

STATE OF CALIFORNIA  
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL COAST REGION

STAFF REPORT FOR REGULAR MEETING OF JULY 7-8, 2005

Prepared on June 13, 2005

ITEM NUMBER: 4

SUBJECT: Perchlorate Cleanup Sites

DISCUSSION:

New information is shown in *italics*. Please refer to the Central Coast Water Board's, July 9, 2004 and February 11, 2005 staff reports for additional historical background information.

General Information: The Department of Health Services (DHS) released the draft Maximum Contaminant Level (MCL) for perchlorate on October 27, 2004. The draft MCL is 6 ppb. The DHS must now formally adopt the MCL through a statutorily defined process. The main steps in DHS' Drinking Water Program's regulations process include review by DHS' Office of Regulations, DHS' Budget Office, the Department of Finance, and the Health & Human Services Agency. It is then released to the Office of Administrative Law (OAL) for publication in the *California Regulatory Notice Register* announcing the availability of the regulation for a 45-day public comment period. If changes are made in response to public comments received during the first comment period, then a second 15-day public comment period will be held. The draft MCL will then be approved by the DHS Director's Office followed by a final review by OAL. Following OAL approval, the regulation is filed with the Secretary of State, and becomes effective 30 days later. Regional Water Board staff anticipates the MCL will be adopted within the next 12 months and will provide updates as the draft MCL makes its way through the review and adoption process.

**Olin Corporation Facility, 425 Tennant Avenue, Morgan Hill, Santa Clara County**  
**Lead Staff: David Athey 805-542-4644**

Current milestones in the investigation of perchlorate contamination on and off of the former Olin facility include:

***On-site Groundwater Treatment and Containment:***

On November 18, 2003, Regional Water Board staff approved the installation and operation of the on-site groundwater containment and perchlorate removal system. The system's purpose is to provide hydraulic containment and removal of perchlorate through on-site groundwater extraction and treatment. The system began operation on February 23, 2004. By April 7, 2004, system startup was completed and has been operated continuously since that time.

*Update: Olin continues to operate the on-site groundwater containment and treatment system. During the month of April 2005, the system treated approximately 6.0 million gallons of perchlorate-contaminated groundwater. Since extraction started in February 2004, the system has removed perchlorate from approximately 43.5 million gallons of groundwater. Olin is required to submit second quarter 2005 treatment system data on July 31, 2005.*

***On-site Ex Situ and In Situ Soil Treatment:***

Olin has proposed to treat on-site perchlorate impacted soils using both ex situ and in situ methods. The two main components of the treatment option include: ex situ anaerobic bioremediation of perchlorate-contaminated soils greater than 7,800 µg/kg, the United States Environmental Protection Agency (USEPA) residential Preliminary Remedial Goal, and in situ bioremediation of soils above the site-specific soil screening level of 50 µg/kg. The site specific soil remediation goal is derived from the methods described in the USEPA's *Soil Screening Guidance: Users Guide* and is the calculated concentration of perchlorate that would not result in groundwater impacts above 4 µg/L.

Regional Water Board staff conditionally approved *Olin's Remedial Action Work Plan & 90% Design Report For Soil Remediation* on June 10, 2004. Olin subsequently responded to comments and Regional Water Board staff provided final approval on August 3, 2004. Olin has begun in situ system construction and has completed the ex situ soil treatment pile. **Photo 1** shows the completed ex situ pile without the cover.



**Photo 1** – This is a view, looking North, of the completed ex situ soil pile (sans cover). The drip tape is visible and the darker soil has been watered with perchlorate free site groundwater.

Olin continues to construct the in situ system and will initiate operation at the conclusion of ex situ soil treatment.

Olin is continuing ex situ soil treatment via bioremediation. Olin is preparing to sample the ex situ soil pile to determine if remediation

goals have been achieved. Olin will be providing the results and its recommendations to the Regional Water Board regarding next steps in the remediation process.

*Update:* Olin submitted a memo from its consultant, GeoSyntec, outlining the successful completion of ex situ soil treatment. **Table 1** lists the results of the five sampling rounds and provides the mean and 95% Upper Confidence Limit (UCL<sub>95</sub>) for all sampling rounds. The April 2005 sampling event results indicate that the samples results are all below the remediation goal of 50 ppb. Soil sampling prior to treatment indicated an overall soil pile perchlorate concentration of 7000 ug/kg. Olin has been able to achieve a 99% reduction in soil perchlorate concentrations.

