

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2011-XXXX

FOR  
TRACK FOUR, INC.  
(A WHOLLY OWNED SUBSIDIARY OF AMSTED INDUSTRIES INC.),  
AND  
FORMER OWNER, MERCK & CO., INC.,  
FORMER BALTIMORE AIRCOIL COMPANY FACILITY  
MERCED COUNTY

This monitoring and reporting program (MRP) is issued by the Executive Officer of the California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) pursuant to California Water Code Section 13267. Former facility owners Amstead Industries, Inc., Track Four, Inc., and Merck & Co., Inc., (hereafter collectively referred to as the Discharger) are required to comply with this MRP, which contains the minimum monitoring and reporting requirements necessary to determine compliance with Waste Discharge Requirements Order No. R5-2011-XXXX. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is approved in writing by Executive Officer of the Central Valley Water Board.

The following MRP is designed to determine the effectiveness of the full-scale in-situ soil remediation effort at the former Baltimore Aircoil Company (BAC) facility. A separate MRP, Order No. R5-2007-0830, specifies comprehensive long-term facility monitoring that goes beyond the scope of the subject MRP. MRP Order No. R5-2008-0047 specifies monitoring associated with ongoing in-situ groundwater remediation at the site.

Prior to construction of any new groundwater monitoring or extraction wells, the Discharger shall submit plans and specifications to the Central Valley Water Board for review and approval. Once installed, all new wells shall be added to the monitoring program and shall be sampled and analyzed according to the schedule provided herein.

All monitoring wells shall be purged using micro-purging methodology with the use of dedicated bladder pumps in all monitoring wells, as necessary. This approach will increase consistency in sample collection, and produce analytical results that are more representative of actual groundwater conditions. Selected parameters including pH, conductivity, turbidity, and temperature of the pump discharge water shall be monitored during micro-purging until they have stabilized. Solid and liquid wastes, principally water resulting from equipment decontamination, well development, and formation water generated during drilling, and purge or sampling water, shall be collected and disposed of pursuant to applicable requirements.

All samples shall be representative of the volume and the nature of the discharge and matrix of the sampled medium. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form.

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## I. GROUNDWATER MONITORING UPON INITIATION OF FULL-SCALE IN-SITU TREATMENT REMEDY

The Discharger has proposed full-scale in-situ deep soil treatment to chemically transform the hexavalent chromium pollution to trivalent chromium. Trivalent chromium is insoluble and would not cause further degradation of the groundwater. The full-scale in-situ treatment remedy includes injecting chemical amendments into the deep soil within the former wood treatment area associated with the former BAC facility. The Order for this MRP provides Central Valley Water Board approval for the full-scale in-situ treatment remedy. Groundwater monitoring associated with this remedy is specified below.

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### A. Groundwater Monitoring for Full-Scale In situ Treatment - Wells and Sampling Schedule

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Existing monitoring wells will be used for monitoring the progress of the full-scale in-situ deep soil treatment. The approximate locations of these wells are shown in Attachment A of the Order for this MRP.

The following wells shall be monitored prior to, during, and following amendment injection activities and continuing until the Central Valley Water Board notifies the discharger that sampling is no longer needed: **IW-L2-02, MW-64, EW-1A, and MW-70.**

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During injections, these well will be monitored monthly. Following the completion of the injections, these wells will be monitored quarterly for one year, and then semi-annually thereafter. If concentrations at any of the four monitoring wells, **IW-L2-02, MW-64, EW-1A, and MW-70** exceed the higher of water quality objectives, background concentration values, or baseline concentrations by 20 percent, the compliance wells MW-26 and EW-8 will also be included in the monitoring for monthly sampling during injections, quarterly for one year after completing injections, and semi-annually thereafter.

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### B. Groundwater Monitoring for Full-Scale In situ Treatment - Laboratory and Field Analysis

All groundwater samples shall be grab samples. Samples from the wells used for groundwater monitoring during full-scale in-situ treatment shall be analyzed pursuant to the following table:

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Parameter	Method <sup>1</sup>	Unit	Maximum Detection Limit <sup>2</sup>
Total Chromium	EPA 200.8, 6010B	µg/L	3 µg/L
Arsenic	EPA 200.8, 6010B	µg/L	2 µg/L
Sulfate <sup>4</sup>	EPA 300.0	µg/L	1 mg/L
Total Dissolved Solids	EPA 160.1, 2540	mg/L	10 mg/L
Total Organic Carbon	EPA 415.1	mg/L	2 mg/l
Temperature	Field Meter	deg C	--
Electrical Conductivity	Field Meter	µmhos/cm	--
Turbidity	Field Meter	NTU	--
pH	Field Meter	pH units	--
Water Level	Field Meter	ft-MSL	--

<sup>1</sup> If necessary, equivalent analytical methods may be used. The Discharger shall provide written justification.

