown | 0 | |
| Static Water Conditions (Unconfined Aquifers) | | | |
| Depth to Static Water (DTW) <u>50</u> feet | 0 to 20 feet | 0 | |
| | 20 to 50 feet | 2 | |
| | 50 to 100 feet | 6 | X |
| | Greater than 100 feet | 10 | |
| | Unknown | 0 | |
| Well Operation (Unconfined Aquifers) | | | |
| Depth to Uppermost Perforations (DUP) <u>205</u> feet | | | |
| Maximum Pumping Rate of Well (Q) <u>2200</u> gallons/minute | | | |
| Length of Screened Interval (H) <u>265</u> feet | | | |
| [DUP - DTW / Q/H] <u>18.67</u> | Less than 5 | 0 | |
| | Between 5 and 10 | 5 | |
| | Greater than 10 | 10 | X |
| | Unknown | 0 | |

Physical Barrier Effectiveness (PBE)

District Name Zone 7 Water Agency District No. B7 County Alameda

System Name Zone 7 Water Agency System No. 0110010

Source Name GRAVEL PITS WELL 1 - PENDING Source No. 023 PS Code 0110010-023

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| Parameter | Possible Points | This Source | Score |
|---|--|-------------|-------|
| Well Construction (All Aquifers) | | | |
| Sanitary Seal (Annular Seal) Depth <u>197</u> 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 | |

| Score | Effectiveness |
|-----------|---------------|
| 0 to 35 | Low |
| 36 to 69 | Moderate |
| 70 to 100 | High |

Maximum Score = 70

| | |
|---------------|-----------------|
| Score | <u>51</u> |
| Effectiveness | <u>Moderate</u> |

Inventory of Possible Contaminating Activities (PCA Inventory)

District Name Zone 7 Water Agency District No. B7 County Alameda
 System Name Zone 7 Water Agency System No. 0110010
 Source Name GRAVEL PITS WELL 1 - PENDING Source No. 023 PS Code 0110010-023

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| PCA (Risk Ranking) | PCA in Zone A | PCA in Zone B5 | PCA in Zone B10 | * | Comments |
|---|---------------|----------------|-----------------|---|----------|
| Commercial/Industrial Activities | | | | | |
| Automobile - Body shops (H) | N | N | N | | |
| Automobile - Car washes (M) | N | N | N | | |
| Automobile - Gas stations (VH) | N | N | N | | |
| Automobile - Repair shops (H) | N | N | N | | |
| Boat services/repair/refinishing (H) | N | N | N | | |
| Chemical/petroleum pipelines (H) | U | U | U | | |
| Chemical/petroleum processing/storage (VH) | N | Y | Y | | |
| 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 | N | | |
| 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 in Zone A, otherwise L) | N | N | N | | |
| Parking lots/malls [>50 spaces] (M) | N | N | N | | |
| Cement/concrete plants (M) | Y | Y | Y | | |
| 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 | | |

Y = Yes N = No U = Unknown
 * = A contaminant potentially associated with this activity has been detected in the water supply.

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System Name Zone 7 Water Agency System No. 0110010

Source Name GRAVEL PITS WELL 1 - PENDING Source No. 023 PS Code 0110010-023

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| PCA (Risk Ranking) | PCA in Zone A | PCA in Zone B5 | PCA in Zone B10 | * | Comments |
|--|---------------|----------------|-----------------|---|----------|
| Residential/Municipal Activities | | | | | |
| 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 in Zone A, otherwise M) | N | N | N | | |
| Sewer collection systems (H in Zone A, otherwise L) | Y | N | 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) | Y | Y | Y | | |
| Housing - high density [>1 house/0.5 acres] (M) | N | N | 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 | N | N | | |
| RV Parks (L) | N | N | N | | |
| Schools (L) | N | N | N | | |
| Hotels, Motels (L) | N | N | N | | |
| Agricultural/Rural Activities | | | | | |
| Grazing [> 5 large animals or equivalent per acre] (H in Zone A, otherwise M) | N | N | N | | |
| Concentrated Animal Feeding Operations [CAFOs] as defined in federal regulation1 (VH in Zone A, otherwise M) | N | N | N | | |
| Animal Feeding Operations as defined in federal regulation2 (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) | Y | Y | Y | | |

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Inventory of Possible Contaminating Activities (PCA Inventory)

