



Department of  
Toxic Substances  
Control

*The Mission of the  
Department of  
Toxic Substances  
Control is to  
provide the highest  
level of safety, and  
to protect public  
health and the  
environment from  
toxic harm.*



State of California



California  
Environmental  
Protection Agency

## March 2010 Fact Sheet

# Progress Update for the Stringfellow Site, Zone 4 Perchlorate Cleanup

(para informacion en Espanol, llame a Jesus Cruz, al 1-800- 495-5651)

The Department of Toxic Substances Control (DTSC) is sending this fact sheet to update you on community area (Zone 4) cleanup activities at the Stringfellow Superfund Site in Glen Avon. The DTSC is the lead state agency conducting actions to protect human health and the environment from hazardous wastes at the site.

The Stringfellow Superfund Site (site) was a hazardous waste disposal site located in Pyrite Canyon, north of Highway 60. The waste disposal site operated from 1956 to 1972 and over that time received about 35 million gallons of hazardous waste.

In the early 1980's, the Santa Ana Regional Water Quality Control Board removed the liquid hazardous waste from the ponds and covered the site with soil. Since 1986, the United States Environmental Protection Agency (U.S. EPA) and DTSC have installed hundreds of groundwater monitoring wells, extraction wells, and several treatment plants to contain and remediate contaminated groundwater migrating from the site. The contamination source area is shown below in Figure 1.

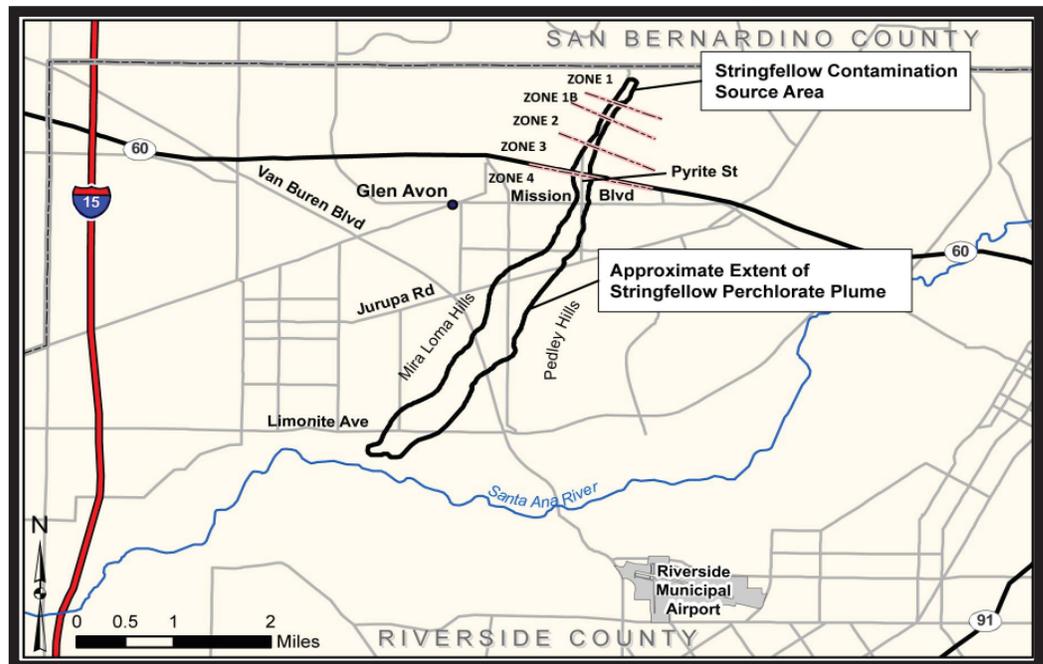


Figure 1 Site map of Stringfellow Perchlorate Plume

### Stringfellow SAC Meetings

The Stringfellow Advisory Committee (SAC) invites the community to attend regularly scheduled SAC meetings. The meetings are held once every two months, usually on the third Wednesday of the month. The meetings are held at 10 am at the following location:

**The Stringfellow Information Center  
9415 Mission Boulevard, Suite D  
Glen Avon, California**



## Perchlorate Found

In early 2001, perchlorate was detected in groundwater south of Highway 60 extending all the way down to Limonite Road. DTSC gave residents using wells in the area of contaminated groundwater bottled water until they could be connected to Jurupa Community Services District (JCSD) water service. DTSC also funded the installation of water mains, laterals, and meters, as needed. The location of the Stringfellow perchlorate plume is also shown in Figure 1 (see Page 1).

Perchlorate is a salt, and in synthetic form is present most commonly as ammonium perchlorate, which is used in solid fuel rockets, matches, and other applications. It is used because it provides the oxygen that the rocket or match needs to burn. Data collected to date suggest that the perchlorate from the source ponds is confined to an area outlined by the bold black line on the map shown in Figure 3 on Page 3.