<sup>2</sup> For non-detectable results

## II. AMENDMENT DISCHARGE MONITORING

Discharger shall monitor daily the injection of water and amendments into the soil. This monitoring shall include, at a minimum, recording of injected water and amendment locations and volumes in gallons per day, and monitoring of amendment(s) added. Each amendment addition shall be recorded individually, along with information regarding the time over which the amendment was injected into the vadose zone.

## III. QUALITY ASSURANCE/QUALITY CONTROL

Quality assurance/quality control (QA/QC) shall be performed to ensure precision and accuracy for groundwater sampling activities. Minimum QA/QC requirements are as follows:

### A. Duplicate Samples

One duplicate groundwater sample shall be collected for every ten groundwater samples collected during each groundwater monitoring event.

### B. Chain-of-Custody Forms

Completed chain-of-custody forms shall be provided with the final laboratory reports.

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### C. Field Meters

Field testing instruments shall be used by an operator trained in proper use and maintenance of the instruments. All field instruments shall be calibrated prior to each monitoring event. In addition, field parameter instruments shall be serviced or calibrated by the manufacturer at the recommended frequency. Field calibration reports shall be included in the semiannual groundwater monitoring reports.

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### IV. REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., influent, effluent, groundwater, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall also be reported to the Central Valley Water Board.

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As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all Reports shall be prepared under the direct supervision of a Registered Engineer or Geologist and signed by the registered professional.

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A **Deep Soil Remediation Completion Report** shall be submitted to the Central Valley Water Board by the Discharger within 60 days of completion of the full-scale deep soil remediation. On-going groundwater monitoring that may continue past the completion of the deep soil remedy implementation shall be submitted as part of on-going semiannual reporting as discussed below.

**Semiannual reports** shall be submitted to the Central Valley Water Board by the Discharger to assess long-term effects of vadose zone injected amendments on aquifer geochemistry until such time as the Executive Officer determines that the reports are no longer necessary. Semiannual monitoring shall be conducted in the second and fourth quarters of the calendar year, with monitoring reports due to the Central Valley Water Board by **1 August** and **1 February**. Each semiannual report shall include the following minimum information:

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1. Depths-to-water measurements and corresponding groundwater elevations for all monitoring wells and extraction wells, extraction rates and total volume extracted from each active extraction well, and groundwater analytical results for all wells sampled. This data shall be presented in tabular format;
2. Copies of all final laboratory analytical reports, including QA/QC (electronic copies are encouraged and preferred);
3. Field logs containing, at a minimum, water quality parameters measured before, during, and after well purging, method of purging, depth of water, volume of water purged, etc.;

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4. A calibration log verifying calibration of any field monitoring instrument (e.g., pH, temperature, electrical conductivity, and turbidity meters) used to measure parameters during well purging;
5. Groundwater elevation contour maps for all groundwater zones, including estimated direction flow;
6. Calculated hydraulic gradients and estimated average linear velocities for all groundwater zones;
7. Isoconcentration maps for total dissolved chromium for the shallow aquifer;
8. Water level and water quality hydrographs showing historical data for each well; and
9. Any proposed changes in the extraction well network with justification for the change.
10. If applicable, the reasons for and duration of all interruptions in the operation of any remediation system, and actions planned or taken to correct and prevent interruptions.
11. A comparison of water quality results for the compliance wells with background concentrations established for the former BAC facility, including a discussion of compliance with Groundwater Limitation C.2 of Order No. R5-2011-XXXX.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period (if applicable), and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

The results of any monitoring done more frequently than required at the locations specified in the MRP also shall be reported to the Central Valley Water Board. The Discharger shall implement the above monitoring program as of the date of the Order.

Ordered by:

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PAMELA C. CREEDON, Executive Officer

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Date

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