



Figure 4-1 Monitoring Well and Borehole Locations

State Underground Storage Tank Regulations  
California Code of Regulations  
Title 23 Waters  
Division 3 Water Resources Control Board

Amendment to Chapter 16 Underground Storage Tank Regulations

Article 11. Corrective Action Requirements



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2720. Additional Definitions

Unless the context clearly requires otherwise, the following definitions shall apply to terms used in this Article.

"Corrective action" means any activity necessary to investigate and analyze the effects of an unauthorized release; propose a cost-effective plan to adequately protect human health, safety, and the environment and to restore or protect current and potential beneficial uses of water; and implement and evaluate the effectiveness of the activity(ies). Corrective action does not include any of the following activities:

- (1) Detection, confirmation, or reporting of the unauthorized release; or
- (2) Repair, upgrade, replacement or removal of the underground storage tank.

"Cost-effective" means actions that achieve similar or greater water quality benefits at an equal or lesser cost than other corrective actions.

"Federal act" means Subchapter IX (commencing with Section 6991) of Chapter 82 of Title 42 of the United States Code, as added by the Hazardous and Solid Waste Amendments of 1984 (P.L. 98-616), or as it may subsequently be amended or supplemented, and the regulations adopted pursuant thereto.

"Regulatory agency" means the Board, regional board, or any local, state, or federal agency which has responsibility for regulating underground storage tanks or which has responsibility for overseeing cleanup of unauthorized releases from underground storage tanks.

"Responsible party" means one or more of the following:

- (1) Any person who owns or operates an underground storage tank used for the storage of any hazardous substance;
- (2) In the case of any underground storage tank no longer in use, any person who owned or operated the underground storage tank immediately before the discontinuation of its use;
- (3) Any owner of property where an unauthorized release of a hazardous substance from an underground storage tank has occurred; and
- (4) Any person who had or has control over a underground storage tank at the time of or following an unauthorized release of a hazardous substance.

Authority: H&SC Section 25299.77  
Reference: H&SC Section 25299.37 and 40 CFR Section 280.12

- (c) When acting as the regulatory agency, the Board or regional board shall take appropriate action pursuant to Division 7, commencing with Section 13000 of the California Water Code, to ensure that corrective action complies with applicable policies for water quality control and applicable water quality control plans.
- (d) The regulatory agency responsible for overseeing corrective action at an underground storage tank site shall comply with the applicable public participation provisions of Section 2728 of this Article.
- (e) Upon completion of required corrective action, the regulatory agency shall inform the responsible party in writing that no further work is required at that time, based on available information. This written notice shall constitute agency concurrence on the completed corrective action.

Authority: H&SC Section 25299.77  
Reference: H&SC Sections 25299.37, 25299.54, 25295 and 25298 and 40 CFR Section 280.67

#### General Applicability of Article

Responsible parties for an underground storage tank shall comply with the requirements of this article whenever there is any reportable unauthorized release pursuant to Section 25295 of Chapter 6.7.

Responsible parties shall take corrective action in compliance with the following requirements:

- (1) all applicable waste discharge requirements or other order issued pursuant to Division 7, commencing with Section 13000 of the Porter-Cologne Water Quality Control Act (Water Code);
- (2) all applicable state policies for water quality control adopted pursuant to Article 3 (commencing with Section 13140) of Chapter 3 of Division 7 of the Water Code;
- (3) all applicable water quality control plans adopted pursuant to Article 3 (commencing with Section 13240) of Chapter 4 of Division 7 of the Water Code;
- (4) all applicable requirements of Chapter 6.7 (commencing with Section 25280) and the regulations (Chapter 16, Title 23 CCR) promulgated thereto; and
- (5) all applicable requirements of Article 4 of Chapter 6.75 of the Health and Safety Code, the applicable provisions of this Chapter, and the Federal act.

#### 2722. Scope of Corrective Action

- (a) Corrective action includes one or more of the following phases:
  - (1) Preliminary Site Assessment Phase
  - (2) Soil and Water Investigation Phase;
  - (3) Corrective Action Plan Implementation Phase; and
  - (4) Verification Monitoring Phase.
- (b) The responsible party shall take or contract for interim remedial actions, as necessary, to abate or correct the actual or potential effects of an unauthorized release. Interim remedial actions can occur concurrently with any phase of corrective action. Before taking interim remedial action, the responsible party shall notify the regulatory agency of the proposed action and shall comply with any requirements that the regulatory agency sets. Interim remedial actions include, but are not limited to, the following:
  - (1) removal of free product. Free product removal must comply with the applicable provisions of Section 2655 of Article 5;
  - (2) enhanced biodegradation to promote bacterial decomposition of contaminants;