When any perchlorate salt, such as ammonium perchlorate is dissolved in groundwater, it is freed from ammonium and it moves freely with the water. Perchlorate can affect human health by interfering with iodide uptake into the thyroid gland. In adults, the thyroid gland helps regulate the metabolism by releasing hormones. In children, the thyroid helps in proper mental development. The existing treatment remedies put in place to treat the TCE plume are also reducing the concentrations of perchlorate in groundwater in the area south of the site.

Starting in 2004 and continuing through 2006, 117 groundwater samples were collected at 70 locations southwest of Pedley Road and to the east and west of the Site's existing monitoring well network. Also, 60 additional small diameter monitoring wells were installed at 28 locations between the 60 Freeway and the Santa Ana River. Data from these monitoring wells was used for an investigation of the Santa Ana River.

In March 2009, the Draft Zone 4 Remedial Investigation report was issued, it defines the extent of the perchlorate plume. Figure 3 on Page 3 shows the outline of the Stringfellow perchlorate plume. In the area surrounding the plume, perchlorate concentrations ranging from 1 ppb to 12 ppb are widespread, but show no pattern, and are not related to the Stringfellow plume. These

low concentrations of perchlorate appear to be related to the historical use of perchlorate-bearing Chilean nitrate fertilizer for agriculture in the area. More than 90% of this land has historically been used for agriculture. A special isotope analysis was performed that confirms that Chilean nitrate fertilizer may be a secondary source of perchlorate in the area.

## Perchlorate Cleanup Pilot Study

From July to December 2009, an in-ground bioremediation pilot study was conducted to test if naturally-occurring microbes could break down perchlorate in groundwater. Food-grade acetate was used to enhance the biochemical reactions. Field monitoring of well probes provided immediate readings to field staff monitoring progress of the pilot study as shown in Figure 2 (see below).



**Figure 2 Bioremediation Pilot Study Monitoring**

A nitrogen gas pulse generator was used to push the acetate out into the aquifer with nitrogen. This injection process is shown in Figure 4 on Page 4. DTSC then monitored the effectiveness of adding acetate to promote the reduction of perchlorate.

Groundwater samples were then collected from monitoring wells located downstream from the injection points. These samples were analyzed at a laboratory for a number of constituents including perchlorate, nitrate, nitrite, and volatile organic compounds (continued on Page 4).

*The map in Figure 3, to the right, shows areas of concentration of perchlorate in groundwater. The area shaded with green has the highest concentrations of perchlorate.*