**Table 1. Summary of Sampling Event Results**

Location	Date of Sampling Event				
	2004				2005
	Sept 21	Oct 21	Nov 16	Dec 16/17	April 10/11
B1	180	17	20	28	13
B2	240	150	100	120	23
B3	29	29	8.7	27	7.6
B4	250	77	45	9.3	6.2
B5	25	36	ND (8)	9.4	19
B6	110	11	19	38	8.5
B7	83	28	180	ND (8)	4.3
B8	15	9.1	ND (4)	23	21
B9	69	120	ND (20)	19	6.0
B10	240	73	ND (20)	7.8	4.4
B11	89	25	16	ND (8)	7.5
B12	180	21	8.8	270	17
<b>Mean</b>	126	50	35	47	12
<b>UCL<sub>95</sub></b>	327	108	135	170	18

NOTE: ND = NON DETECT; REPORTING LIMIT GIVEN IN PARENTHESES.

ALL UNITS GIVEN IN MICROGRAMS/KILOGRAM.

The ex situ soil pile sampling locations are shown on **Figure 1** (page 3) for each round of sampling.

Now that ex situ treatment is complete, Olin has started in situ soil treatment unit construction. Completed work includes addition of soil amendments, construction of rock underlayments for irrigation water mains and sub mains, and the perimeter berm. Work that will be completed in June includes installation of the lysimeters and moisture probes within the infiltration unit, construction of the electrical/mechanical elements, and drip tape installation. Following construction completion, GeoSyntec will conduct a system

shakedown, followed by initial start up and optimization.

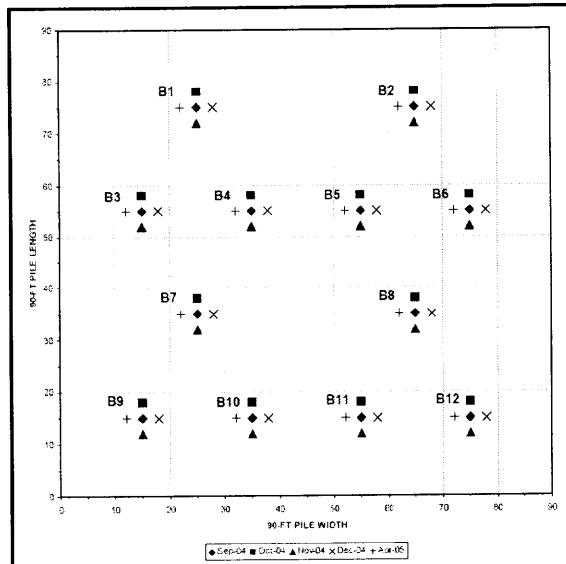


Figure 1 – Ex situ pile sampling locations.

#### Groundwater Monitoring and Reporting:

Update: Cleanup or Abatement Order No. R3-2005-0014 (CAO No. R3-2005-0014) was signed and sent to the Dischargers on March 10, 2005. CAO No. R3-2005-0014 contains requirements for Olin to submit an updated groundwater-monitoring plan that details plans to fully delineate the off-site plume's lateral and vertical extent. The groundwater-monitoring plan was received on April 9, 2005, as required and is currently being reviewed. Regional Water Board staff has provided Olin with comments related to plan details. The City of Gilroy and Santa Clara Valley Water District have also provided comments to Olin. Regional Water Board staff had a meeting with Olin on June 8, 2005, to discuss the groundwater-monitoring plan and the submitted comments. Results of that meeting will be provided to the Regional Water Board at the July 8, 2005 meeting.

#### Northeast Groundwater Flow Assessment:

Olin is continuing to install the multi level and single level piezometers to the northeast. Olin has completed one piezometer and is finishing up a second. A total of four multi-port piezometers (also called continuous multi channel tubing piezometers or CMT) and three deeper single (or double depending on

lithology and depth) screen piezometers will be installed. Regional Water Board staff visited the PZ-1/MP-1 drill site on April 26, 2005, to observe drilling activities and the continuous soil core. **Photo 2** shows the sonic drill rig at PZ-1. **Photo 3** shows a typical example of a 2' core section.

