California Regional Water Quality Control Board
Central Coast Region

Alan C. Lloyd, PhD.
Secretary for Environmental Protection

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Arnold Schwarzenegger
Governor

February 28, 2006

Mr. Richard W. McClure
Olin Corporation
Environmental Remediation Group
P.O. Box 248
Charleston, TN 37310-0248

Dear Mr. McClure:

SLIC: 425 TENNANT AVE, MORGAN HILL; MODIFIED ENROLLMENT IN THE GENERAL WAIVER OF WASTE DISCHARGE REQUIREMENTS FOR THE OLIN SITE

This letter is in response to Olin's February 3, 2006 request for conditional approval to reinject treated groundwater by modifying Olin's enrollment in the General Waiver of Waste Discharge Requirements. Regarding your initial request, our November 2, 2005 letter required Olin to comply with seven specific conditions prior to operating its recharge system. To confirm that compliance with all conditions has been achieved, Water Board staff has reviewed all information and technical reports submitted in response to our November 2, 2005 conditional approval. Following is a brief description of each condition, including a discussion of the information provided and Olin's compliance status.

1. **Condition 1:** *Comply with revised Monitoring and Reporting Program (MRP) No. 01-161.*

   It is our position that Olin remains in compliance with revised MRP No. 01-161. Olin continues to monitor and submit monitoring reports in compliance with monitoring and reporting requirements. In an effort to further clarify and consolidate monitoring requirements, Water Board staff is working cooperatively with Olin staff to develop a comprehensive monitoring and reporting program for the entire Site. Further, the need for additional monitoring modifications is continuously evaluated and, if necessary and appropriate, Water Board staff will make necessary changes.

2. **Condition 2:** *Submit an evaluation of the current groundwater piezometric monitoring system, verify that the existing piezometric network is adequately designed and constructed, and evaluate the need for additional piezometric wells, and confirm modeling of the extent of hydraulic capture.*

   According to your February 3, 2006 request letter, Condition 2 has been satisfied via implementation of Quarterly Performance Monitoring Reports submitted pursuant to MRP No. 03-0168. The performance monitoring reports have been submitted since 2nd Quarter 2004 and have included all of the performance evaluation information required. Monitoring reports demonstrate the groundwater extraction system is performing as designed.

   To confirm that compliance with this condition has been achieved, Water Board staff reviewed the Third and Fourth Quarter 2005 Performance Monitoring Reports For On-Site Containment & Treatment Of Perchlorate In Groundwater And In Situ Bioremediation Of Perchlorate In Soil. The Performance Monitoring Reports document the operation and performance of the on-site perchlorate groundwater

treatment system and the in-situ bioremediation system to treat perchlorate-impacted soils. The data collected confirms the extent of hydraulic capture beneath the site is well understood and has been adequately modeled. We agree with Olin's assertion that the potentiometric surfaces in both the A-zone and B1-zone directly beneath the site have been evaluated and accurately defined. We understand that Olin will continue evaluating the potential for adding additional on-site monitoring points and intends to present any recommendations for changes in future quarterly performance monitoring reports. We take this opportunity to point out, based on the groundwater monitoring data and evaluation results that Water Board staff has the authority to require modifications to the monitoring program at any time, if necessary.

We find the above referenced performance monitoring reports complete and acceptable. As such, we find Condition 2 has been adequately satisfied.

3. **Condition 3:** *Submit the results of the Phase I, Pre-Design Data Collection investigation for staff review and acceptance.*

In compliance with this condition, GeoSyntec Consultants (GeoSyntec), on behalf of Olin Corporation (Olin), submitted a letter report titled, Report on Pre-Design Data Collection Program On-Site Recharge Using Injection Wells, Olin/Standard Fusee Site, Morgan Hill, California, dated December 7, 2005. The letter report documents the investigation and findings of the Pre-Design Data Collection (PDDC) program conducted for recharge at the Olin Site. The letter report describes the design and implementation of modifications to the existing groundwater treatment system (GWTS) to allow recharge of the GWTS effluent using conventional injection wells. The report clarifies that the ability to discharge GWTS effluent to the Butterfield Flood Control Ditch will be retained for contingency purposes.

We find the letter report adequately describes and supports the proposed recharge system and is complete and acceptable. Thus, Condition 3 has been adequately satisfied.

4. **Condition 4:** *Submit the Phase 2, Engineering Design and Permitting package to Water Board staff for review and acceptance. Written permission from Executive Officer is required to use the recharge wells.*

We have reviewed 90% Engineering Design Report For On-Site Recharge System, Olin/Standard Fusee Site Morgan Hill, California. The Design Report was prepared by GeoSyntec Consultants (GeoSyntec) on behalf of Olin Corporation and is dated December 19, 2005. The Design Report describes and provides the technical merits for the approved On-Site Recharge System's design and adequately describes the major modification to the existing groundwater treatment system (GWTS). The Design Report explains that the major modification to the existing GWTS is the recharge portion of the system. Presently, perchlorate-impacted groundwater is extracted from two shallow (A-Zone) wells (wells EW-001A and EW-002A) and an uppermost intermediate (B1-Zone) well (well EW-001B1), which are located along the southern portion of the Site. Extracted groundwater is combined and filtered, and perchlorate is removed using an ion exchange process. Once treated, a fraction of the discharge is diverted to the on-Site In-Situ Bioremediation Infiltration unit. The remainder of the treated groundwater is discharged to Butterfield Flood Control Ditch (Butterfield Ditch).