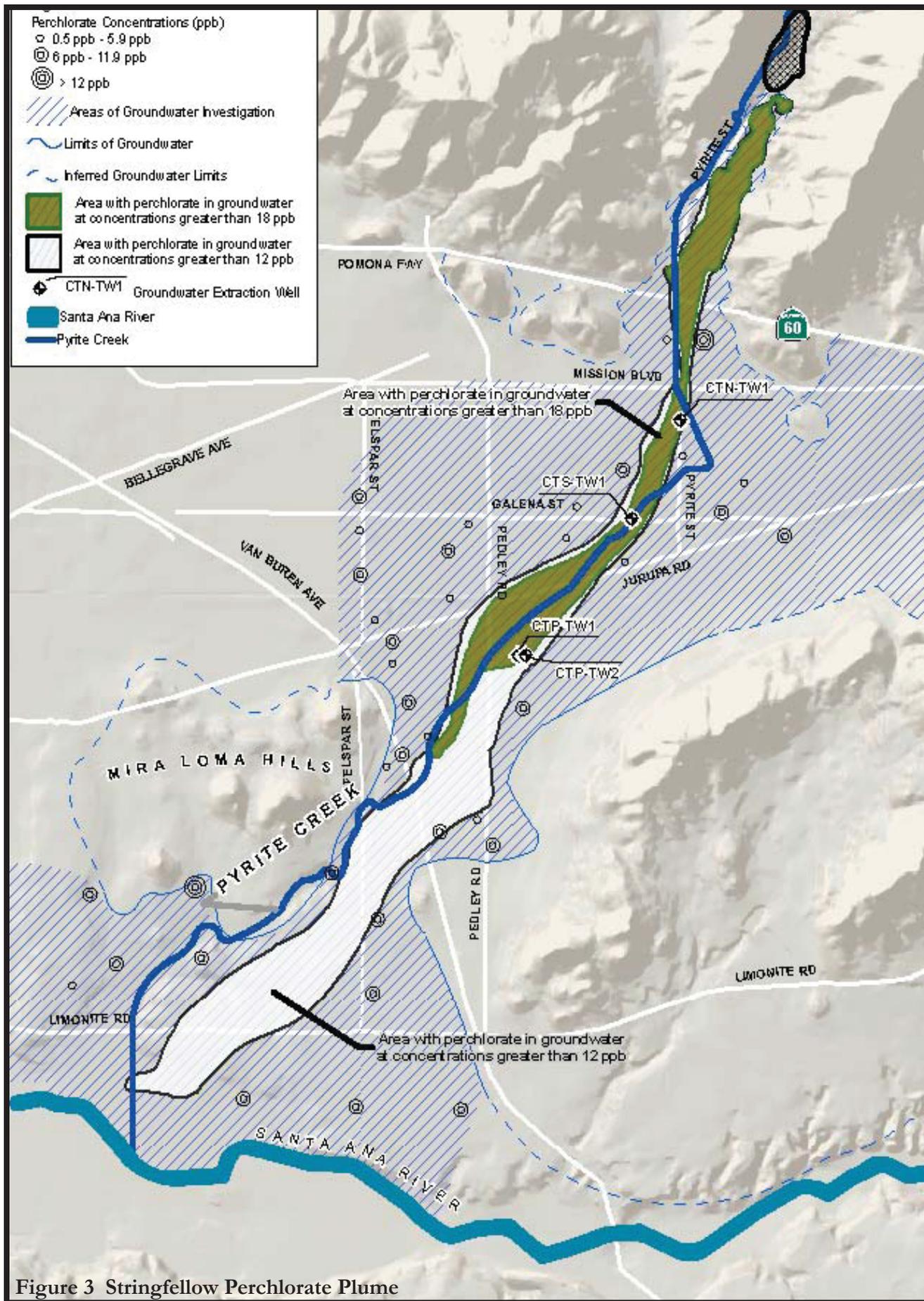


Figure 3 Stringfellow Perchlorate Plume



**Figure 4 Acetate Injected into Groundwater Wells**

The pilot study results showed a decrease in observed concentrations of perchlorate in the test area. A pilot study technical memorandum that summarizes the pilot study results will be issued for public review in Spring 2010.

### **Zone 4 Perchlorate Feasibility Study**

The Feasibility Study (FS) for perchlorate in Zone 4 groundwater is being prepared. A computer-generated groundwater model is being developed as a tool in the FS to predict how many pumping wells to use, how effective in-ground bioremediation will be, estimating cleanup times, and simulating the effectiveness of cleanup alternatives. Also, a background study will be performed to determine the ambient concentration related to fertilizer use in the area.

The FS will consider a range of viable remedial alternatives to clean up perchlorate in Zone 4, balancing such factors as effectiveness, ability to implement, cost, and sustainability. The process to select an alternative will take into account results of the Remedial Investigation, Health Risk Assessment, and the groundwater modeling. The Draft FS is scheduled to be submitted for stakeholder review in Spring 2010. An open house is planned in the Summer of 2010 for the Zone 4 Feasibility Study.

### **Zone 4 Perchlorate Proposed Plan**

The Proposed Plan will summarize and compare all of the cleanup alternatives and will identify the preferred cleanup option for the perchlorate plume in Zone 4. There will be a formal 30-day public comment period and a public meeting to discuss the Proposed Plan and receive public

comments. Current plans are to have the Proposed Plan out for public review and comment in the Winter of 2011.

After considering all public comments received, a Record of Decision (ROD) will be prepared and issued by the EPA. The Draft ROD will be submitted for stake holder review, by Spring 2011.

### **Contact Information**

Please contact any of the following individuals with any questions or concerns you may have regarding the Stringfellow Site.

For Information about Technical Issues, contact Joan Weber, DTSC Project Manager at (916) 255-6518, or [JWeber@dtsc.ca.gov](mailto:JWeber@dtsc.ca.gov)

Susan Fears at (916) 255-6552, or [SFears@dtsc.ca.gov](mailto:SFears@dtsc.ca.gov)

For information about Public Participation, or if you would like to be added or removed from our mailing list, contact Jesus Cruz, Public Participation Specialist at (800) 495-5651 or (916) 255-3315 or [JCruz@dtsc.ca.gov](mailto:JCruz@dtsc.ca.gov)

For Media questions contact Kam Kimberly Coveyou, DTSC Public Information Officer at (916) 643- 8304, or [KCoveyou@dtsc.ca.gov](mailto:KCoveyou@dtsc.ca.gov)

### **Where to Find Site Documents**

Electronic versions of Site documents are available in the DTSC's EnviroStor document library located at: <http://www.envirostor.dtsc.ca.gov/public>

**Hard copies of documents are located at:**

Glen Avon Public Library  
4810 Pedley Road  
Riverside, California 92509  
(951) 685-8121 (call for hours)

### **Notice to the hearing impaired**

TDD users can obtain information about the Site by using the California State Relay Service at (888) 877-5378 (TDD). Ask for Jesus Cruz at (916) 255-3315 regarding the Stringfellow site