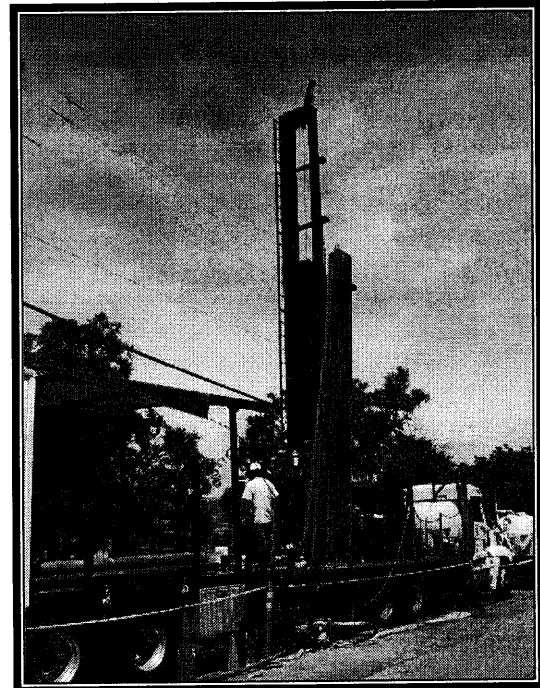


Photo 2 – Sonic Drill Rig. The sonic drill rig uses sound waves to advance the drill head through the soil column. This produces almost no drill cuttings.



Photo 3 – MACTEC geologist examining a 2' core section. The core sections are divided into 2' sections, wrapped in plastic and sections labeled, and stored in cardboard boxes at the former flare manufacturing facility. Munsell color chart is to the left.

*The Water District has completed a draft forensic work plan and is currently conducting an internal review prior to submitting it to the Regional Water Board. Regional Water Board staff anticipates receiving the plan sometime near the end of June 2005. Regional Water Board staff will provide more specific details at the July 2005 Board Meeting, if available.*

**Cleanup or Abatement Order No. R3-2004-0101:**

The July 9, 2004 Cleanup Order directs Olin and Standard Fusee to supply uninterrupted replacement water to well owners with perchlorate-contaminated wells. The Order requires Olin and Standard Fusee to provide interim uninterrupted water to well owners whose wells meet two important criteria. The first criterion is for wells that test at or higher than 4 ppb. Well owners with wells that test at or higher than 4 ppb shall be supplied interim uninterrupted water service (currently bottled water). The Order also establishes a mechanism for stopping bottled water supply to these wells and includes follow up monitoring.

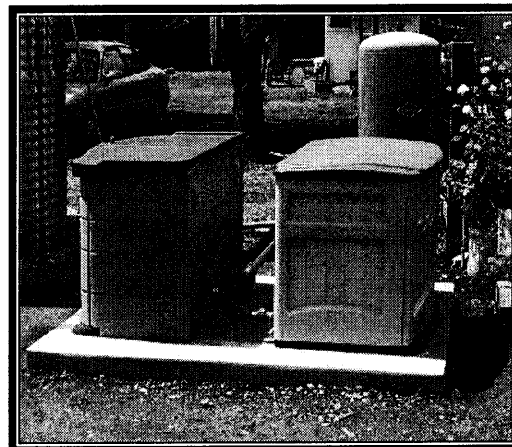
On August 5, 2004, Olin petitioned the State Water Resources Control Board (State Water Board) to review the Order. The State Water Board reviewed the petition and issued a final Order on April 19, 2005.

*Update: The State Water Board final order adopted May 19, 2005 (Attachment 1), establishes a trigger level of 6 ug/L for alternative water delivery. The final order finds that Regional Water Board staff did not abuse its discretion in requiring a trigger level below the 6 ppb Public Health Goal (PHG). The State Water Board found that Regional Water Board staff should have deferred to the Office of Environmental Health Hazard Assessment's PHG to set the trigger level. The PHG is currently 6 parts per billion (ppb). Regional Water Board staff responded to the draft final order (response provided in Attachment 2). The final order includes requirements for four prospective quarters of monitoring prior to stopping bottled water supply if the perchlorate concentrations are below the PHG. The State Water Board did include a mechanism for Olin to request*

