

GeoTracker GAMA Groundwater Information System

Los Angeles Regional Board Meeting
November 10, 2011

John Borkovich, PG

GAMA Program

State Water Resources Control Board



Presentation Overview

- GAMA Background and Status
- Groundwater Information in GeoTracker
GAMA

GAMA is:

Groundwater
Ambient
Monitoring and
Assessment



GAMA Background

- Legislature's concern about groundwater quality
- Budget Act of 2000
- Water Code Section 10780
 - Groundwater Quality Monitoring Act of 2001 - (AB 599, Liu)
 - Groundwater Quality Monitoring – (2008. AB 2222, Caballero)

GAMA Program Functions

- Coordinate with water agencies
- Collect new data
- Combine new and existing data
(water quality, water level, contaminant sources)
- Assess groundwater quality
- Serve information to the public

GAMA Program Current Projects

Special
Studies

Priority
Basins



Domestic
Wells

GeoTracker
GAMA



Sampling conducted in *Voluntary Cooperation* with Participants



Status: Priority Basins Project

- First statewide sampling cycle nearly complete
- 2,200 wells sampled
- Dozens of Reports, Fact Sheets published
- USGS Technical Lead, LLNL



Status: Special Studies Project

- Studies on nitrates from dairies, fertilizer, human wastewater
- Wastewater Indicator studies on effect of septic systems on shallow groundwater and areas influenced by recycled water
- Changes in chemistry of groundwater by recharge of surface water
- Innovations in lab analyses: age dating, isotopes, recharge tracers; water mining
- Lawrence Livermore Laboratory technical lead

Status: Domestic Well Project

- 1,100 Wells sampled by Board staff from 2003-11
- Key Results – *EIDorado, Yuba, Tehama, Tulare, San Diego Counties*
 - Total Coliform: 28% wells tested Positive
 - Nitrate: Average 10% wells tested above MCL
 - Nitrate: 41% Tulare County wells tested above MCL
 - Radionuclides: 33% San Diego above MCL
- Monterey County sampling completed 2011

GeoTracker GAMA: *Groundwater Information System*

- Fulfills AB599 intent: Central data system
- Shares data from CDPH, USGS, LLNL, DWR, DPR, State and Regional Water Boards
- Water quality, PLUS water levels, contaminant sources, groundwater publications
- Groundwater quality data collected with State funds must comply with AB 599 - but electronic submittal not specified (AB 1747)

System is capable of expanding more



Groundwater Quality Information

State Water Resources Control Board - Windows Internet Explorer provided by Internet Explorer 7 for SWRCB

http://www.waterboards.ca.gov/water_issues/programs/gama/geotracker_gama.shtml

File Edit View Favorites Tools Help

State Water Resources Control Board

Programs | Available Documents | Hot Topics |

Office of Governor **Jerry Brown**
Visit his Website

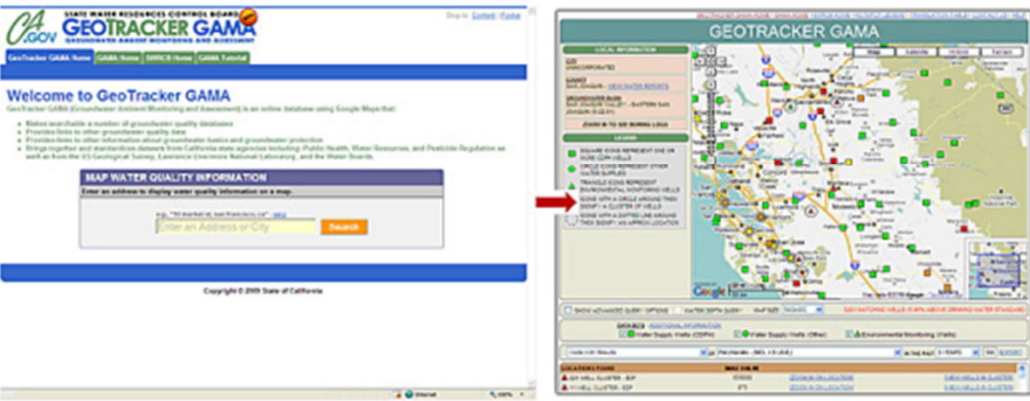
Home » Water Issues » Programs » Gama

GAMA – Groundwater Ambient Monitoring & Assessment Program

GeoTracker GAMA Groundwater Data Sources

GeoTracker GAMA provides user-friendly internet access to groundwater data. Data are searchable by chemical, with results displayed on an interactive map (shown below).

→ [Start GeoTracker GAMA](#)



Water Quality
Performance Report
Website Feedback

GAMA RESOURCES

- GAMA Home
- Priority Basin Project
- Domestic Well Project
- Special Studies Project
- California Aquifer Susceptibility Project
- Groundwater Reports
- Chemicals of Concern (COC) Information Sheets
- Related Laws and Regulations
- Sources of Groundwater

GeoTracker GAMA includes data for over 150,000 locations. GeoTracker GAMA integrates, standardizes, and provides tools to analyze several datasets, including data from:

- State and Regional Water Boards (SWRCB/RWQCB)
- California Department of Public Health (CDPH)
- Department of Pesticide Regulation (DPR)
- Department of Water Resources (DWR)
- United States Geological Survey (USGS)
- Lawrence Livermore National Laboratory (LLNL)

Sources of GeoTracker GAMA Data are depicted in the figure below. Move your mouse cursor over a well (A, B, C) for more information on these data sources.

Done Trusted sites 100%

Access system through GAMA Homepage

Shared datasets listed here

★ Favorites | GeoTracker | State Water Resourc... | Page | Safety

CA.GOV STATE WATER RESOURCES CONTROL BOARD
GEOTRACKER GAMA
GROUNDWATER AMBIENT MONITORING AND ASSESSMENT

Skip to: [Content](#) | [Footer](#)

GeoTracker GAMA Home | GAMA Home | SWRCB Home | GAMA Tutorial

INFORMATION

- GeoTracker GAMA Home
- GAMA Home
- SWRCB Home
- GAMA Tutorial
- Download Data

DATA SOURCES

GROUNDWATER

- GeoTracker GAMA (Multi-Agency Quality, Levels, Facilities)
- CASGEM (DWR Levels SB X6 7, Water Data Library)
- IWRIS (Regional Groundwater)
- EPA Water Data Finder (US Environmental Protection Agency)
- NWIS (US Geological Survey)

SURFACE WATER

Welcome to GeoTracker GAMA

GeoTracker GAMA (Groundwater Ambient Monitoring and Assessment) is an online database using Google Maps that:

- Makes searchable a number of groundwater quality databases
- Provides links to other groundwater quality data
- Provides links to other information about groundwater basics and groundwater protection
- Brings together and standardizes datasets from California state agencies including: Public Health, Water Resources, and Pesticide Regulation as well as from the US Geological Survey, Lawrence Livermore National Laboratory, and the Water Boards.

MAP WATER QUALITY INFORMATION

Enter an address to display water quality information on a map.

e.g., "10 market st, san francisco, ca" - [INFO](#)

Access all Data in System by County

Enter your address, zip to start query

Easy access to Groundwater and Surface Water Related databases

GeoTracker State Water Resour...