- (3) excavation and disposal of contaminated soil;
- (4) excavation and treatment of contaminated soil;
- (5) vacuum extraction of contaminants from soil or ground water; and
- (6) pumping and treatment of ground water to remove dissolved contaminants.

c) The responsible party shall submit a workplan to the regulatory agency responsible for overseeing corrective action at the underground storage tank site, under the conditions listed below. If no regulatory agency has assumed responsibility for overseeing corrective action, the responsible party shall submit the workplan to the regional board with jurisdiction for the site where the underground storage tank is or was located:

- (1) for proposed activities under the Preliminary Site Assessment Phase, if directed by the regulatory agency; and
- (2) before initiating any work in accordance with Sections 2725 and 2727 of this Article.

d) The workplan shall include the proposed actions and a proposed schedule for their completion. The responsible party shall modify the workplan, as necessary, at the direction of the regulatory agency.

e) In the interest of minimizing environmental contamination and promoting prompt cleanup, the responsible party may begin implementation of the proposed actions after the workplan has been submitted and before it has received agency concurrence. Implementation of the workplan may begin sixty (60) calendar days after submittal, unless the responsible party is otherwise directed in writing by the regulatory agency. Before beginning these activities, the responsible party shall:

- (1) notify the regulatory agency of the intent to initiate the proposed actions included in the workplan submitted; and
- (2) comply with any conditions set by the regulatory agency, including mitigation of adverse consequences from cleanup activities.

Authority: H&SC Section 25299.77  
 Reference: H&SC Sections 25295, 25297, 25299.14, 25299.37, 25299.78, and 40 CFR Sections 280.53, and 280.60 through 280.66, and Section 13267 of the Water Code

2723. Preliminary Site Assessment Phase

- (a) The Preliminary Site Assessment Phase includes, at a minimum, initial site investigation, initial abatement actions and initial site characterization in accordance with Sections 2652, 2653, and 2654 of Article 5 and any interim remedial actions taken in accordance with Section 2722(b) of this Article.
- (b) Implementation of any of the interim remedial actions or any of the activities included in the Preliminary Site Assessment Phase shall constitute initiation of corrective action.

Authority: H&SC Section 25299.77  
 Reference: H&SC Sections 25295, 25298, 25299.37, and 40 CFR Sections 280.61 and 280.62

2724. Conditions That Require Soil and Water Investigation

The responsible party shall conduct investigations of the unauthorized release, the release site, and the surrounding area possibly affected by the unauthorized release, if any of the following conditions exists:

- (1) There is evidence that surface water or ground water has been or may be affected by the unauthorized release;
- (2) Free product is found at the site where the unauthorized release occurred or in the surrounding area;
- (3) There is evidence that contaminated soils are or may be in contact with surface water or ground water; or
- (4) The regulatory agency requests an investigation, based on the actual or potential effects of contaminated soil or ground water on nearby surface water or ground water resources or based on the increased risk of fire or explosion.

Authority: H&SC Section 25299.77  
 Reference: H&SC Sections 25299.37 and 40 CFR Sections 280.61 through 280.64

25. Soil and Water Investigation Phase

) The Soil and Water Investigation Phase includes the collection and analysis of data necessary to assess the nature and vertical and lateral extent of the unauthorized release and to determine a cost-effective method of cleanup

) Using information obtained during the investigation, the responsible party shall propose a Corrective Action Plan. The Corrective Action Plan shall consist of those activities determined to be cost-effective.

) The responsible party shall submit the Corrective Action Plan to the regulatory agency for review and concurrence. The regulatory agency shall concur with the Corrective Action Plan after determining that implementation of the plan will adequately protect human health, safety and the environment and will restore or protect current or potential beneficial uses of water. The responsible party shall modify the Corrective Action Plan in response to a final regulatory agency directive.

) The Corrective Action Plan shall include the following elements:

- (1) an assessment of the impacts listed in subsection (e) of this Section;
- (2) a feasibility study, in accordance with subsection (f) of this Section; and
- (3) applicable cleanup levels, in accordance with subsection (g) of this Section.

) An assessment of the impacts shall include, but is not limited to, the following:

- (1) The physical and chemical characteristics of the hazardous substance or its constituents, including their toxicity, persistence, and potential for migration in water, soil, and air;
- (2) The hydrogeologic characteristics of the site and the surrounding area where the unauthorized release has migrated or may migrate;
- (3) The proximity and quality of nearby surface water or ground water, and the current and potential beneficial uses of these waters;
- (4) The potential effects of residual contamination on nearby surface water and ground water; and

(f) The responsible party shall conduct a feasibility study to evaluate alternatives for remedying or mitigating the actual or potential adverse effects of the unauthorized release. Each alternative shall be evaluated for cost-effectiveness, and the responsible party shall propose to implement the most cost-effective corrective action.