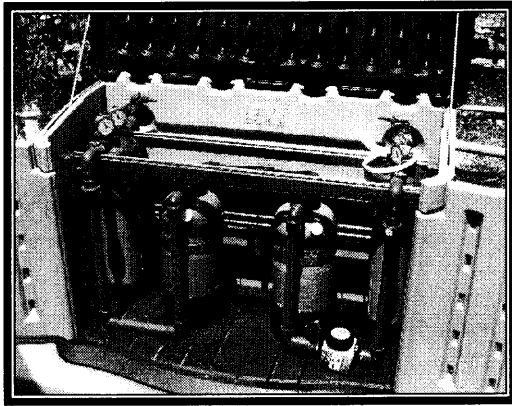
*earlier termination of alternative water service for wells with existing results. Olin may submit a request to the Regional Water Board for termination of accounts with existing results.*

*The State Water Board final order applies only to the Olin case, unlike the previous draft order, which potentially could have affected cleanups and alternative water issues in other regions. Regional Water Board staff will enforce the State Water Board order to ensure the requirements are being met.*

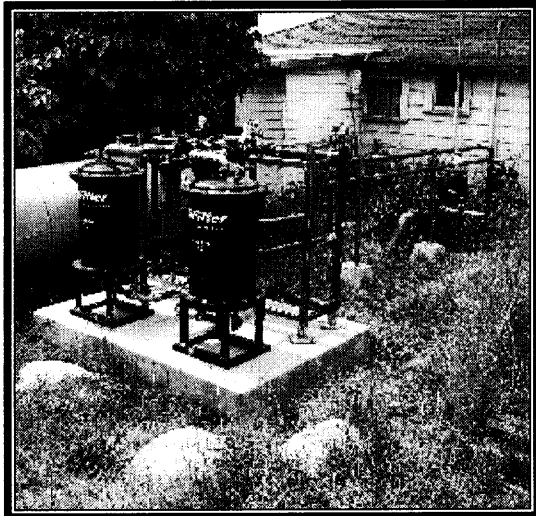
*Regional Water Board staff observed three ion exchange systems that Olin, with the assistance of US FILTER, has installed on four wells just south of the site. The systems range in size from 1-10 gallons per minute (gpm) on up to 60 gpm. Photos 4, 5, 6, and 7 show the different sized systems. Olin anticipates a one-year life span based on biofouling and not ion exchange resin life.*



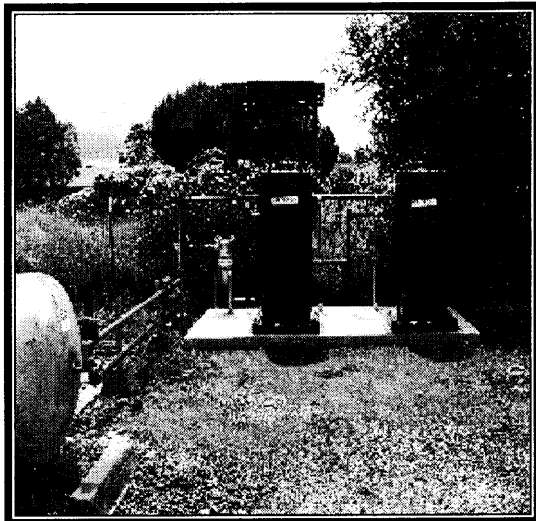
**Photo 4** – This photo shows the structures, pad and pressure tank of a 10 gpm system. The ion exchange vessels are located in the plastic structures.



**Photo 5** – This photo shows the ion exchange tanks and filters (blue vessels) along with associated piping and gauges.



**Photo 6** – This system shows a mid range system that serves four units.



**Photo 7** – This is a 60 gpm systems that is installed on the U-Save Rockery well.

All of these systems are run in a lead-lag configuration, similar to full scale systems on municipal wells.

***Southern Plume Area and Gilroy Wells:***

During the second quarter of 2004, Olin tested 42 southern area wells near the City of Gilroy. Of these 42 wells, six were sampled for the first time. Twenty-six wells did not contain perchlorate above the reporting limit of 4 ppb. Sixteen wells had perchlorate concentrations ranging from 4 to 6.6 ppb. According to Olin, these results define the southern-most detections of perchlorate above the Department of Health Service's 6 ppb action level.