The major changes involve ceasing discharges to the Butterfield Ditch. Instead, as discussed and adequately supported by the design report, the existing GWTS has been modified so as to allow for recharge (injection) of the treated groundwater (effluent) from the on-Site GWTS to the shallow (A-Zone) aquifer using up to five conventional injection wells located along the northern portion of the Site. The injection wells are strategically located to spread the recharge and minimize the amount of groundwater mounding. The injection wells will be installed in two phases. The first phase includes the installation of three of the injection wells. These injection wells will be operated to generate hydraulic and performance data during the peak flow season to determine/quantify the need for supplemental injection wells. If necessary, up to two additional injection wells will be installed during the second phase of the implementation. The injection wells will be 8 inches in diameter and screened across the most transmissive A-zone materials, from approximately 43 to 53 feet below

ground surface (bgs), and will be connected to the GWTS effluent equalization tank. The flow to the injection wells will be pressurized using the product water booster pump currently used for the in-situ bioremediation (ISB) system. The recharge system is designed to accommodate an injection rate range of 50 to 250 gpm, with the expectation that extraction rates will generally reside within a range of 50 to 175 gpm.

Further, during operation of the bioremediation system (expected through the end of 2007), the recharge rate to the injection wells will be reduced by approximately 40 gpm (on average), as some portion of the GWTS effluent will continue to be diverted to the infiltration unit. Following completion of the bioremediation program, the injection wells will receive the entire GWTS effluent discharge. Also, while the goal is inject all effluent into the shallow aquifer, Olin will retain the capability of discharging effluent to the Butterfield Ditch when deemed necessary during emergencies.

It is our understanding that implementation of Phase I of the recharge system is well underway. Three injection wells were installed in December 2005. Construction of the recharge system infrastructure was completed in early February, and completion of system shakedown is expected by mid-February. Hence, Olin is formally requesting Executive Officer approval to begin recharge system operation. We find the Design Report adequately describes and supports the proposed recharge system. We find the report is complete and support immediate implementation.

While Resolution No. R3-2002-0115 (General Waiver For Specific Types of Discharges) adopted by the Water Board December 13, 2002, clearly addresses discharge conditions for treated water, we take this opportunity to re-state some of the most significant conditions pertaining to treated groundwater injection.

It is our understanding the ion exchange process will effectively treat perchlorate-impacted groundwater to non-detect levels. In accordance with the waiver conditions for the approved discharge, injection of treated groundwater must not degrade the quality of the receiving water (i.e., contaminant concentrations in treated water cannot be higher than concentrations in the receiving water). These discharge conditions evolve from the California Water Code and the State anti-degradation policy. Therefore, it is our expectation that all extracted perchlorate-impacted groundwater will be treated to levels (below detection for the perchlorate sampling analytical methods prior to injection.

Additionally, continuing compliance with all applicable groundwater monitoring and reporting requirements, as specified in the most recent Executive Officer-approved groundwater monitoring and reporting program, is required. You are required to perform sampling and analysis of all treated groundwater. Prior to injection, you must ensure all treated water is below the detection levels for the perchlorate sampling analytical methods. All necessary operation and maintenance of the discharge unit and injection wells must be performed, as deemed necessary, to ensure consistent and reliable groundwater treatment and injection system performance. Further, staff is presently evaluating and revising, and consolidation the existing monitoring and reporting programs for the entire facility. As part of these revisions, we aim to evaluate the need for incorporating additional monitoring and reporting requirements, specific to the groundwater recharge system.

5. **Conditions 5 through 7:** *Provide a start-up and shakedown report, 45 days after the startup period is completed. Achieve continued compliance with the enrollment requirements contained in our December 8, 2003 letter. Acknowledge that the enrollment period expires December 8, 2008.*
We find Olin is in compliance with Conditions 5 through 7. No Water Board action is needed regarding these conditions at this time.

After our review of the documents and information provided in response to our November 2, 2005 conditional approval letter, we find Olin has achieved satisfactory compliance with all of the conditions referenced above. All requested information included technical reports, as referenced above, are complete and acceptable for immediate implementation. Olin is hereby authorized to operate its on-Site Recharge System, as approved and conditioned above.

If you have any questions, please contact **Hector Hernandez at: (805) 542-4641** or via e-mail at: Hhernandez@waterboards.ca.gov, or Eric Gobler at (805) 549-3467.

Sincerely,

Roger W. Briggs
Executive Officer

cc via E-mail:

Ms. Lori Okun
Office of the Chief Counsel
State Water Resources Control Board

cc via U.S. Mail:

Olin Correspondence IPL

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