- (1) For all sites, each recommended alternative shall be designed to mitigate nuisance conditions and risk of fire or explosion;
- (2) For sites where the unauthorized release affects or threatens waters with current or potential beneficial uses designated in water quality control plans, the feasibility study shall also identify and evaluate at least two alternatives for restoring or protecting these beneficial uses;
- (3) For sites where the unauthorized release affects or threatens waters with no current or potential beneficial uses designated in water quality control plans, the feasibility study shall identify and evaluate at least one alternative to satisfy paragraph (1) of this subsection.

(g) Cleanup levels for ground or surface waters, affected or threatened by the unauthorized release, shall comply with the requirements of Section 2721(b) and shall meet the following requirements:

- (1) For waters with current or potential beneficial uses for which numerical objectives have been designated in water quality control plans, the responsible party shall propose at least two alternatives to achieve these numerical objectives;
- (2) For waters with current or potential beneficial uses for which no numerical objectives have been designated in water quality control plans, the responsible party shall recommend target cleanup levels for long-term corrective actions to the regulatory agency for concurrence. Target cleanup levels shall be based on the impact assessment, prepared in accordance with subsection (e) of this Section.

Authority: H&SC Section 25299.77  
Reference: H&SC Sections 25299.37, 25299.57

2726. Corrective Action Plan Implementation Phase

- (a) The Corrective Action Plan Implementation Phase consists of carrying out the cost-effective alternative selected during the Soil and Water Investigation Phase for remediation or mitigation of the actual or potential adverse effects of the unauthorized release.
- (b) Upon concurrence with the Corrective Action Plan or as directed by the regulatory agency, the responsible party shall implement the Corrective Action Plan. The responsible party shall monitor, evaluate, and report the results of implementation of the Corrective Action Plan on a schedule agreed to by the regulatory agency.
- (c) In the interest of minimizing environmental contamination and promoting prompt cleanup, the responsible party may begin cleanup of soil and water after the Corrective Action Plan has been submitted and before it has received agency concurrence. Implementation of the Corrective Action Plan may begin sixty (60) calendar days after submittal, unless the responsible party is otherwise directed in writing by the regulatory agency. Before beginning this cleanup, the responsible party shall:
  - (1) notify the regulatory agency of its intention to begin cleanup; and
  - (2) comply with any conditions set by the regulatory agency, including mitigation of adverse consequences from cleanup activities.
- (d) The responsible party shall modify or suspend cleanup activities when directed to do so by the regulatory agency.

Authority: H&SC Section 25299.77

Reference: H&SC Section 25299.37 and 40 CFR Sections 280.65 and 280.66

2727. Verification Monitoring Phase

- (a) The Verification Monitoring Phase includes all activities required to verify implementation of the Corrective Action Plan and evaluate its effectiveness.
- (b) The responsible party shall verify completion of the Corrective Action Plan through sampling or other monitoring of soil and/or water for such period of time and intervals agreed to by the regulatory agency. Using the monitoring results obtained pursuant to this Section and any other relevant data obtained pursuant to this Article, the responsible party shall evaluate the effectiveness of the site work.
- (c) The responsible party shall submit monitoring data and an evaluation of the results of such monitoring in writing on a schedule and for a duration agreed to by the regulatory agency.

Authority: H&SC Section 25299.77

Reference: H&SC Section 25299.37 and 40 CFR Section 280.65

2728. Public Participation

- (a) For each confirmed unauthorized release that requires a Corrective Action Plan, the regulatory agency shall inform the public of the proposed activities contained in the Corrective Action Plan. This notice shall include at least one of the following:
  - (1) publication in a regulatory agency meeting agenda;
  - (2) public notice posted in a regulatory agency office;
  - (3) public notice in a local newspaper;
  - (4) block advertisements;
  - (5) a public service announcement;
  - (6) letters to individual households; or
  - (7) personal contacts with the affected parties by regulatory agency staff.
- (b) The regulatory agency shall ensure that information and decisions concerning the Corrective Action Plan are made available to the public for inspection upon request.
- (c) Before concurring with a Corrective Action Plan, the regulatory agency may hold a public meeting when requested by any member of the public, if there is sufficient public interest on the proposed Corrective Action Plan.

