Department of Toxic Substances Control

Maureen F. Gorsen, Director
700 Heinz Avenue
Berkeley, California 94710-2721

Linda S. Adams
Secretary for
Environmental Protection

Arnold Schwarzenegger
Governor

COMPLAINT INVESTIGATION REPORT

LOG NUMBER: Log. No.: 05 -0305-0132

SUBJECT OF INVESTIGATION: University of California Richmond Field Station (UCRFS)

ADDRESS: 1301 South 46th Street, Richmond, California 94804

TELEPHONE NUMBER: (510) 642-4848

LOCATION OF ACTIVITY: 1301 South 46th Street, Richmond, California 94804

MAILING ADDRESS: 317 University Hall, Berkeley, California 94720-1150

ID Number: CAD 983 669 268

DATE INVESTIGATION STARTED: May 19, 2005

DATE OF REPORT: July 18, 2008

NARRATIVE OF FINDINGS

A. STATEMENT OF ALLEGATIONS

Complaint Log No. 05-035-0132 (Attachment A, Complaint dated March 14, 2005) alleged the unauthorized disposal and unauthorized treatment of contaminated soil at the UCRFS site.

According to Ms. Barbara Cook, Branch Chief and Project Manager for the clean-up of Zeneca, former Stauffer Chemical Site located in Richmond, California, a potential illegal activity may have taken place during the 2002 field work at the Zeneca and the UCRFS sites. According to the complaint, "Zeneca and the University of California, Berkeley, had cut a deal on how the cinder materials found at the UCRFS property would be managed. If the material contained total mercury above 50 mg/kg, UC Berkeley would haul it off. If they have less than 50 mg/kg, they mixed it with carbon and disposed it at Zeneca. "

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B. CHRONOLOGICAL NARRATIVE OF THE FINDINGS

Site Location and History

UCRFS is located at 1301 South 46th Street in Richmond, south of Interstate 580 and along the San Francisco Bay shoreline in Richmond, California (See Attachment F, Figure 1). The site consists of approximately 150 acres and is used for academic research and activities by the University of California. The UCRFS site, the adjacent Zeneca/Formerly Stauffer Chemical (Zeneca site), and portions of the adjacent Stege marsh comprise the area designated as the Meade Street Operable Unit (MSOU).

Portions of the UCRFS site were formerly owned by the California Cap Company, which produced blasting caps on the eastern portion of the site. California Cap Company's operations on-site included production of mercury fulminate, blasting caps, and shells, and also had facilities for testing and storing explosives. Production of explosives ceased in 1948 prior to UC Berkeley's purchase of the property in 1950.

In the 1950's, UC Berkeley (UCB) built new buildings in the upland area to accommodate research programs, including administration buildings and the Forest Products Laboratory where wood preservatives were tested. Currently, the UCRFS facilities include the Forest Products Laboratory, research facilities for seismic engineering, fire testing, hydraulic modeling, soil mechanics, sanitary engineering, environmental health, and library storage.

Stauffer Chemical Company (Stauffer), produced cinders at the adjacent Zeneca site as a byproduct of its sulfuric manufacturing operations. From approximately 1919 to 1962, pyrite cinders were deposited by Stauffer on the southeast portion of the UCRFS site and on an adjacent portion of Western Stege Marsh. Cinders were also placed directly into Stege Marsh in the vicinity of a seawall, breakwater, and a pier. Various metals, such as arsenic and lead and other inorganics, were commonly associated with pyrite ore used by Stauffer. UCB constructed roads, utilities, and research ponds on pyrite cinders that were deposited in this southeast portion area of the UCRFS site.