GROUNDWATER

- > GeoTracker GAMA (Multi-Agency Quality, Levels, Facilities)
- > CASGEM (DWR Levels SB X6 7, Water Data Library)
- > IWRIS (Regional Groundwater)
- > EPA Water Data Finder (US Environmental Protection Agency)
- > NWIS (US Geological Survey)

SURFACE WATER

- > CEDEN (Surface Water Quality)
- > EPA Water Data Finder (US Environmental Protection Agency)
- > EWRIMS (Water Rights)
- > NWIS (US Geological Survey)

FACILITY INFORMATION

- > GeoTracker (Cleanup Sites - Water Boards)
- > EnviroStor (Cleanup Sites & Hazardous Waste Permits - DTSC)
- > CIWQS (Permitted Facilities)

DRINKING WATER

- > CDPH (CA Dept of Public Health)

e.g., "10 market st, san francisco, ca" - [INFO](#)



**Access to
Groundwater and
Surface Water
Related databases**

INFORMATION

- [GeoTracker GAMA Home](#)
- [GAMA Home](#)
- [SWRCB Home](#)
- [GAMA Tutorial](#)
- [Download Data](#)

DATA SOURCES

GROUNDWATER

- [GeoTracker GAMA \(Multi-Agency Quality, Levels, Facilities\)](#)
- [CASGEM \(DWR Levels SB X6 7, Water Data Library\)](#)
- [IWRIS \(Regional Groundwater\)](#)
- [EPA Water Data Finder \(US Environmental Protection Agency\)](#)
- [NWIS \(US Geological Survey\)](#)

SURFACE WATER

- [CEDEN \(Surface Water Quality\)](#)
- [EPA Water Data Finder \(US Environmental Protection Agency\)](#)
- [EWRIMS \(Water Rights\)](#)
- [NWIS \(US Geological Survey\)](#)

GAMA DATA DOWNLOAD - TAB DELIMITED FORMAT

LAST UPDATED: 7/18/2011 1:02:42 PM

- | | |
|---|--|
| Alameda [COPH] [DPR] [DWR] [EDF] [LLNL] [USQS] [ALL DATA] | Orange [COPH] [DPR] [DWR] [EDF] [LLNL] [USQS] [ALL DATA] |
| Alpine [COPH] [EDF] [ALL DATA] | Placer [COPH] [DPR] [DWR] [EDF] [GAMA_DOMESTIC] [LLNL] [USQS] [ALL DATA] |
| Amador [COPH] [EDF] [GAMA_DOMESTIC] [LLNL] [USQS] [ALL DATA] | Plumas [COPH] [DWR] [EDF] [LLNL] [ALL DATA] |
| Butte [COPH] [DPR] [DWR] [EDF] [GAMA_DOMESTIC] [LLNL] [USQS] [ALL DATA] | Riverside [COPH] [DPR] [DWR] [EDF] [LLNL] [USQS] [ALL DATA] |
| Calaveras [COPH] [DPR] [EDF] [ALL DATA] | Sacramento [COPH] [DPR] [DWR] [EDF] [GAMA_DOMESTIC] [LLNL] [USQS] [ALL DATA] |
| Colusa [COPH] [DPR] [DWR] [EDF] [USQS] [ALL DATA] | San Benito [COPH] [DPR] [DWR] [EDF] [USQS] [ALL DATA] |
| Contra Costa [COPH] [DPR] [DWR] [EDF] [ALL DATA] | San Bernardino [COPH] [DPR] [DWR] [EDF] [LLNL] [USQS] [ALL DATA] |
| Del Norte [COPH] [DPR] [DWR] [EDF] [ALL DATA] | San Diego [COPH] [DPR] [DWR] [EDF] [GAMA_DOMESTIC] [LLNL] [USQS] [ALL DATA] |
| El Dorado [COPH] [DPR] [DWR] [EDF] [GAMA_DOMESTIC] [LLNL] [USQS] [ALL DATA] | San Francisco [COPH] [DPR] [EDF] [USQS] [ALL DATA] |
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| Inyo [COPH] [DWR] [EDF] [USQS] [ALL DATA] | Santa Clara [COPH] [DPR] [DWR] [EDF] [LLNL] [USQS] [ALL DATA] |
| Kern [COPH] [DPR] [DWR] [EDF] [LLNL] [USQS] [ALL DATA] | Santa Cruz [COPH] [DPR] [DWR] [EDF] [LLNL] [USQS] [ALL DATA] |
| Kings [COPH] [DPR] [DWR] [EDF] [USQS] [ALL DATA] | Shasta [COPH] [DPR] [DWR] [EDF] [LLNL] [USQS] [ALL DATA] |
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| Marin [COPH] [DWR] [EDF] [LLNL] [USQS] [ALL DATA] | Stanislaus [COPH] [DPR] [DWR] [EDF] [LLNL] [USQS] [ALL DATA] |
| Mariposa [COPH] [DWR] [EDF] [ALL DATA] | Sutter [COPH] [DPR] [DWR] [EDF] [GAMA_DOMESTIC] [USQS] [ALL DATA] |
| Mendocino [COPH] [DPR] [DWR] [EDF] [ALL DATA] | Tehama [COPH] [DPR] [DWR] [EDF] [GAMA_DOMESTIC] [LLNL] [USQS] [ALL DATA] |
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| Napa [COPH] [DPR] [DWR] [EDF] [LLNL] [USQS] [ALL DATA] | Yolo [COPH] [DPR] [DWR] [EDF] [LLNL] [USQS] [ALL DATA] |
| Nevada [COPH] [DWR] [EDF] [GAMA_DOMESTIC] [LLNL] [USQS] [ALL DATA] | Yuba [COPH] [DPR] [DWR] [EDF] [GAMA_DOMESTIC] [USQS] [ALL DATA] |

More information about these datasets can be found [here](#).

Access all Data in System by County - Over 100M results

WELL NAME	APPROXIMATE	LATITUDE	APPROXIMATE	LONGITUDE	CHEMICAL	QUALIFIER	RESULT	UNITS	DATE	DATASI	
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0202501-001	38.77	-119.82	PCA	0	UG/L	12/13/1988	CDPH	CDPH	ALPINE	6	CARSON VALLEY
0202501-001	38.77	-119.82	PCE	0	UG/L	12/13/1988	CDPH	CDPH	ALPINE	6	CARSON VALLEY

File so large need
to export to Text
Delimited format

GEOTRACKER GAMA

Map Satellite Hybrid Terrain

LOCAL INFORMATION

CITY
UNINCORPORATED

COUNTY
MADERA - [VIEW WATER REPORTS](#)

GROUNDWATER BASIN

ZOOM IN TO SEE BORING LOGS

LEGEND

- SUPPLY WELLS - CDPH (within one mile of actual location)
- SUPPLY WELLS - OTHER (within 1/2 mile of actual location)
- MONITORING WELLS - REGULATED SITES (exact locations displayed)
- ICONS WITH A CIRCLE AROUND THEM SIGNIFY A CLUSTER OF WELLS

ADDITIONAL TOOLS

- DEPTH-TO-WATER
- DEPTH-TO-WATER CHANGE
- GROUNDWATER ELEVATION

Over 200K Wells in GeoTracker GAMA system

221148 MATCHING WELLS FOR NITRATE AS NO3

MAP SIZE: 640x480

DATASETS - ADDITIONAL INFORMATION

MONITORING WELLS:

- Monitoring Wells - Water Board Regulated Sites

SUPPLY WELLS:

- Supply Wells - CDPH
- GAMA - SWRCB Domestic
- GAMA - USGS
- GAMA - LLNL
- DPR
- DWR

Map data ©2011 Europa Technologies, Google, INEGI, Terms of Use

Done Trusted sites 125%

GeoTracker GAMA State Water Resourc...

Map Satellite Hybrid Terrain

Several Features are available to the user

LOCAL INFORMATION

CITY
UNINCORPORATED

COUNTY
MONO - [VIEW WATER REPORTS](#)

GROUNDWATER BASIN

ZOOM IN TO SEE BORING LOGS

LEGEND

- SUPPLY WELLS - CDPH (within one mile of actual location)
- SUPPLY WELLS - OTHER (within 1/2 mile of actual location)
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ADDITIONAL TOOLS

- DEPTH-TO-WATER
- DEPTH-TO-WATER CHANGE
- GROUNDWATER ELEVATION

4957 MATCHING WELLS FOR NITRATE AS NO3

DATASETS - ADDITIONAL INFORMATION

MONITORING WELLS:
 Monitoring Wells - Water Board Regulated Sites

SUPPLY WELLS:
 Supply Wells - CDPH GAMA - SWRCB Domestic GAMA - USGS GAMA - LLNL DPR DWR

GIS LAYER - SELECTING A GIS LAYER WILL LIMIT YOUR QUERY TO RESULTS IN THAT GIS LAYER

Select a GIS Layer

Wells With Results Above Comparison Concentration OF Nitrate as NO3 - (MCL = 45 MG/L) IN THE PAST ALL YEARS Go EXPORT