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Completed by James Witty Date May, 2008

| PCA (Risk Ranking) | PCA in Zone A | PCA in Zone B5 | PCA in Zone B10 | * | Comments |
|--|---------------|----------------|-----------------|---|----------|
| Agricultural/Rural Activities | | | | | |
| 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 | Y | Y | | |
| Managed Forests (M) | N | N | N | | |
| Crops, irrigated [Berries, hops, mint, orchards, sod, greenhouses, vineyards, nurseries, vegetable] (M) | Y | Y | Y | | |
| Fertilizer/Pesticide/Herbicide Application (M) | U | U | U | | |
| Sewage sludge/biosolids application (M) | N | N | N | | |
| Crops, nonirrigated [e.g., Christmas trees, grains, grass seeds, hay, pasture] [includes drip-irrigated crops] (L) | Y | Y | Y | | |
| Other Activities | | | | | |
| NPDES/WDR permitted discharges (H) | N | N | N | | |
| Underground Injection of Commercial/Industrial Discharges (VH) | N | N | N | | |
| Historic gas stations (VH) | N | N | N | | |
| Historic waste dumps/landfills (VH) | N | N | N | | |
| Illegal activities/unauthorized dumping (H) | U | U | U | | |
| Injection wells/dry wells/ sumps (VH) | U | U | U | | |
| Known Contaminant Plumes (VH) | N | Y | Y | | |
| Military installations (VH) | N | N | N | | |
| Mining operations - Historic (VH) | Y | Y | Y | | |
| Mining operations - Active (VH) | Y | Y | Y | | |
| Mining - Sand/Gravel (H) | Y | Y | Y | | |
| 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) | N | Y | Y | | |
| Underground storage tanks - Decommissioned - inactive tanks (L) | N | N | Y | | |

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Inventory of Possible Contaminating Activities (PCA Inventory)

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 Source Name GRAVEL PITS WELL 1 - PENDING Source No. 023 PS Code 0110010-023

Completed by James Witty Date May, 2008

| PCA (Risk Ranking) | PCA in Zone A | PCA in Zone B5 | PCA in Zone B10 | * | Comments |
|---|---------------|----------------|-----------------|---|----------|
| Other Activities | | | | | |
| Underground storage tanks - Non-regulated tanks [tanks smaller than regulatory limit] (H) | N | N | N | | |
| Underground storage tanks - Not yet upgraded or registered tanks (H) | N | N | N | | |
| Underground storage tanks - Upgraded and/or registered - active tanks (L) | N | Y | Y | | |
| Above ground storage tanks (M) | N | N | N | | |
| Wells - Water supply (M) | Y | Y | Y | | |
| 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 | Y | | |
| 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) | Y | Y | Y | | |
| Transportation corridors - Roads/Streets (L) | Y | Y | Y | | |
| Hospitals (M) | N | N | N | | |
| Storm Drain Discharge Points (M) | Y | Y | Y | | |
| Storm Water Detention Facilities (M) | N | N | N | | |
| 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) | Y | Y | Y | | |
| Wells - monitoring, test holes (L) | Y | Y | Y | | |

Y = Yes N = No U = Unknown
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Vulnerability Ranking