Site Cleanup Order No. 01-102 (Attachment B)

On September 19, 2001, the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB), issued a Site Cleanup Order No. 01-102 (RWQCB Order) to UCB, owner of the UCRFS, See Attachment B. The RWQCB Order prescribed the Site Cleanup Requirements for Subunit 2 of the Meade Street Operable Unit (MSOU), which consists of the UCRFS site including a portion of the adjacent Western Stege Marsh. The MSOU is the area containing the UCRFS site and the adjacent Zeneca sites and their groundwater pollution plumes. The MSOU consists of Subunit 1, the Zeneca site and adjacent portion

of Eastern Stege Marsh, and Subunit 2, the UCRFS site and an adjacent portion of the Western Stege Marsh. Subunit 2 is sub-divided into: Subunit 2A, the cinder fill area located in the southeastern portion of the upland area of the site and the eastern portion of the Western Stege Marsh and Subunit 2B, the remainder of the upland portion of the UCRFS site and the western portion of Western Stege Marsh.

UCB, the current owner of the site, is responsible for releases coming from the site and is named as the discharger in the RWQCB Order. Zeneca, the owner of the adjoining property when the RWQCB Order was issued (formerly Stauffer Chemical Company) that was the source of pyrite cinders used as a fill at the UCRFS site, is also named as a discharger in the RWQCB Order.

The RWQCB was the lead regulatory agency overseeing the restoration and clean-up of the entire Zeneca site. However, in November 2004, the regulatory oversight of the Upland area (Lots 1, 2 and 3), was transferred to DTSC. In May 2005, DTSC became the lead regulatory oversight agency for the entirety of the Zeneca (former Stauffer Chemical) and the UCRFS sites.

In its response of August 2, 2006 (Attachment M) to DTSC's July 6, 2006 Information Request Letter (Attachment C) pertaining to any amendments to the RWQCB Order, UCB, owner of the UCRFS site, stated that it had not received any amendments to the original RWQCB Order. UCB added that, it was its understanding that Cherokee Simeon Venture LLC (CSV) purchased the Zeneca property on December 31, 2002. UCB was not provided specific information related to the sale of the Zeneca property, according to UCB's August 2, 2006 response to DTSC (Attachment M).

In its November 20, 2006 response (Attachment N) to DTSC's October 25, 2006 Supplemental Information Request Letter (Attachment C), UCB stated that CSV's involvement in the remedial activities at the UCRFS site between December 2002 and December 2004 consisted of attendance and participation by staff of de Maximus, who represented both Zeneca and CSV in the weekly construction management meetings run by UCB. UCB's November 2006 response also stated that, since December 2004, UCB's records relating to CSV's involvement at UCRFS are limited to correspondence between DTSC and CSV's counsel and consultants relating to the new DTSC Site Investigation and Remediation for the UCRFS site.

<u>Summary of Remedial Activities (See Attachment F, Maps 1,2 and 3 for reference, Attachments P, Q and R, See Summary of Phase 1, Phase 2 and Phase 3 Final Implementation Reports, prepared by URS Corporation dated September 4, 2003 and December 3, 2004)</u>

The Phase 1 Remedial activities conducted by UCB's construction contractor, Geo-Con, from September to December 2002, included excavation and

remediation of the upland portion of Subunit 1 and portions of Subunit 2A (Attachment P). Approximately 36,700 in-situ cubic yards of materials were removed from Areas 1, 2, 3 and 4 of subunit 2A. Of this total, approximately 1,700 cubic yards were treated by Geo-Con at UCRFS with 5% powdered activated carbon for mercury stabilization, with limestone to stabilize cinder-related metals, then placed and capped at Subunit 1, Zeneca site. For a summary of the general description of the Phase 1 Remediation activities, see Section 3.0. of Attachment P, Implementation Report, Phase 1-Subunit 2A, Meade Street Operable Unit, University of California, Berkeley.