Trusted sites 100%

UNINCORPORATED
COUNTY
SACRAMENTO - [VIEW WATER REPORTS](#)
GROUNDWATER BASIN
SACRAMENTO VALLEY - SOUTH AMERICAN (5-21.65)

ZOOM IN TO SEE BORING LOGS

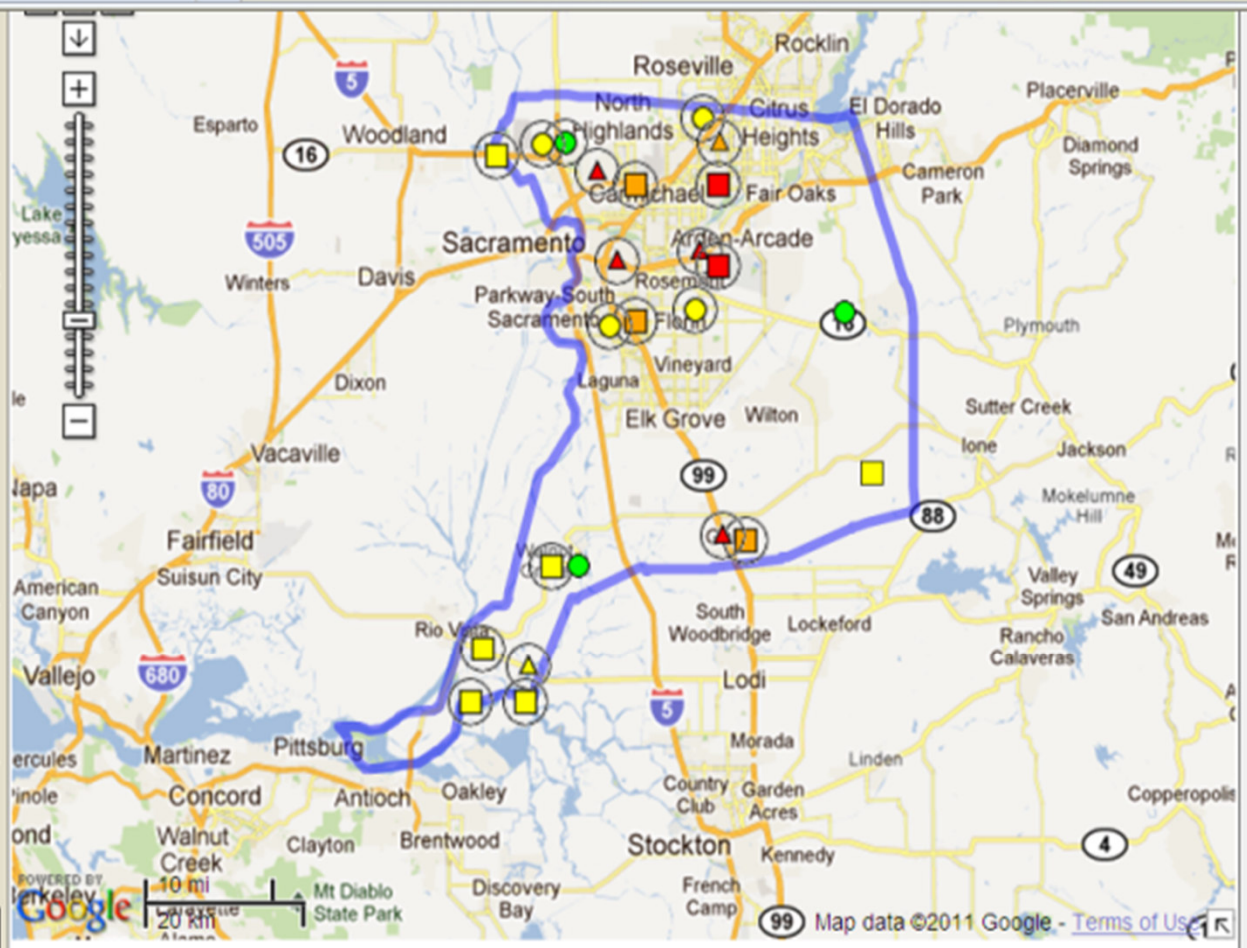
LEGEND

- SUPPLY WELLS - CDPH (within one mile of actual location)
- SUPPLY WELLS - OTHER (within 1/2 mile of actual location)
- ▲ MONITORING WELLS - REGULATED SITES (exact locations displayed)
- ICONS WITH A CIRCLE AROUND THEM SIGNIFY A CLUSTER OF WELLS

ADDITIONAL TOOLS

- DEPTH-TO-WATER
- DEPTH-TO-WATER CHANGE
- GROUNDWATER ELEVATION

* Comparison concentration is 45 MG/L (MCL).
Click [here](#) for more information



MAP SIZE: 640x480 | 1100 MATCHING WELLS FOR NITRATE AS NO3 (3.64% ABOVE COMPARISON CONCENTRATION)*

- DATASETS - ADDITIONAL
- MONITORING WELLS
 - Monitoring Wells -
- Counties
- Groundwater Basins
 - Regional Board Boundaries
 - Assembly Districts
 - Senate Districts
 - Counties

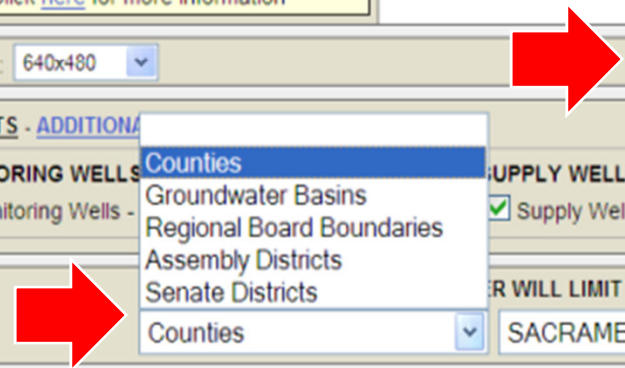
SUPPLY WELLS:

- Supply Wells - CDPH
- GAMA - SWRCB Domestic
- GAMA - USGS
- GAMA - OTHER

WILL LIMIT YOUR QUERY TO RESULTS IN THAT GIS LAYER

SACRAMENTO COUNTY

Chose a unique GIS to Narrow your results



9_NO3 - Microsoft Excel

Home Insert Page Layout Formulas Data Review View

Calibri 11 A A

Wrap Text

General

Conditional Formatting Format as Table Cell Styles

Insert Delete Format

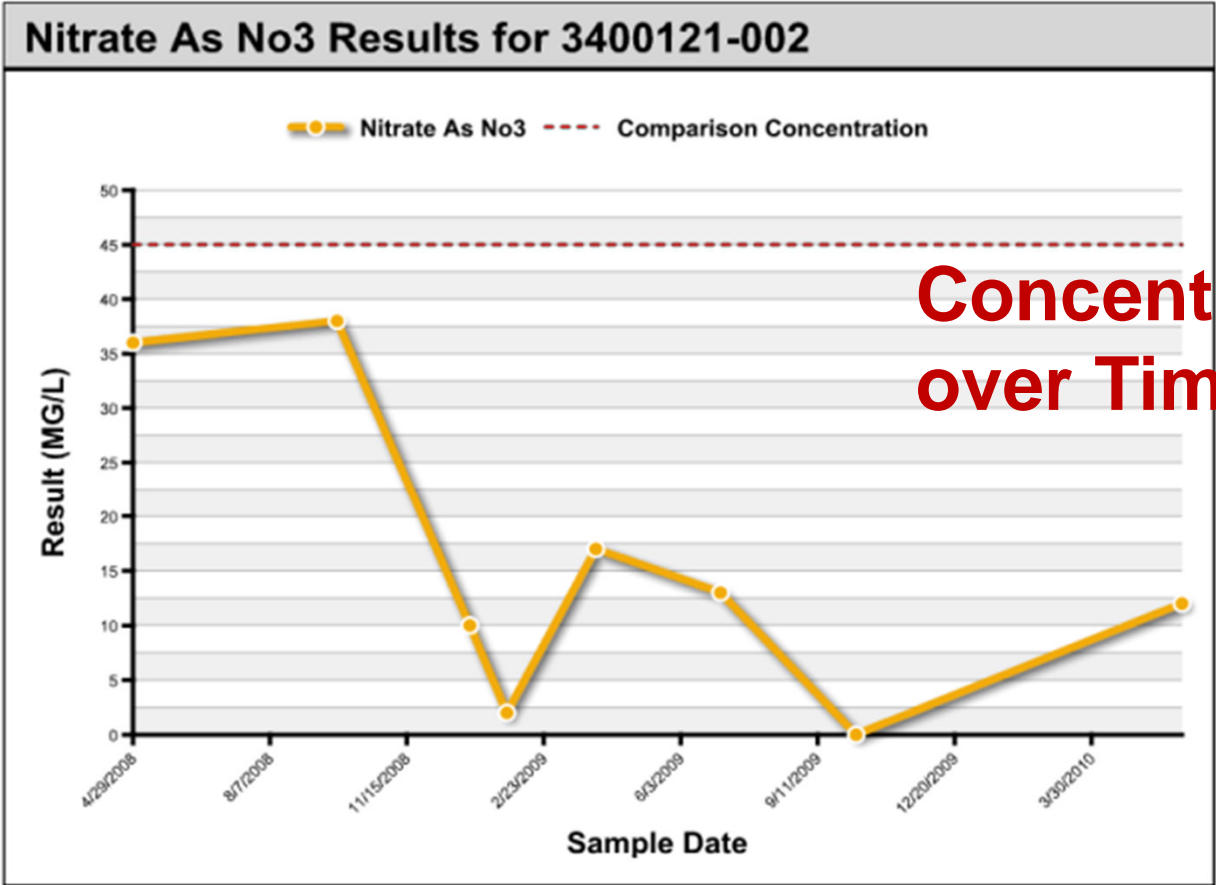
Sort & Filter Find & Select

A1 WELL NAME

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	WELL NAME	APPROXIM	APPROXIM	CHEMICAL	QUALIFIER	RESULT	UNITS	DATE	DATASET_CAT	DATASET	COUNTY	RB	GW_BASIN	ASSEM
2	3400263-001	38.625	-121.484	NO3		0	MG/L	9/23/2004	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
3	3400296-001	38.509	-121.444	NO3		15	MG/L	7/9/2003	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
4	3410002-011	38.509	-121.484	NO3		0	MG/L	9/20/1999	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
5	3410002-003	38.509	-121.484	NO3		5.148	MG/L	4/30/2003	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
6	3410002-003	38.509	-121.484	NO3		6.4	MG/L	2/23/2007	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
7	3410002-003	38.509	-121.484	NO3		7.4	MG/L	11/27/2006	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
8	3410002-003	38.509	-121.484	NO3		8	MG/L	2/23/2000	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
9	3410002-003	38.509	-121.484	NO3		13	MG/L	7/26/2001	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
10	3410002-003	38.509	-121.484	NO3	<	19	MG/L	5/30/2002	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
11	3410002-004	38.509	-121.484	NO3		14	MG/L	7/17/1990	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
12	3410002-004	38.509	-121.484	NO3		14	MG/L	10/4/1990	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
13	3410002-004	38.509	-121.484	NO3		14	MG/L	5/18/2009	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
14	3410002-004	38.509	-121.484	NO3		23	MG/L	2/11/2009	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
15	3410002-004	38.509	-121.484	NO3		23	MG/L	11/27/2006	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
16	3410002-004	38.509	-121.484	NO3		24	MG/L	2/20/2008	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
17	3410002-004	38.509	-121.484	NO3		24	MG/L	8/16/2006	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
18	3410002-013	38.596	-121.405	NO3		0	MG/L	5/14/1996	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
19	3410002-013	38.596	-121.405	NO3	<	1	MG/L	7/17/1990	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
20	3410002-013	38.596	-121.405	NO3		7	MG/L	2/23/2000	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
21	3410020-021	38.596	-121.444	NO3		11	MG/L	10/1/1998	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
22	3410020-026	38.625	-121.444	NO3		3.9	MG/L	3/10/1993	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
23	3410020-024	38.625	-121.444	NO3		2	MG/L	11/18/1988	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
24	3410020-024	38.625	-121.444	NO3		5	MG/L	5/15/1997	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
25	3410020-024	38.625	-121.444	NO3		5.9	MG/L	5/2/1996	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
26	3410020-024	38.625	-121.444	NO3		4.8	MG/L	10/1/1998	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
27	3410020-024	38.625	-121.444	NO3		15	MG/L	10/16/2007	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
28	3410020-025	38.625	-121.444	NO3		12.2	MG/L	5/9/1995	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
29	3410020-028	38.625	-121.444	NO3		1.9	MG/L	10/1/1998	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN
30	3410020-030	38.625	-121.444	NO3		6.1	MG/L	10/16/2007	WATER SUPPLY (WE DHS		SACRAMEN		5	SACRAMEN

9_NO3

Export Results to
Excel Spreadsheet



**Concentrations
over Time**

[VIEW AS PDF](#)

Other Groundwater Information

GEOTRACKER GAMA

LOCAL INFORMATION

CITY

LOS ANGELES

COUNTY





LOS ANGELES - [VIEW WATER REPORTS](#)

GROUNDWATER BASIN

SAN FERNANDO VALLEY (4-12)

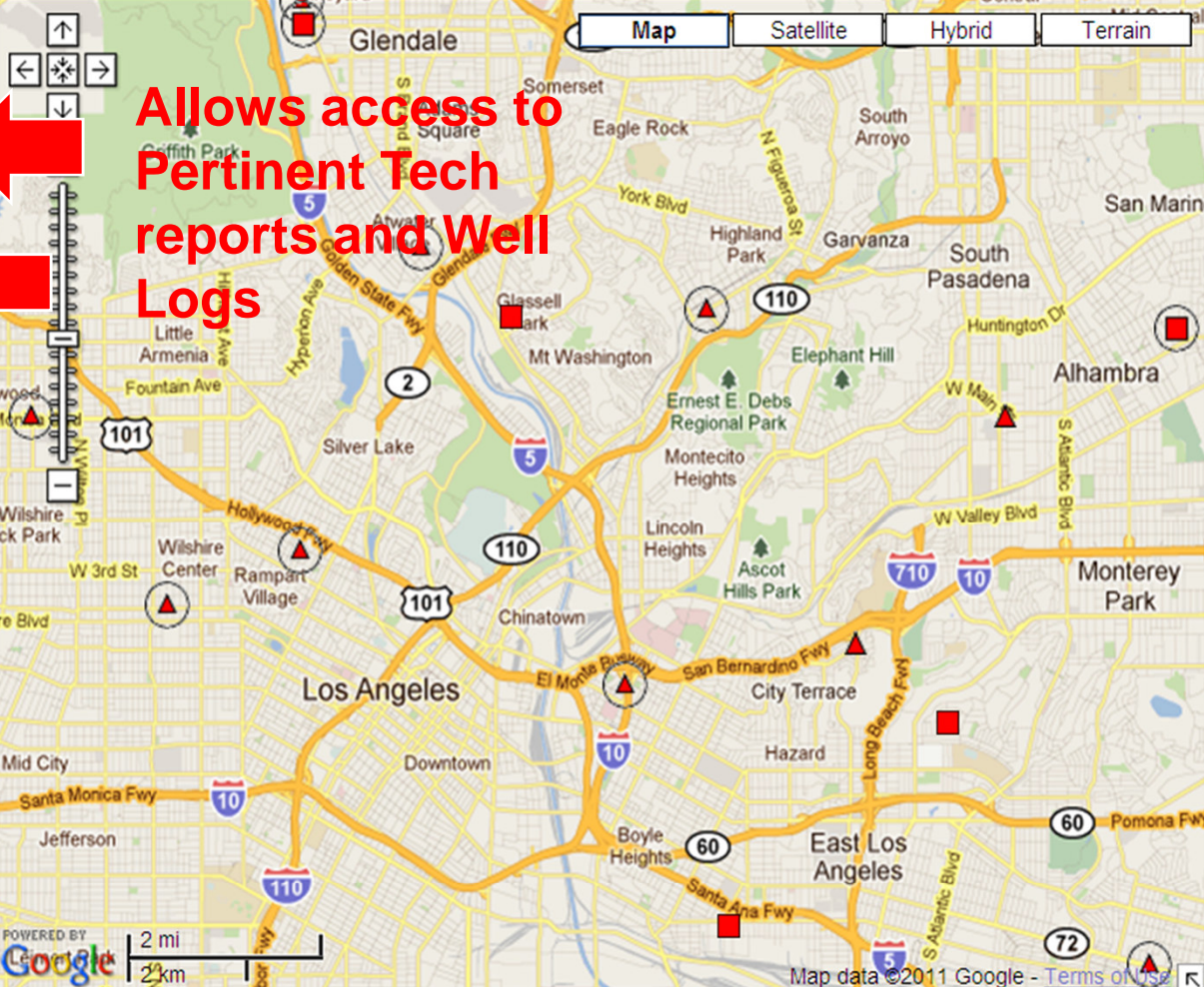
[VIEW 494 WELL BORING LOGS](#)