Regional Water Board staff is currently not convinced that the edge of the plume, both vertically and laterally, has been identified. Cleanup or Abatement Order No. R3-2005-0014 (CAO R3-2005-0014), Ordering Paragraph A, requires the Dischargers to delineate the lateral and vertical extent of perchlorate in the Llagas groundwater subbasin. Ordering Paragraph A requires the Dischargers to submit a comprehensive monitoring plan including recommendations for off-site monitoring wells, by April 9, 2005. Olin submitted the report on time and has not proposed dedicated monitoring wells for the southern plume area. Olin is proposing to use existing supply wells to define the plume's downgradient edge. Regional Water Board staff will be evaluating Olin's proposed monitoring system, including the elements concerning the southern plume area, to ensure that the plume's extent is delineated.

***Perchlorate Community Advisory Group (PCAG)***

*Update: Regional Water Board staff provided an update at the June 2, 2005 PCAG meeting. Regional Water Board staff discussed the final State Water Board order pertaining to replacement water. The next Perchlorate Community Advisory Group meeting is scheduled for June 30, 2005, 7 p.m.*

***Cleanup or Abatement Order R3-2005-0014:***

The Executive Officer issued CAO R3-2005-0014 on March 10, 2005, to Olin and Standard Fusee. CAO R3-2005-0014 applies to areas south of the Olin site. CAO R3-2005-0014 requirements include a:

- Llagas subbasin groundwater monitoring plan.
- groundwater monitoring well installation work plan.
- Llagas subbasin characterization report.
- plume migration control feasibility study.
- plume migration control work plan.
- Llagas subbasin cleanup level report.
- Llagas subbasin cleanup feasibility study.
- Llagas subbasin cleanup work plan.

Regional Water Board staff solicited public comments on the Draft CAO R3-2005-0014 to facilitate the community's participation. Comments were received from the Perchlorate Community Advisory Group, Olin Corporation, City of Morgan Hill, Santa Clara Valley Water District, Perchlorate Medical Advisory Group and Dr. Richard Peekema. Regional Water Board staff considered all submitted comments and included its responses in the final CAO R3-2005-0014 transmittal letter. The Order and transmittal letter were provided to Regional Water Board as part of the February 2005 Staff Report. CAO R3-2005-0014 was not petitioned to the State Water Board.

*Update: Olin submitted a request on June 2, 2005, to extend the deadline for submittal of the groundwater monitoring well installation work plan. Their request was based on the lack of approval of the Llagas Subbasin Monitoring Plan. Regional Water Board staff responded to Olin's request in a letter dated June 9, 2005 (Attachment 3).*

*Olin reports and significant correspondence can be accessed on our web site by going to: <http://www.swrcb.ca.gov/rwqcb3/Facilities/Olin%20Perchlorate/Olinsite.htm>*

**McCormick Selph, 3601 Union Road,  
Hollister, San Benito County**

**Lead Staff: David Athey 805-542-4644**

*Update: The Discharger performed the first quarter 2005 sampling event on February 21,*

*2005. Regional Water Board staff received the monitoring data as part of the first quarter 2005 groundwater monitoring report received April 30, 2005. Staff is currently reviewing this report.*

*The data collected as part of the quarterly monitoring events will be used to assess the success of the enhanced in situ bio-remediation program (EISB). Components of the EISB include: 1) pre-injection groundwater monitoring (completed), 2) pilot scale injection of Hydrogen Releasing Compound<sup>®</sup> (completed), 3) post injection groundwater monitoring (ongoing), and 4) preparation and implementation of a full-scale EISB work plan. Prior to preparation of the full-scale EISB work plan, six groundwater monitoring events are scheduled. There are two more groundwater monitoring events scheduled prior to full-scale EISB work plan submittal. The Discharger will be submitting the full-scale EISB work plan by September 30, 2005.*

**Whittaker Ordnance Facility, 2751 San  
Juan Road, Hollister, San Benito County**  
**Lead Staff: Kristina Seley 805-549-3121**

On August 13, 2004, Regional Water Board staff visited the Whittaker Ordnance facility to discuss site activities and observe site cleanup areas. Perchlorate and volatile organic compound remediation efforts continue at contaminated areas on and off of the site. Whittaker is still collecting data and will be submitting the following reports shortly (some reports have been received):

- **Deep Aquifer Analysis Report (DAAR)**  
–The DAAR is a supplement to the Corrective Action Plan. The DAAR evaluates volatile organic compounds (VOCs) and perchlorate plume stability, identifies monitoring data gaps, and summarizes ongoing groundwater corrective actions. The Report includes detailed perchlorate and TCE iso-concentration contour maps and trend analyses. This Report was received on September 17, 2004. Staff has provided comments on the DAAR.
- **Monitoring Well Installation Report and Revised Hydrostratigraphic**

**Interpretation Report** – This report was received on September 20, 2004. The report details well installation activities performed to better define groundwater conditions downgradient. It also presents a revised interpretation of the geology and hydrostratigraphy beneath the Whittaker site. Staff has provided comments on this report.