(d) Upon completion of corrective action, the regulatory agency shall give public notice that complies with subsection (a) of this Section, if both of the following conditions apply:

- (1) Implementation of the Corrective Action Plan does not achieve the cleanup levels established in the Corrective Action Plan; and
- (2) The regulatory agency does not intend to require additional corrective action, except for monitoring in accordance with Section 2727.

(e) The regulatory agency shall comply with all applicable provisions of the California Environmental Quality Act, Public Resources Code, commencing with Section 21000.

Authority: H&SC Section 25299.77

Reference: H&SC Sections 25299.37 and 25299.78 and 40 CFR Sections 280.65 through 280.67

## BACKGROUND AND HISTORY

The following is a discussion of events related to former underground storage tanks (USTs) and other soil and groundwater investigations at the James River Corporation (JRC) site. This summary is based only on information made available to Brown and Caldwell (BC). A facility map is included as Figure 1.

- July 1982 - Documented release of approximately 1500 gallons of n-propyl acetate from tank failure. Tank replaced in July 1982.
- June 1983 - Documented release of approximately 2000 gallons of isopropyl acetate from tank failure. Tank replaced in December 1983.
- ???? - Groundwater wells W-1, through W-6 installed.
- 1986 - Harding-Lawson Associates investigation to develop groundwater remediation plan. Installed wells W-7, W-8, W-9, and B-1 (see Figure 1). Acetates, Alcohols, Acetone, and Acids detected in groundwater. High concentrations restricted to wells in vicinity of tanks.
- ???? - Groundwater Remediation Plan formulated.
- April 1988 - City of San Leandro grants permit to discharge treated groundwater to sanitary sewer.
- March to June 1989 - During installation of an underground runoff containment tank stained soil exhibiting odors was noted (Figure 1). BC was contacted to perform an investigation to delineate the extent of the stained soil. Sixteen boreholes were installed (Figure 2). Sampling and analysis of soils surrounding the stained area was conducted. JRC requested the investigation because they wished to define the extent of, and remove, the pigment-stained soil.
- April 1989 - Brown and Caldwell conducts groundwater sampling as part of Groundwater Remediation Plan Evaluation. Chlorinated hydrocarbons detected. The highest levels were detected in wells located hydraulically upgradient off site plume suspected.
- June 1989 - Tank removal activities initiated by James River and ESI/Atlas Hydraulic. Three solvent tanks, located as shown on Figure 1, were removed.
- June 27 & 28 - Samples collected from tank excavation and piping trench in locations shown on Figure 3. Samples

10/11/89  
JRC  
16/1/89



analyzed for constituents stored in tanks. Detectable levels of ethyl alcohol, n-propanol, and n-propyl acetate in 3 of 11 samples.

July 1989 - BC collects composite sample of stained soil identified during runoff containment tank and delineated in March/April investigation. Composite sample analyzed for TCLP 8240 8270 and CAM metals.

August 1989 - BC proposes soil vapor survey to evaluate a possible off-site source of the chlorinated hydrocarbons detected in the site groundwater. JRC contacted Southern Pacific Railroad for access agreement.

Early September 1989 - Correspondence between JRC and Alameda County regarding tanks. 9/1/89 JRC transmits data on storage history for the three tanks. County requests all documents and laboratory reports concerning water quality at the site.

September 26, 1989 - JRC recaps UST removal project and associated soil remediation and described JRC's plans related to remediating soil in pipe trench. Transmitted information on groundwater remediation efforts

September 26, 1989 - Alameda County approves backfilling UST excavation and requests a correction plan for soils in the pipe trench.

October 10, 1989 - Alameda County requests additional information.

October 30, 1989 - JRC summarizes remediation plan.

November 1989 - Chem-Tech delineates an area containing pigment-stained soils that exhibited organic vapors, as shown on Figure 4.

November 1989 - Additional groundwater sampling August 1989 transmitted to JRC. Report concludes that purgeable organic compounds were present in all wells but that concentrations had decreased when compared with April results. Where detection limits allow comparisons between data, levels of chlorinated hydrocarbons have generally decreased.

December 7, 1989 - JRC describes Chem-Tech's investigation. JRC intends to excavate and dispose at a Class I facility.

December 18, 1989 - Letter from JRC to County regarding stained soil. Requested a site visit from County personnel.

December 1989 - JRC excavates stained soil encountered during runoff containment tank installation. Stained soil transported to a Class I facility. Samples from excavation bottom/sidewalls indicate low levels of PCE as well as BETX are present in soils.

January 1990 - JRC contacted BC to assist in closing tank and piping excavations.