The Phase 2 remedial activities conducted by UCB's construction contractor, Envirocon, from August 2003 to February 2004, included excavation and remediation of the remaining upland and marsh portions of Subunit 2B (M3 and M1a) (Attachment Q). Approximately 38,200 in-situ cubic yards of materials were excavated by Envirocon from Areas 2, 4, M3 and M1a. Approximately 6,000 cubic yards of pyrite cinders (designated by UC as Type A from Area 4) were treated by Envirocon with limestone to stabilize cinder-related metals and placed and capped at Subunit 1, Zeneca site. Approximately 11,900 cubic yards of cinders (designated as Type B from Area 4) were treated by Envirocon with 5 % powdered activated carbon for mercury stabilization, treated with limestone or cement kiln dust (CKD) to stabilize cinder-related metals and placed and capped at Subunit 1, Zeneca site. Approximately 2,100 tons of vegetation from Area 2 and M3 were treated by Envirocon with limestone and disposed of at an off-site landfill. The rest of the excavated material, primarily marsh sediment which was approximately 8,500 cubic yards (described as Type C and M1a as Type D), was solidified with CKD as needed and disposed off at off-site landfills. For a summary of the general description of the Phase 2 Remediation activities, see Section 3.0. of Attachment Q, Implementation Report, Phase 2-Subunit 2A & 2B, Meade Street Operable Unit, University of California, Berkeley.

The Phase 3 construction activities were conducted from September 2004 to November 2004 (Attachment R). Approximately 3,336 in-situ cubic yards of materials were excavated by Envirocon from Areas of Concern (AOCs), U1, U2, U3, U4, U6, and U8. Hazardous wastes from AOCs U1, U2, U4, U6 and M3 were sent off-site to Chemical Waste Management by UCB. For a chronological description of the Phase 3 Remediation activities and a summary of excavated materials, see Attachment R, Section 3.0.

Complaint Investigation of Complaint Log No. 05-0305-0132

Upon becoming aware that unauthorized treatment and disposal of hazardous wastes may have taken place during the remedial activities at the UCRFS and the Zeneca sites, DTSC sent information request letters to UCB, to determine if the remedial activities at the UCRFS site were being conducted in accordance with California's hazardous waste laws and regulations. Information request letters were sent to UCB on June 13 and

September 26, 2005, July 6 and October 25, 2006 (See Attachment C). Separate letters were also sent to Zeneca and CSV.

On behalf of UCB, 4 LEAF, Inc., its consultant, (4LEAF) provided responses to the information requests from DTSC on June 30, 2005, November 4 and 28, 2005 (See Attachments I and J), January 13, 2006 (see Attachment K), February 8, 2006 (See Attachment L), August 2 and November 20, 2006 (see Attachments M and N). In addition to the above submittals, DTSC reviewed the Phase 1, 2 and 3, Implementation Reports (Attachments P, Q, and R) and other relevant documents, such as the Remedial Design Details Reports and Addendums.

DTSC also met briefly with UCB representatives and 4 Leaf, when UCB delivered its January 13, 2006 response to DTSC. During the meeting, UCB stated that all remedial activities at the UCRFS site were approved by the RWQCB. Copies of letters from the RWQCB were provided to DTSC on January 18, 2007 (Attachment D).

C. VIOLATIONS

Based on a review of the UCB's submittals to DTSC's information request letters and other materials available to DTSC, the following violations of hazardous waste laws and regulations were noted:

Class 1 Violations

1. Treatment of Hazardous Waste Without a Permit

UCRFS violated Health and Safety Code (HSC) section 25201 (a) in that UCRFS treated hazardous wastes without a permit or other grant of authorization from the DTSC, to wit:

a. On or about October 30 through November 18, 2002, UCRFS treated with 5 % powdered activated carbon, 1,700 cubic yards of contaminated cinders and sediment containing mercury at concentrations from 50 mg/kg to 170 mg/kg (described by UCB as between 50 mg/kg and 260 mg/kg), and zinc at 5000 mg/kg, excavated from Subunit 2A, Area 1. This treatment was conducted in a lined, on-site treatment cell located in Area 4 (see Attachment F, Map 2 for location of Areas 1 and 4).

According to UCB's June 30, 2005 submittal (Attachment H, Response no.1.a.), pre-treatment analytical results for the mercury-affected cinders and sediment in Area 1 consisted of site characterization sampling performed prior to development of the

remedial design details (RDDR) addendum (URS 2002a). A summary of the analytical results is shown in the table below.