LEGEND

-  SUPPLY WELLS - CDPH (within one mile of actual location)
-  SUPPLY WELLS - OTHER (within 1/2 mile of actual location)
-  MONITORING WELLS - REGULATED SITES (exact locations displayed)
-  ICONS WITH A CIRCLE AROUND THEM SIGNIFY A CLUSTER OF WELLS

ADDITIONAL TOOLS

- DEPTH-TO-WATER
- DEPTH-TO-WATER CHANGE
- GROUNDWATER ELEVATION



Allows access to Pertinent Tech reports and Well Logs



MAP SIZE: 640x480

136 MATCHING WELLS FOR NITRATE AS NO3


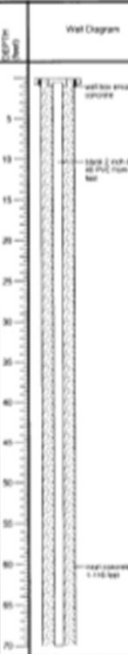
DATASETS - [ADDITIONAL INFORMATION](#)

MONITORING WELLS:

Monitoring Wells - Water Board Regulated Sites

SUPPLY WELLS:

Supply Wells - CDPH GAMA - SWRCB Domestic GAMA - USGS GAMA - LLNL DPR DWR

 WAYNE PERRY, INC. 8391 Commonwealth Avenue Business Park, California 95621 (714) 828-0382 www.wpiinc.com		Log of Boring/Well MW-1	
PROJECT: Former Shell Service Station		SURFACE ELEVATION: 90.7 feet waf (estimate)	
LOCATION: 4381 Marconi Ave. Sacramento, Ca		TOTAL DEPTH: 135 feet	BORING DIAMETER: 8.5 inches
PROJECT NO.: N06432		DEPTH TO FIRST SATURATION: 123 feet	
DATE BEGAN: 10/19/07	FINISHED: 10/19/07	TOP OF WELL CASING ELEVATION: 90.24 feet waf	
DRILLING COMPANY: Gregg Drilling and Testing, Inc		STATIC GW ELEVATION: -29.46 feet waf	DATE: 10/29/07
DRILLING METHOD: Helico-Spud Auger		LOGGED BY: J. Alexander CHECKED BY: D. Henry	
<small>This log is a representation of subsurface conditions in the time and place of drilling. With the passage of time or at any other location, there may be consequential changes in conditions.</small>			
DEPTH (feet)	Sample ID	Geologic Description	Well Diagram
0		ASPHALT, 6 inches	
5	BW 125 3925 12/18/05 1	5 1/2" SAND - fine-grained, brown (12/18/05), dense, damp.	
10	BW 126 3925 5/9/12 3	10 1/2" SAND - fine-grained, brown (5/9/12), dense, damp.	
15	BW 128 3925 10/11/12 30	15 1/2" SAND - fine-grained, brown (10/11/12), dense, damp.	
20	BW 129 3927 12/22/05 50	20 1/2" SILT with Clay - light olive brown (2/2/05), hard, damp.	
25	BW 125 1800 10/25/05 26	25 1/2" SAND - fine-grained, olive brown (2/2/05), very dense, damp.	
30	BW 128 1015 20/30/07 16	30 1/2" SAND - fine-grained, olive brown (2/2/07), very dense, damp.	
35	BW 128 1014 17/30/07 33	35 1/2" SILT with Clay - light olive brown (2/2/07), hard, damp.	
40	BW 128 1017 23/31/03 13	40 1/2" SILT SAND - fine-grained, dark yellowish brown (12/18/03), very dense, damp.	
45	BW 128 1101 10/22/09 5	45 1/2" SAND - fine-grained, olive brown (2/2/09), very dense, damp.	
50	BW 128 1140 10/22/09 36	50 1/2" SAND - fine-grained, olive brown (10/18/09), very dense, damp.	
55	BW 128 1101 10/22/09 5	55 1/2" SAND - fine-grained, olive brown (2/2/09), very dense, damp.	
60	BW 128 1300 10/13/08 30	60 1/2" SAND - fine-grained, olive brown (2/2/08), dense, moist.	
65	BW 128 1213 10/29/05 5	65 1/2" SAND - fine-grained, olive brown (10/29/05), dense, moist.	
Remarks/Notes: 1) PD Used			Page 1 of 2

Shows Well Logs for over 130 K Monitoring Wells

GeoTracker GAMA | State Water Resour...

GEOTRACKER GAMA HOME | GAMA HOME | SWRCB HOME | HOTSPOT LEGEND | TRANSLATION TABLE | CONTACT US | HELP

GEOTRACKER GAMA

LOCAL INFORMATION

CITY: CARMICHAEL

COUNTY: SACRAMENTO - [VIEW WATER REPORTS](#)

GROUNDWATER BASIN: SACRAMENTO VALLEY - NORTH AMERICAN (5-21.64)

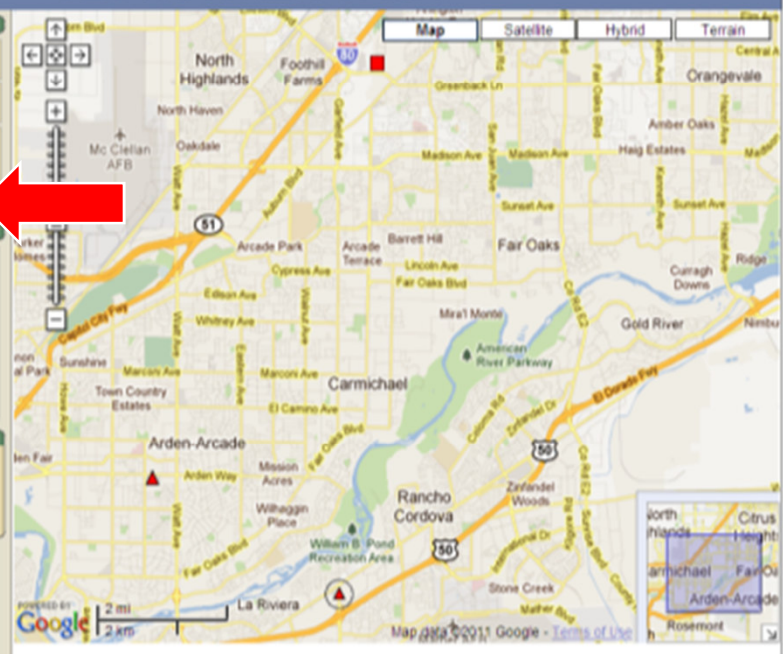
[VIEW 224 WELL BORING LOGS](#)

LEGEND

- SUPPLY WELLS - CDPH (within one mile of actual location)
- SUPPLY WELLS - OTHER (within 1/2 mile of actual location)
- ▲ MONITORING WELLS - REGULATED SITES (exact locations displayed)
- ICCHS WITH A CIRCLE AROUND THEM SIGNIFY A CLUSTER OF WELLS