District Name Zone 7 Water Agency District No. B7 County Alameda

System Name Zone 7 Water Agency System No. 0110010

Source Name GRAVEL PITS WELL 1 - PENDING Source No. 023 PS Code 0110010-023

Completed by James Witty Date May, 2008

| Zone | PCA (Risk Ranking) | * | PCA Risk Points | Zone Points | PBE Points | Vulnerability Score |
|------|--|---|-----------------|-------------|------------|---------------------|
| A | Mining operations - Active (VH) | | 7 | 5 | 3 | 15 |
| A | Mining operations - Historic (VH) | | 7 | 5 | 3 | 15 |
| A | Mining - Sand/Gravel (H) | | 5 | 5 | 3 | 13 |
| A | Septic systems - low density [<1/acre] (H in Zone A, otherwise L) | | 5 | 5 | 3 | 13 |
| A | Sewer collection systems (H in Zone A, otherwise L) | | 5 | 5 | 3 | 13 |
| B5 | Chemical/petroleum processing/storage (VH) | | 7 | 3 | 3 | 13 |
| B5 | Known Contaminant Plumes (VH) | | 7 | 3 | 3 | 13 |
| B5 | Mining operations - Active (VH) | | 7 | 3 | 3 | 13 |
| B5 | Mining operations - Historic (VH) | | 7 | 3 | 3 | 13 |
| B5 | Underground storage tanks - Confirmed leaking tanks (VH) | | 7 | 3 | 3 | 13 |
| A | Cement/concrete plants (M) | | 3 | 5 | 3 | 11 |
| A | Crops, irrigated [Berries, hops, mint, orchards, sod, greenhouses, vineyards, nurseries, vegetable] (M) | | 3 | 5 | 3 | 11 |
| A | Golf courses (M) | | 3 | 5 | 3 | 11 |
| A | Storm Drain Discharge Points (M) | | 3 | 5 | 3 | 11 |
| A | Transportation corridors - Road Right-of-ways [herbicide use areas] (M) | | 3 | 5 | 3 | 11 |
| A | Wells - Water supply (M) | | 3 | 5 | 3 | 11 |
| B5 | Mining - Sand/Gravel (H) | | 5 | 3 | 3 | 11 |
| B5 | Wells - Agricultural/ Irrigation (H) | | 5 | 3 | 3 | 11 |
| B10 | Chemical/petroleum processing/storage (VH) | | 7 | 1 | 3 | 11 |
| B10 | Known Contaminant Plumes (VH) | | 7 | 1 | 3 | 11 |
| B10 | Mining operations - Active (VH) | | 7 | 1 | 3 | 11 |
| B10 | Mining operations - Historic (VH) | | 7 | 1 | 3 | 11 |
| B10 | Underground storage tanks - Confirmed leaking tanks (VH) | | 7 | 1 | 3 | 11 |
| A | Injection wells/dry wells/ sumps (VH) | | 7 | 0 | 3 | 10 |
| B5 | Injection wells/dry wells/ sumps (VH) | | 7 | 0 | 3 | 10 |
| B10 | Injection wells/dry wells/ sumps (VH) | | 7 | 0 | 3 | 10 |
| A | Crops, nonirrigated [e.g., Christmas trees, grains, grass seeds, hay, pasture] [includes drip-irrigated crops] (L) | | 1 | 5 | 3 | 9 |
| A | Surface water - streams/lakes/ rivers (L) | | 1 | 5 | 3 | 9 |

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Vulnerability Ranking

District Name Zone 7 Water Agency District No. B7 County Alameda

System Name Zone 7 Water Agency System No. 0110010

Source Name GRAVEL PITS WELL 1 - PENDING Source No. 023 PS Code 0110010-023

Completed by James Wilty Date May, 2008

| Zone | PCA (Risk Ranking) | * | PCA Risk Points | Zone Points | PDE Points | Vulnerability Score |
|------|---|---|-----------------|-------------|------------|---------------------|
| A | Transportation corridors - Roads/Streets (L) | | 1 | 5 | 3 | 9 |
| A | Wells - monitoring, test holes (L) | | 1 | 5 | 3 | 9 |
| B5 | Cement/concrete plants (M) | | 3 | 3 | 3 | 9 |
| B5 | Crops, irrigated [Berries, hops, mint, orchards, sod, greenhouses, vineyards, nurseries, vegetable] (M) | | 3 | 3 | 3 | 9 |
| B5 | Golf courses (M) | | 3 | 3 | 3 | 9 |
| B5 | Storm Drain Discharge Points (M) | | 3 | 3 | 3 | 9 |
| B5 | Transportation corridors - Road Right-of-ways [herbicide use areas] (M) | | 3 | 3 | 3 | 9 |
| B5 | Wells - Water supply (M) | | 3 | 3 | 3 | 9 |
| B10 | Mining - Sand/Gravel (H) | | 5 | 1 | 3 | 9 |
| B10 | Wells - Agricultural/ Irrigation (H) | | 5 | 1 | 3 | 9 |
| A | Chemical/petroleum pipelines (H) | | 5 | 0 | 3 | 8 |
| A | Illegal activities/unauthorized dumping (H) | | 5 | 0 | 3 | 8 |
| B5 | Chemical/petroleum pipelines (H) | | 5 | 0 | 3 | 8 |
| B5 | Illegal activities/unauthorized dumping (H) | | 5 | 0 | 3 | 8 |
| B10 | Chemical/petroleum pipelines (H) | | 5 | 0 | 3 | 8 |
| B10 | Illegal activities/unauthorized dumping (H) | | 5 | 0 | 3 | 8 |

* = A contaminant potentially associated with this activity has been detected in the water supply.