Sample Location Figures /Tables, (Attachment G, Violation 1.a.)	**Pre-treatment Analytical Results (mg/kg),** See Attachment H, June 30, 2005 submittal, Tables 1 and 4 (Attachment A) ( )= Total Threshold limit Concentration, TTLC If concentration is >= TTLC, considered hazardous waste	
	Mercury (20 mg/kg)	Zinc (5,000 mg/kg)
2AU-15-8	50	
2AU-18-14	52	5000
2AU-19-14	100	
2AU-19-18	170	
2AU-20-13	100	
2AU-27-13	71	
2AU-28-4	58	
2AU-29-4	120	

The treated wastes were transported to Zeneca for further treatment with limestone and placed into Subunit 1 (Also see Violation 3.b.). (Attachment F, Map 1 for location of Subunit 1 for this violation and for subsequent violations).

[**Note:** A waste is hazardous if it exhibits any of the characteristics identified in California Code of Regulations, title 22, section 66261.20(a). A waste exhibits the characteristic of toxicity if representative samples of the waste contain a substance listed in subsection (a)(2)(A) or (A)(2)(B) of Section 66261.24 at a concentration in milligrams per liter (mg/l) of waste extract, as determined using the Waste Extraction Test (WET) which equals or exceeds its listed soluble threshold limit concentration (STLC) or at a concentration in milligrams per kilogram (mg/kg) in the waste which equals or exceeds its listed total threshold limit concentration (TTLC). (See California Code of Regulations, title 22, section 66261.24(a) (2) (A). The TTLCs for mercury and zinc are 20 mg/kg and 5,000 mg/kg respectively.]

Evidence: Attachment G, Violation 1.a.; Attachment H, Response to DTSC's Request For Information, Regarding the Phase 1 Implementation Report, Subunit 2A, Meade Street Operable Unit Richmond Field station, Richmond, California, dated June 30, 2005; See Response no. 1, pages 1-5, and Site Characterization Sampling Data, Tables 1 and 4

(Attachment A of Attachment H, June 30, 2005 submittal); Phase 1 Implementation Report, 3.2. 2.2, page 3-3.

Witness: Luz Castillo

b. On or about October 8, 2002, UCRFS treated by solidification with cement kiln dust, approximately 14,000 cubic yards of excavated cinders and sediment (7,500 cubic yards from the eastern portion of marsh Area 2, and 6,500 cubic yards from marsh Area 3), containing concentrations of mercury from 22 mg/kg to 53 mg/kg (described by UCRFS as containing less than 50 mg/kg of mercury), arsenic from 555 to 2,210 mg/kg, copper at 12,000 mg/kg, zinc from 7,200 to 9,200 mg/kg and lead at 2,600 mg/kg (Attachment F, See Map 2 for location of Marsh Areas 2 and 3). The TTLCs for mercury, arsenic, copper, zinc and lead are 20 mg/kg, 500 mg/kg, 2,500 mg/kg, 5,000 mg/kg, and 1,000 mg/kg, respectively. This treatment was conducted in a portion of Area 2 known as the "Orange Pond" (see Attachment F, Map 2).

According to UCB's June 30, 2005 submittal (Attachment H, Response no. 2), the mercury -affected cinders and sediment were excavated in Marsh Areas 2 and 3. Pre-treatment analytical results consisted of site characterization sampling performed prior to development of the remedial design details (RDDR) addendum (URS 2002a). A summary of the analytical results is shown in the table below.

Sample Location Figures /Tables, (Attachment G, Violation 1.b.)	**Pre-treatment Analytical Results (mg/kg),** See Attachment H, June 30, 2005 submittal, Response No. 2, and Tables 5 (Attachment A) ( )= Total Threshold limit Concentration, TTLC If concentration is >= TTLC, considered hazardous waste				
	Mercury (20 mg/kg)	Arsenic (500 mg/kg)	Copper (2,500 mg/kg)	Zinc (5,000 mg/kg)	Lead (1,000 mg/kg)
Area 3					
SMAB-2	23				
SMAB-3	5.4	1,100			2,600
SMAB-4	18	1,100			
SMAB-5	28	600			
SMAB-11	1.8	640			
SM-124	35		12,000		