- **Second Semiannual Groundwater Monitoring Report** – This Report was received on January 31, 2005. The report summarizes soil and groundwater monitoring activities during the second half of 2004. The report also presents the status of remediation activities.

Remedial activities currently underway at the site include:

- Point-of-use treatment systems for three off-site private supply wells including ion exchange for perchlorate remediation and granular activated carbon for VOC treatment.
- Air stripping at the Riverside well for VOC contamination.
- Groundwater extraction and treatment and soil vapor extraction at the north Building 5 septic tank area.
- Ozone sparging at the north building 5 septic tank area. Since March 2003, the system has not been operational, and although major efforts to repair the system have been conducted, no further operation of the system is proposed.
- In situ reactive zone groundwater remediation programs at the northwest site boundary, Building 23 area, upper burn area and southwest burn area.
- Proposed soil flushing at the Former Burn area. Construction efforts are underway for soil flushing. However, this remediation strategy will be reevaluated for the site-wide remediation strategy before implementation.

*Regional Water Board staff has reviewed the Second Semiannual Groundwater Monitoring Report, in conjunction with the DAAR and Monitoring Well Installation Report. Comments were*

*issued May 2, 2005. In summary, staff provided the following comments.*

1. *Provide a strategy to resolve monitoring gaps down gradient from the Lower Facility.*
2. *Enroll the Groundwater Extraction and Treatment System on our General Waiver of Waste Discharge Requirements for injection of treated water to groundwater. The GETS enrollment was approved by staff in a letter dated December 7, 2001. However, since that time, the Regional Water Board has adopted a general waiver that is more appropriate for developing effluent limits and monitoring requirements. Staff are working with the consultant to enroll the GETS in the General Waiver.*
3. *Staff requested setting effluent standards for irrigation wells at detection limits. Specifically, the Riverside well treatment system effluent has varied between 1.7 ug/L and 15 ug/L for TCE and the most recent perchlorate detection was 120 ug/L. Whittaker's consultant has informed the Regional Water Board that they will decommission the well in the first quarter of 2006.*

- **Draft Sampling and Analysis Plan** - This report was submitted in response to Regional Water Board staff's request for a comprehensive review of on- and off-site groundwater monitoring. The draft report applies to soil and groundwater sample collection, analysis, and data review. It also applies the soil vapor extraction systems, groundwater extraction systems, and domestic and irrigation supply well treatment systems. On and off-site monitoring is conducted to assess the vertical and lateral extent of contamination, and to design, modify, and assess corrective actions and evaluate treatment system performance. The report was submitted on February 25, 2005.

*Staff provided comments on April 25, 2005. The April 25<sup>th</sup> letter requires updates to the SAP, including expansion of data reporting and monitoring and sampling protocols. The final SAP is due*

June 1, 2005. The SAP will serve as the monitoring and reporting doctrine for the Whittaker site. The SAP will be a living, stand-alone document that will be updated by Whittaker with Regional Water Board concurrence. Changes will be made as monitoring, sampling, and remediation efforts alter or new data is received.

- **First Quarter 2005 Remediation Status Report** – The quarterly report, dated April 29, 2005, is currently under review by staff. The First Quarter Report describes groundwater monitoring and corrective action activities underway at the Site. Staff anticipate providing comments prior to the July Board Meeting.

On January 27, 2005, Regional Water Board staff met with Whittaker's consultants to discuss their development of a comprehensive site strategy. The consultants presented their draft site cleanup strategy, a site model with remedial alternatives for contaminated site areas, and a proposed remedial program. The conceptual site model identified six soil source areas impacting groundwater. Remediation alternatives for each soil area and each impacted groundwater zone were developed. Perchlorate and VOC remedial alternatives were ranked based on effectiveness, time, and cost. Regional Water Board staff provided feedback to the proposed strategy, including a request for a compilation of data presented in a site strategy report. In a May 2, 2005 letter, staff directed Whittaker to submit a Remedial Design/Remedial Action Work Plan for Site-Wide Cleanup by May 28, 2005.