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 | Zone 7 Water Agency | from DHS database |
| System Number | 0110010 | from DHS database |
| Source of Information (well log, DHS/County files, system, etc) | Well Log | |
| Organization Collecting Information (DHS, County, System, other) | System's Consultant | |
| Date Information Collected/Updated | 2/6/2008 | |
| WELL IDENTIFICATION | | |
| * Well Number or Name | Chain of Lakes Well No 1 (023) | from DHS database |
| * DHS Source Identification Number (FRDS ID No.) | | |
| DWR Well Log on File? ("YES" or "NO") | No | |
| State Well Number (from DWR) | | |
| Well Status (Active, Standby, Inactive) | Active | from DHS database |
| WELL LOCATION | | |
| Latitude | 37° 41' 08.493" | from DHS database |
| Longitude | -121° 50' 46.672" | from DHS database |
| Ground Surface Elevation (ft above Mean Sea Level) | 360 | Estimated |
| Street Address | | |
| Nearest Cross Street | El Charro Road | |
| City | Pleasanton | |
| County | Alameda | |
| * Neighborhood/Surrounding Area (see Note 1) | Ru, Re, I, Mu, O | |
| Site plan on file? ("YES" or "NO") | | In Progress |
| DWR Ground Water Basin | Livermoore Valley | to come from DWR |
| DWR Ground Water Sub-basin | Amador | to come from DWR |
| SANITARY CONDITIONS | | |
| ** Distance to closest Sewer Line, Sewage Disposal, Septic Tank (ft) | 26.5 | 75% Design |
| Distance to Active Wells (ft) | 764 | Estimated from Coordinates |
| Distance to Abandoned Wells (ft) | 4635 | Estimated from Coordinates |
| Distance to Surface Water (ft) | 116 | actual |
| ** Size of controlled area around well (square feet) | 49,670 | Planned |
| * Type of access control to well site (fencing, building, etc) | Fencing | Planned |
| * Surface Seal? (Concrete slab)("YES", "NO" or "UNKNOWN") | Yes | Planned |
| * Dimensions of concrete slab: Length(ft)/ Width(ft)/ Thick(in) | 109.33/52/0.66 | Planned |
| * Within 100 year flood plain? ("YES", "NO" or "UNKNOWN") | No | |
| * Drainage away from well? ("YES" or "NO") | Yes | Planned |
| ENCLOSURE/HOUSING | | |
| Enclosure Type (building, vault, none, etc.) | Building | Planned |
| Floor material | Concrete | Planned |
| Located in Pit? ("YES" or "NO") | No | |
| Pit depth (feet) (if applicable) | | |
| WELL CONSTRUCTION | | |
| Date drilled | November, 2007 | |
| Drilling Method | Mud Rotary | |
| Depth of Bore Hole (feet below ground surface) | 850 | actual |
| Casing Beginning Depth/Ending Depth(ft below surface); 2nd Casing Beginning Depth/Ending Depth; 3rd Casing, etc. | 1/100 - 1/197 - 2/203 203/205 - 205/590 | Actual |
| Casing Diameter (Inches); 2nd Casing Diameter; 3rd Casing, etc. | 40 - 50 - 18.625 - 18.625 18.625 | Actual |

WELL DATA SHEET (Page 2 of 3)