Sample Location Figures /Tables, (Attachment G, Violation 1.b.)	**Pre-treatment Analytical Results (mg/kg),** See Attachment H, June 30, 2005 submittal, Response No. 2, and Tables 5 (Attachment A) ( )= Total Threshold limit Concentration, TTLC If concentration is >= TTLC, considered hazardous waste				
	Mercury (20 mg/kg)	Arsenic (500 mg/kg)	Copper (2,500 mg/kg)	Zinc (5,000 mg/kg)	Lead (1,000 mg/kg)
Area 3 (Continued)					
B8MA	35.9	875			
RFS-1(0-2 Depth)	24.2				
RFS-1(3 Depth)	22	895			
RFS-3(1 Depth)	27.5	746			
B10MA	20.2	2,210			
E-2	5.8	749			
Area 2					
SMAB-13	16	930		8,900	
SMAB-14	3.6			9,200	
SM-108 (0)	0.86	610			
SM-108 (2)	11	700		8,800	
SM-108 (4.5)	53	1,200		7,200	
SM-131	12	576			
RFS-3 (0 Depth)	1.3	1,020			
SD6MA	10.6	555			

The treated cinders and sediment were transported to Zeneca for final treatment with limestone during final placement and placed into Subunit 1. (Also see Violation 3.c.).

Evidence: Attachment G, Violation 1.b.; Attachment H, Response to DTSC's Request For Information, Regarding the Phase 1 Implementation Report, Subunit 2A, Meade Street Operable Unit Richmond Field station, Richmond, California, dated June 30, 2005; See Response no. 2, pages 1-6, and Table 5.

Witness: Luz Castillo

c. On or about September 9 to October 25, 2003, UCRFS treated by stabilization, 6,145 and 129 cubic yards (total of 6,274 cubic yards, see Attachment Q, Section Five, Summary, page 5-2) of cinder related materials, containing mercury from 24 mg/kg to 49 mg/kg (described by UCRFS as less than 50 mg/kg, and referred to as "Type A materials"), and containing concentrations of arsenic between 550 and 1,100 mg/kg, cadmium at 3,000 mg/kg, copper from 2,700 to 11,000 mg/kg, and zinc from 6,200 to 47,000 mg/kg. The TTLCs for mercury, arsenic, cadmium, copper and zinc are 20 mg/kg, 500 mg/kg, 100 mg/kg, 2,500 mg/kg and 5,000 mg/kg respectively. The materials were excavated from Area 4 and from Area 2 of Subunit 2A, respectively. The "Type A materials" were treated with 7.5 % crushed limestone in Treatment Pad B. (Attachment F, See Map 2, for location of Areas 4 and 2, and Map 3 for location of Treatment Pad B).

According to UCB's November 4, 2005 submittal (Attachment I, sections 2.0-2.1.6; and Attachment Q, Phase 2, Section Five, Summary, page 5-2), pre-treatment analytical results for Type A materials (excavated from Area 4 and Area 2) consisted of site characterization sampling performed prior to development of the remedial design details (RDDR) addendum (URS 2002a). A summary of the analytical results is shown in the table below.

Sample Location Figures /Tables, (Attachment G, Violation 1.c.)	**Pre-treatment Analytical Results (mg/kg),** See Attachment I, November 4, 2005 submittal, Section 2.0-2.1.6; and Tables 1, 4, and 5 (Appendix B) ( )= Total Threshold limit Concentration, TTLC , If concentration is >= TTLC, considered hazardous waste				
	Mercury (20 mg/kg)	Arsenic (500 mg/kg)	Cadmium (100 mg/kg)	Copper (2,500 mg/kg)	Zinc (5,000 mg/kg)
Area 4 (See Tables 1 and 4)					
2AU-1-4	41				
2AU-4-10	28				
2AU-12-7	49				
2AU-16-7	6.3		3,000	11,000	47,000
Area 4 (See Table 4)					
A4-15 (4' depth)	0.82			2,700	
A4-15 (6' depth)	0.33			3,800	
A4-17	1.4			8,900	6,200