The Remedial Design/Remedial Action Work Plan was received May 31, 2005. However, with staff approval, Whittaker will submit Appendix E: Off-Site Groundwater Fate and Transport Modeling Report June 3, 2005. Staff are currently reviewing the work plan and will provide comments shortly.

**United Defense, 900 John Smith Road,  
Hollister, San Benito County**  
**Lead Staff: Kristina Seley 805-549-3121**

As reported at the July 9, 2004 Regional Water Board meeting, United Defense is proceeding

with additional site investigations. Regional Water Board staff approved the additional investigation work items in a July 30, 2004 letter. The recommendations set forth within the Report include:

- Continued research and analysis of local hydrogeology and geology to determine the fate and transport of site contaminants.
- Ranch well groundwater sampling.
- Surface water sampling in the Santa Ana Creek up and down stream of the pond and up and down stream of Arena 2.
- Further evaluation of the lateral and vertical extent of perchlorate and nitrate including the implementation of additional monitoring wells, cone penetration test borings, and soil borings at Arena 1 and Building 6.
- Attainment of United Defense's non-drinking water well's construction log.

United Defense submitted the Phase III Environmental Investigation Report (Report) on September 30, 2004. The Report provides supplemental information to the Initial Site Assessment and Phase II Reports. The Phase III investigation was conducted to more fully assess the extent of perchlorate, nitrate and nitrite, energetics (explosive compounds, i.e. TNT), and aluminum contamination in site soil, groundwater, and surface water. The following areas were investigated:

- Arena 1: Previous sampling during the Phase II investigation found perchlorate at a maximum of 2,900 milligrams per kilogram (mg/kg) in soil and 2,600 micrograms per liter (µg/L) in groundwater. Soil results from the Phase III investigation ranged from ND to 3.4 mg/kg. As stated in the Report, Phase II and Phase III perchlorate soil samples are generally highest within two feet below ground surface. Perchlorate detections in groundwater for the Phase III analysis ranged from ND to 8.5 µg/L. These results are from groundwater samples taken from recently installed groundwater wells. Previous groundwater perchlorate results were collected from temporary soil borings.
- Arena 2: One soil boring at 0.5 ft had a perchlorate detection of 3.7 mg/kg.



- Three Nearby Groundwater Wells: Perchlorate was detected in the Rancher's well at 15 µg/L and the Windmill well at 34 µg/L. Nitrate + nitrite (as N) was detected in the Windmill well and WW-1 at 45 µg/L and 4.2 µg/L respectively.
- Ranch Pond Dredge Area: Perchlorate was detected at 1.1 mg/kg in one of the two soil boring samples taken. Nitrate + nitrite (as N) was detected at 8.2 mg/kg and 27 mg/kg in the two borings. Aluminum was also detected at 13,000 mg/kg and 17,000 mg/kg, but results were below the background sample results of approximately 25,000 mg/kg.
- Building No 6 Area: Additional energetic sampling was conducted near Building No. 6 to further assess the extent of HMX, RDX, and TNB (energetics) contamination. The Report states that generally concentrations increase with depth. HMX, RDX, and TNB were found at 2,400 µg/kg, 1,200 µg/kg, and 240 µg/kg, respectively, 20 feet below ground surface.
- Building No 1 Area: All groundwater and surface water results tested non detect for energetics and perchlorate.
- Santa Ana Creek: All surface water samples of perchlorate, nitrates and nitrites, and energetics were non-detect. Dissolved aluminum was detected in four samples ranging from 0.14 mg/L to 0.25 mg/L. Sediment samples exhibited similar results; perchlorate, nitrates/nitrites and energetics samples were all non-detect. However, aluminum concentrations ranged from 6,300 mg/kg to 13,000 mg/kg.

On November 30, 2004, United Defense submitted its Phase III Environmental Investigation Report Addendum. The Addendum provided additional monitoring results to fill data gaps; findings from the Addendum are included below.

- Arena 1: Additional soil borings were advanced to assess the extent of perchlorate contamination. One of 33 soil samples detected perchlorate at 1.1 mg/kg at a depth of 1.5 to 2 feet below ground surface (bgs).