| | | |
|--|--|------------------------------------|
| <i>Complete as much information as possible. Leave blank if information is not available, use N.A. if not applicable.</i> | | |
| * Indicates items required for Source Water Assessment | | |
| ** Indicates additional items required for assessments and Ground Water Rule | | |
| Casing Material, 2nd Casing Material, 3rd Casing, etc. | 0.5" Steel, 0.375" Steel, 0.375" HSLA Steel, Dissimilar Metals Connector, 0.375" Stainless Steel | Actual |
| | <i>(separate multiple entries in field with semi-colon)</i> | Actual, Estimated or Default? |
| WELL CONSTRUCTION (continued) | | |
| Conductor casing used? ("YES", "NO" or "UNKNOWN") (See Note 2) | Yes | |
| Conductor casing removed? ("YES", "NO" or "UNKNOWN") | No | |
| * Depth to highest perforations/screens (ft below surface) (or "UNKNOWN") | 205 | |
| Screened Interval Beginning Depth/Ending Depth (ft below surface); 2nd Screened Interval Beg. Depth/Ending Depth; 3rd Screened Interval, etc. | 205/265; 305/440; 460/530 | |
| * Total length of screened interval (ft) (default = 10% pump capacity in gpm) (or "UNKNOWN") | 265 | |
| * Annular Seal? ("YES", "NO" or "UNKNOWN") (See Note 3) | Yes | |
| * Depth of Annular Seal (ft) | 197 | |
| Material of Annular Seal (cement grout, bentonite, etc.) | Cement Sand Grout | |
| Gravel pack, Depth to top (ft below ground surface) | 0 | |
| Total length of gravel pack (ft) | 630 | |
| AQUIFER | | |
| * Aquifer Materials (list all that apply: sand, silt, clay, gravel, rock, fractured rock) | sand, silt, clay, gravel | |
| * Effective porosity (decimal percent) (default = 0.2) (or "UNKNOWN") | 0.2 | default |
| * Confining layer (Impervious Strata) above aquifer? ("YES", "NO" or "UNKNOWN") | Yes | |
| Thickness of confining layer, if known (ft) | 20 | Borehole Log |
| Depth to confining layer, if known (ft below ground) | 180 | Borehole Log |
| * Static water level (ft below ground surface) | 60 | Average during construction period |
| Static water level measurement: Date/Method | 11/17/07 Electric Tape | |
| Pumping water level (ft below ground surface) | 190 | Predicted 90 day drawdown |
| Pumping water level measurement: Date/Method | max design drawdown | |
| WELL PRODUCTION | | |
| Well Yield (gpm) | 2,200 | |
| Well Yield Based On (i.e., pump test, etc.) | Pumping Test | |
| Date measured | Dec 07 & Feb 08 | |
| Is the well metered? ("YES" or "NO") | Yes | Planned |
| Production (gallons per year) | TBD | Planned for Intermittant |
| Frequency of Use (hours/year) | TBD | operation on an as needed |
| Typical pumping duration (hours/day) | TBD | basis primarily for drought |
| | | and emergencies |
| PUMP | | |
| Make | TBD | |
| Type | TBD | |
| Size (hp) | 600 | Planned |
| * Capacity (gpm) | 3,000 | Planned |
| Depth to suction intake (ft below ground surface) | 275 | Planned |
| Lubrication Type | Water | Planned |
| Type of Power: (i.e., electric, diesel, etc.) | Electric | Planned |
| Auxiliary power available? ("YES" or "NO") | TBD | |
| Operation controlled by: (i.e., level in tank, pressure, etc.) | Remote as needed | Planned |