ADDITIONAL TOOLS

- DEPTH-TO-WATER
- DEPTH-TO-WATER CHANGE
- GROUNDWATER ELEVATION



4 MATCHING WELLS FOR NITRATE AS N03

DATASETS - ADDITIONAL INFORMATION

MONITORING WELLS: SUPPLY WELLS:

Map Size: 640x400

Map Date: 2011

Map Data: 2011

Trusted sites

125%



Favorites | GeoTracker GAMA | State Water Resour... | Page | Safety

LOCAL INFORMATION

CITY
BELL

COUNTY
LOS ANGELES - [VIEW WATER REPORTS](#)

GROUNDWATER BASIN
COASTAL PLAIN OF LOS ANGELES - CENTRAL (4-11.04)

ZOOM IN TO SEE BORING LOGS

LEGEND

- SUPPLY WELLS - CDPH (within one mile of actual location)
- SUPPLY WELLS - OTHER (within 1/2 mile of actual location)
- ▲ MONITORING WELLS - REGULATED SITES (exact locations displayed)
- ICONS WITH A CIRCLE AROUND THEM SIGNIFY A CLUSTER OF WELLS

ADDITIONAL TOOLS

- DEPTH-TO-WATER
- DEPTH-TO-WATER CHANGE
- GROUNDWATER ELEVATION

Map | Satellite | Hybrid | Terrain

POWERED BY Google

5 mi | 10 km

740 SITES LISTED

SHOW THE DEPTH TO WATER (IN FEET) FOR ENVIRONMENTAL MONITORING SITES FOR Q1 2010 Go

SLT43193191	3.67
SL0603799731	4.04
T0603701960	4.27

Trusted sites | 125%

Water Levels for 130K MWs



LOCAL INFORMATION

CITY
BELL

COUNTY
LOS ANGELES - [VIEW WATER REPORTS](#)

GROUNDWATER BASIN
COASTAL PLAIN OF LOS ANGELES - CENTRAL (4-11.04)

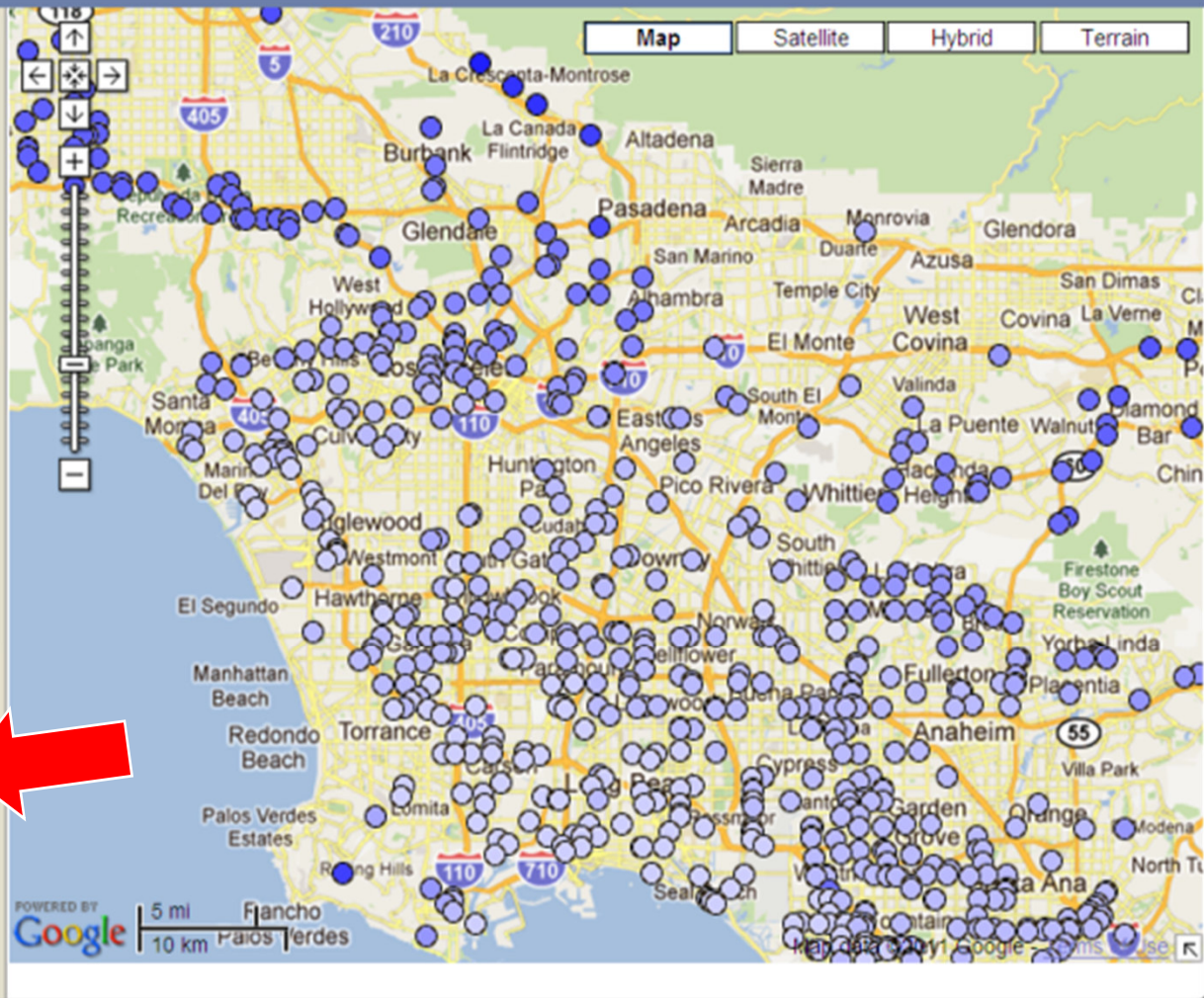
ZOOM IN TO SEE BORING LOGS

LEGEND

- SUPPLY WELLS - CDPH (within one mile of actual location)
- SUPPLY WELLS - OTHER (within 1/2 mile of actual location)
- MONITORING WELLS - REGULATED SITES (exact locations displayed)
- ICONS WITH A CIRCLE AROUND THEM SIGNIFY A CLUSTER OF WELLS