- Cattle Guard: Soil samples where Arena 1 drainage meets the Santa Ana Creek were non-detect for perchlorate.
- Water Well WW-2: Groundwater was collected from WW-2 and analyzed for perchlorate, nitrate + nitrite, and nitroaromatics/nitroamines (energetics). Perchlorate and energetics were not detected, however, nitrate + nitrite as N was detected at 3.5 mg/L.

Regional Water Board staff has completed review of both the Phase III Report and Report Addendum. Regional Water Board staff provided comments to United Defense on December 22, 2004. Regional Water Board staff directed United Defense to proceed with the on-site environmental investigation and provide a Phase IV Report by April 1, 2005. The following highlights information United Defense is required to submit as part of the Phase IV Report:

- Resample the Windmill well. If perchlorate is confirmed, propose an investigation to identify the source and extent of perchlorate contamination.
- Continue to monitor for perchlorate and nitrate + nitrite in the Ranch Pond Dredge area.
- Determine vertical and lateral extent of energetic contamination at Building 6.
- Begin quarterly sampling of the Rancher's well and Windmill well and installed monitoring wells for nitroaromatics/nitroamines (energetics), perchlorate and nitrate + nitrite.
- Develop a site-specific monitoring plan for monitoring of constituents of concern (COCs).
- Propose cleanup standards for perchlorate and energetics by July 1, 2005.

Regional Water Board staff anticipates issuing a monitoring and reporting program for the United Defense, Hollister Test Facility following submittal of site-specific monitoring plan in the Phase IV Report. Once perchlorate and energetic cleanup standards are determined and monitoring data is collected to delineate vertical and lateral extent of COC contamination, Regional Water Board staff will require United Defense to submit a cleanup plan.

On February 4, 2005, Regional Water Board received the following documents.

- **Revised Analytical Results for Table 1 and 2 for the Phase III Environmental Investigation** – The Phase III revised results include a greater detail of perchlorate concentrations. The lab's method detection limits were decreased to 4 ppb for perchlorate groundwater results and 10 to 40 ppb for perchlorate soil results. The laboratory reanalyzed the same samples with the increased sensitivity of 4 ppb. The decrease resulted in two soil detections at Arena 2 and over 16 soil detections between 0.17 mg/kg and 1.8 mg/kg that were previously non-detect.
- **Storm Water Pollution Prevention Plan**
- **Storm Water Monitoring Program**
- **Addendum Work Plan Phase IV Environmental Investigation** – The Addendum Work Plan proposes work to be performed during the Phase IV Environmental Investigation (EI). The Phase IV EI will address Regional Water Board comments issued in our December 6, 2004 letter and comments from the landowner who leases the site to United Defense. The EI will further assess site stratigraphy, water quality, and lateral and vertical extent of COC contamination, particularly at Arena 1. Regional Water Board staff anticipates approving the proposed work.

On February 8, 2005, Regional Water Board staff spoke with United Defense's consultant, URS. URS stated they were moving aggressively with the work plan and have already begun site work. The Reports have been reviewed and the addendum work plan was found to be adequate. Regional Water Board staff approved a request by United

Defense to extend the Phase IV Report due date from April 1 to May 15, 2005.

On March 28, 2005, Ms. Seley spoke with URS staff member Susie Vedantham, United Defense's consultant. Ms. Seley discussed the request by the Regional Water Board to implement interim corrective action at source areas. Pursuant to the request, URS will continue with the Phase IV work to delineate the perchlorate and energetic contamination to characterize the source areas. URS will also propose a draft cleanup level, which will be the basis for cleanup. Once the two items are complete, Regional Water Board staff will request a proposal for interim remedial options at the source areas and an overall cleanup strategy.

Following submittal of the Phase IV Report, Regional Water Board staff will meet with United Defense and its consultant to review the Report findings and discuss conclusions.

*Staff received the Phase IV Report on May 13, 2005, and met with United Defense's consultant URS on June 2, 2005. URS reviewed the Report findings and Regional Water Board staff discussed initial comments. Staff will complete review of the Phase IV Report and provide final comments prior to the July 8<sup>th</sup> Board meeting.*

#### **ATTACHMENTS**

1. Olin – State Water Board WQ 2005-0007.
2. Olin - May 16, 2005 Letter to State Water Board commenting on the final draft order.
3. Olin - June 9, 2005 Letter responding to Olin's request for an extension to submit the Llamas Sub-basin monitoring plan.