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 | Zone 7 Water Agency | from DHS database |
| System Number | 0110010 | from DHS database |
| Source of Information (well log, DHS/County files, system, etc) | Well Log | |
| Organization Collecting Information (DHS, County, System, other) | System's Consultant | |
| Date Information Collected/Updated | 2/6/2008 | |
| WELL IDENTIFICATION | | |
| * Well Number or Name | Chain of Lakes Well No 1 (023) | from DHS database |
| * DHS Source Identification Number (FRDS ID No.) | | |
| DWR Well Log on File? ("YES" or "NO") | No | |
| State Well Number (from DWR) | | |
| Well Status (Active, Standby, Inactive) | Active | from DHS database |
| WELL LOCATION | | |
| Latitude | 37° 41' 08.493" | from DHS database |
| Longitude | -121° 50' 46.672" | from DHS database |
| Ground Surface Elevation (ft above Mean Sea Level) | 360 | Estimated |
| Street Address | | |
| Nearest Cross Street | El Charro Road | |
| City | Pleasanton | |
| County | Alameda | |
| * Neighborhood/Surrounding Area (see Note 1) | Ru, Re, I, Mu, O | |
| Site plan on file? ("YES" or "NO") | | In Progress |
| DWR Ground Water Basin | Livermore Valley | to come from DWR |
| DWR Ground Water Sub-basin | Amador | to come from DWR |
| SANITARY CONDITIONS | | |
| ** Distance to closest Sewer Line, Sewage Disposal, Septic Tank (ft) | 26.5 | 75% Design |
| Distance to Active Wells (ft) | 764 | Estimated from Coordinates |
| Distance to Abandoned Wells (ft) | 4635 | Estimated from Coordinates |
| Distance to Surface Water (ft) | 116 | actual |
| ** Size of controlled area around well (square feet) | 49,670 | Planned |
| * Type of access control to well site (fencing, building, etc) | Fencing | Planned |
| * Surface Seal? (Concrete slab)("YES", "NO" or "UNKNOWN") | Yes | Planned |
| * Dimensions of concrete slab: Length(ft)/ Width(ft)/ Thick(in) | 109.33/52/0.66 | Planned |
| * Within 100 year flood plain? ("YES", "NO" or "UNKNOWN") | No | |
| * Drainage away from well? ("YES" or "NO") | Yes | Planned |
| ENCLOSURE/HOUSING | | |
| Enclosure Type (building, vault, none, etc.) | Building | Planned |
| Floor material | Concrete | Planned |
| Located in Pit? ("YES" or "NO") | No | |
| Pit depth (feet) (if applicable) | | |
| WELL CONSTRUCTION | | |
| Date drilled | November, 2007 | |
| Drilling Method | Mud Rotary | |
| Depth of Bore Hole (feet below ground surface) | 550 | actual |
| Casing Beginning Depth/Ending Depth(ft below surface); 2nd Casing Beginning Depth/Ending Depth; 3rd Casing, etc. | -1/100; -1/197; -2/203; 203/205; 205/530 | Actual |
| Casing Diameter (inches); 2nd Casing Diameter; 3rd Casing, etc. | 40.30; 18.625; 18.625; 18.625 | 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 | | |
| Casing Material; 2nd Casing Material; 3rd Casing, etc. | 0.5" Steel; 0.375" Steel; 0.375" HSLA Steel; Dissimilar Metals Connector; 0.375" Stainless Steel | Actual |
| | (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 | |
| Conductor casing removed? ("YES", "NO" or "UNKNOWN") | No | |
| * Depth to highest perforations/screens (ft below surface) (or "UNKNOWN") | 205 | |
| Screened Interval Beginning Depth/Ending Depth (ft below surface); 2nd Screened Interval Beg. Depth/Ending Depth, 3rd Screened Interval, etc. | 205/265; 305/440; 460/530 | |
| * Total length of screened interval (ft) (default = 10% pump capacity in gpm) (or "UNKNOWN") | 265 | |
| * Annular Seal? ("YES", "NO" or "UNKNOWN") (See Note 3) | Yes | |
| * Depth of Annular Seal (ft) | 197 | |
| Material of Annular Seal (cement grout, bentonite, etc.) | Cement Sand Grout | |
| Gravel pack, Depth to top (ft below ground surface) | 0 | |
| Total length of gravel pack (ft) | 530 | |
| AQUIFER | | |
| * Aquifer Materials (list all that apply: sand, silt, clay, gravel, rock, fractured rock) | sand, silt, clay, gravel | |
| * Effective porosity (decimal percent) (default = 0.2) (or "UNKNOWN") | 0.2 | default |
| * Confining layer (Impervious Strata) above aquifer? ("YES", "NO" or "UNKNOWN") | Yes | |
| Thickness of confining layer, if known (ft) | 20 | Borehole Log |
| Depth to confining layer, if known (ft below ground) | 180 | Borehole Log |
| * Static water level (ft below ground surface) | 50 | Average during construction period |
| Static water level measurement: Date/Method | 11/17/07 Electric Tape | |
| Pumping water level (ft below ground surface) | 191 | Predicted 90 day drawdown |
| Pumping water level measurement: Date/Method | max design drawdown | |
| WELL PRODUCTION | | |
| Well Yield (gpm) | 2,200 | |
| Well Yield Based On (i.e., pump test, etc.) | Pumping Test | |
| Date measured | Dec 07 & Feb 08 | |
| Is the well metered? ("YES" or "NO") | Yes | Planned |
| Production (gallons per year) | TBD | Planned for Intermittant |
| Frequency of Use (hours/year) | TBD | operation on an as needed |
| Typical pumping duration (hours/day) | TBD | basis primarily for drought |
| PUMP | | and emergencies |
| Make | TBD | |
| Type | TBD | |
| Size (hp) | 400 | Planned |
| * Capacity (gpm) | 2,200 | Planned |
| Depth to suction intake (ft below ground surface) | 200 | Planned |
| Lubrication Type | Water | Planned |
| Type of Power (i.e., electric, diesel, etc.) | Electric | Planned |
| Auxiliary power available? ("YES" or "NO") | TBD | |
| Operation controlled by: (i.e., level in tank, pressure, etc.) | Remote as needed | Planned |
| Pump to Waste capability? ("YES" or "NO") | TBD | |