ADDITIONAL TOOLS

- DEPTH-TO-WATER
- DEPTH-TO-WATER CHANGE
- GROUNDWATER ELEVATION



Shows Relative Water Elevations for Quarter chosen

MAP SIZE: 640x480

651 SITES LISTED

SHOW THE GROUNDWATER ELEVATION (IN FEET) FOR ENVIRONMENTAL MONITORING SITES FOR Q1 2010 Go

T0605901711	-9.64
T0603714288	-9.245
T0603701503	-9.235



LOCAL INFORMATION

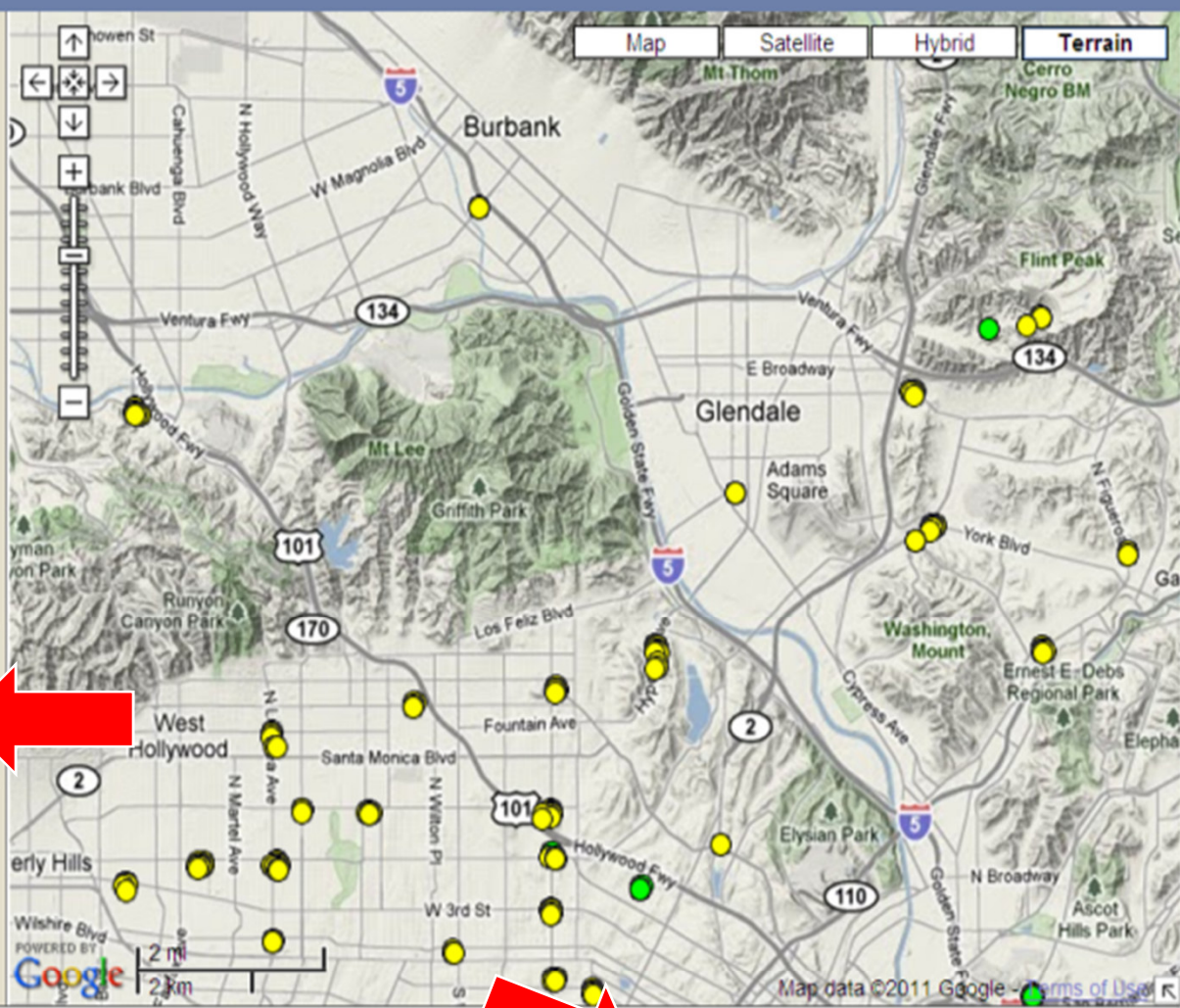
CITY
 LOS ANGELES
COUNTY
 LOS ANGELES - [VIEW WATER REPORTS](#)
GROUNDWATER BASIN
[VIEW 622 WELL BORING LOGS](#)

LEGEND

- SUPPLY WELLS - CDPH (within one mile of actual location)
- SUPPLY WELLS - OTHER (within 1/2 mile of actual location)
- ▲ MONITORING WELLS - REGULATED SITES (exact locations displayed)
- ICONS WITH A CIRCLE AROUND THEM SIGNIFY A CLUSTER OF WELLS

ADDITIONAL TOOLS

- DEPTH-TO-WATER
- DEPTH-TO-WATER CHANGE
- GROUNDWATER ELEVATION

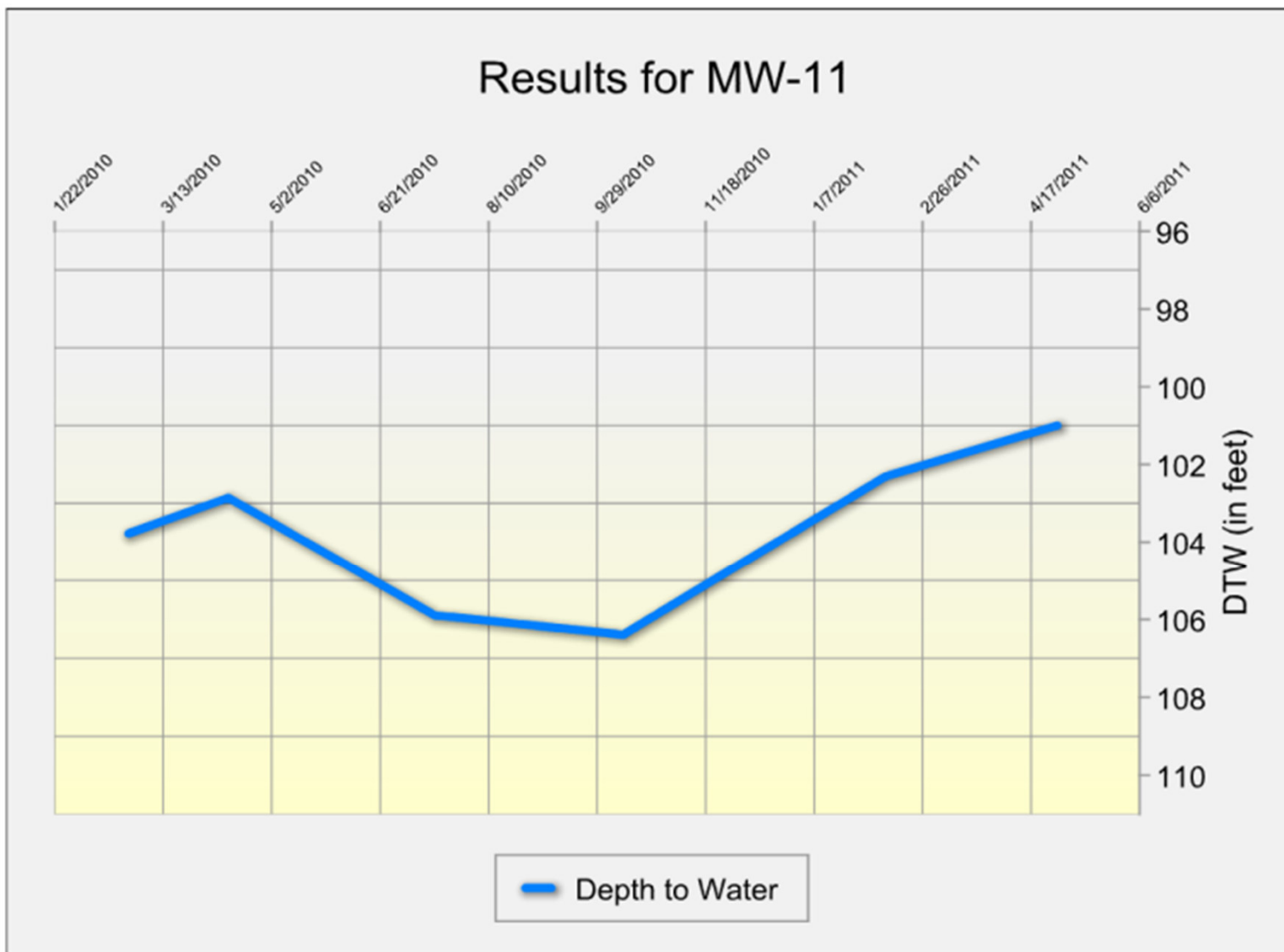


Shows Relative
 Water Level
 Changes over
 Given Time

285 MATCHING WELLS FOR NITRATE AS NO3

SHOW THE DEPTH-TO-WATER CHANGE (IN FEET) FOR ENVIRONMENTAL MONITORING WELLS BETWEEN Q1 2010 AND Q1 2011 Go

LOCATIONS FOUND	GLOBAL ID	DTW Q1 2010	DTW Q1 2011	DTW CHANGE
	● T0603793034 - ASW1	100.98	107.31	6.33
	● T0603793034 - ASW2	99.45	105.7	6.25



[VIEW PDF VERSION](#)

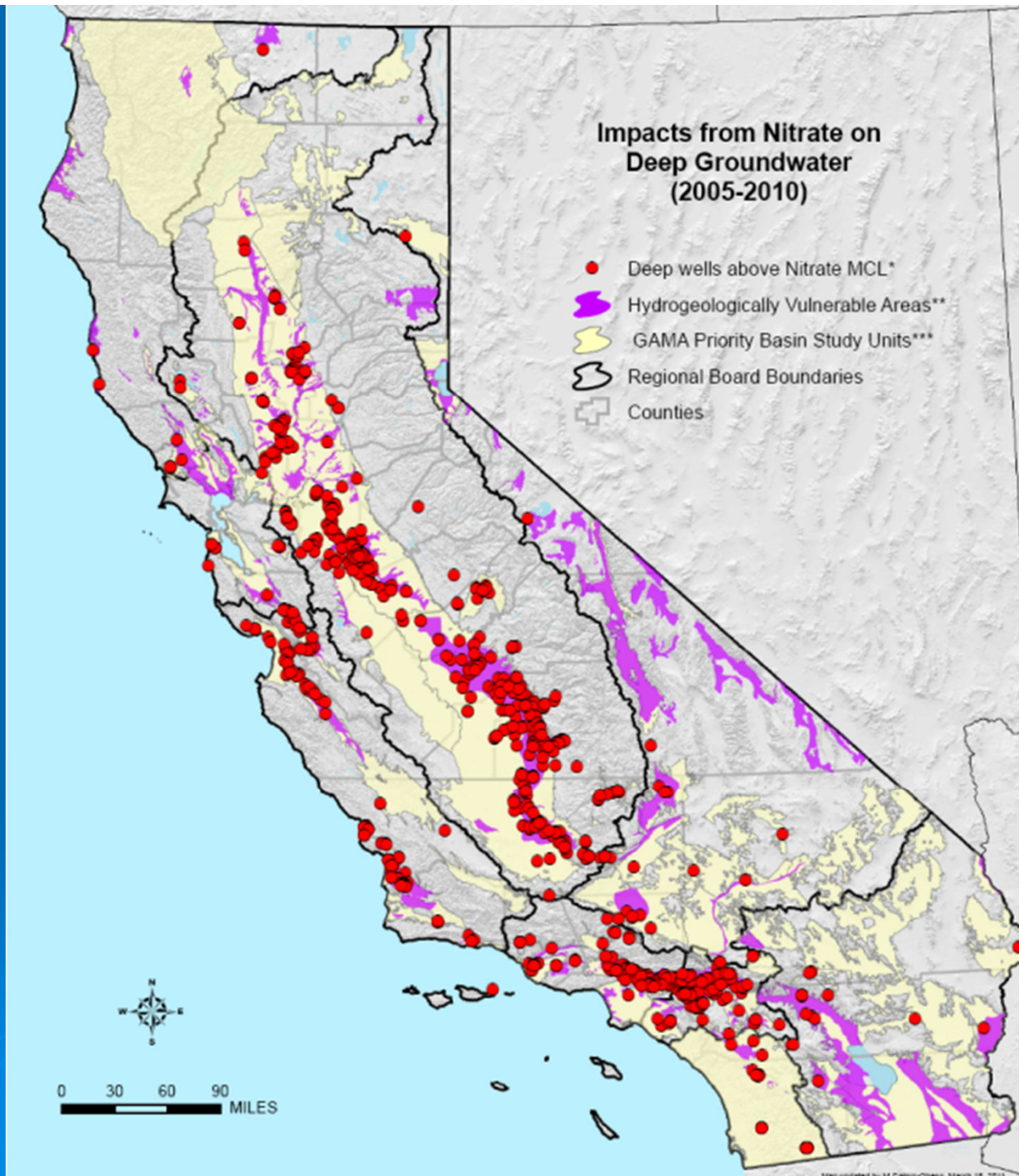
Click on a Well and get its Hydrograph (water level history)

Uses of GeoTracker GAMA



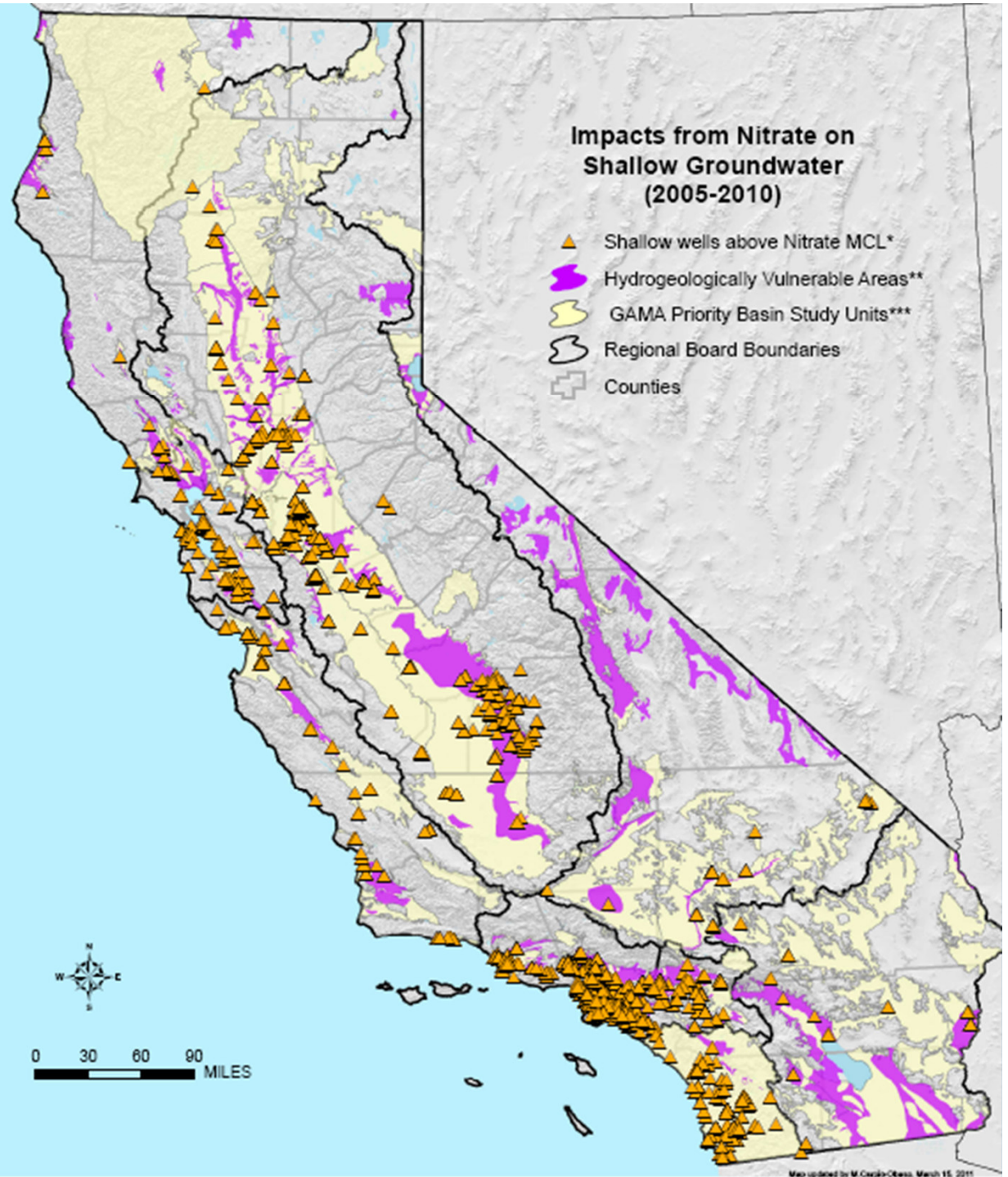
Hydrogeologically Vulnerable Areas and GAMA Priority Basins

Nitrate above MCL in Public Supply Wells



Hydrogeologically Vulnerable Areas and GAMA Priority Basins

Nitrate above MCL in Shallow Wells



Summary

- Legislature wanted groundwater quality data in GeoTracker GAMA
- GT GAMA - robust information system
 - Ability to integrate multiple disparate datasets – 100M analytical results
 - Also has “non” water quality functionality
 - Well logs, water levels
- Co-locating other groundwater data on Google maps interface of GeoTracker GAMA in the near future.

John Borkovich
GAMA Program Manager

www.waterboards.ca.gov/gama