Sample Location Figures /Tables, (Attachment G, Violation 1.c.)	**Pre-treatment Analytical Results (mg/kg),** See Attachment I, November 4, 2005 submittal, Section 2.0-2.1.6; and Tables 1, 4, and 5 (Appendix B) ( )= Total Threshold limit Concentration, TTLC , If concentration is >= TTLC, considered hazardous waste				
	Mercury (20 mg/kg)	Arsenic (500 mg/kg)	Cadmium (100 mg/kg)	Copper (2,500 mg/kg)	Zinc (5,000 mg/kg)
Area 2 (See Table 5)					
SMAB-7	30	1,100			
SMAB-16 (2.5)	24				
SMAB-19	1.2	550			

The treated "Type A materials" were transported to Zeneca for placement at Subunit 1 (Also see Violation 3.d.).

Evidence: Attachment G, Violation 1.c.; Attachment I, Response to DTSC's Request For Information, Phase 2 and 3 Remedial Activities for Subunits 2A and 2B, Meade Street Operable Unit Richmond Field Station, Richmond, California, dated November 4, 2005; Section 2.0.- 2.1.6, Appendix B, Tables 1, 4, and 5.

Witness: Luz Castillo

d. On or about August 12 to September 2, 2003, UCRFS treated by stabilization, 1,496 cubic yards of cinder-impacted materials containing mercury at concentrations of 22 mg/kg and 40.2 mg/kg, excavated from various locations in Subunit 2B (described by UCRFS as less than 50 mg/kg of mercury and referred to as "UC Berkeley Type A materials"). The "UC Berkeley Type A materials" were treated with 7.5 % crushed limestone in Treatment Pad B. (Attachment F, See Map 3 for location of Subunit 2B and Treatment Pad B). The TTLC for mercury is 20 mg/kg.

According to UCB's January 13, 2006 submittal (Attachment K), the analytical record for the UC Berkeley Type A materials (prior to treatment) consisted of the results from three previous site characterization sampling events performed in the area that was occupied by Treatment Pad B. A summary of the analytical results is shown in the table below.

Sample Location Figures /Tables, (Attachment G, Violation 1.d.)	**Pre-treatment Analytical Results (mg/kg),** Attachment K, See Table C-1 (Attachment C) ( )= Total Threshold limit Concentration, TTLC If concentration is >= TTLC, considered hazardous waste
	Mercury (20 mg/kg)
B10SH	40.2
HD2	22

The treated "UC Berkeley Type A" materials were transported to Zeneca for placement at Subunit 1 (Also see Violation 3.e.).

Evidence: Attachment G, Violation 1.d.; Attachment I, Response to DTSC's Request For Information, Phase 2 and 3 Remedial Activities for Subunits 2A and 2B, Meade Street Operable Unit Richmond Field Station, Richmond, California, dated November 4, 2005; Section 2.0.- 2.1.6.; Attachment K, Response to DTSC Request for Additional Information Regarding Phase 2 and 3 Remedial Activities for Subunits 2A and 2B, Meade Street Operable Unit Richmond Field Station, Richmond, California, dated January 13, 2006, Response No.1., Attachment C, Table C-1.

Witness: Luz Castillo

e. On or about September 12 to October 25, 2003, UCRFS treated with 5% powdered activated carbon and 7.5% crushed limestone, a total of 11,987 cubic yards of cinder-related soil containing mercury at concentrations from 56 mg/kg to 210 mg/kg (described as greater than 50 mg/kg and less than 260 mg/kg and referred to by UCRFS as "Type B materials"), and containing concentrations of arsenic from 640 to 2,900 mg/kg, copper from 3,500 to 5,300 mg/kg, selenium from 130 to 260 mg/kg, and zinc from 6,100 to 9,200 mg/kg. The TTLCs for mercury, arsenic, copper, selenium and zinc are 20 mg/kg, 500 mg/kg, 2,500 mg/kg, 100 mg/kg and 5,000 mg/kg respectively. The 11,987 cubic yards of cinder-related soil consisted of 4,266 cubic yards excavated from Area 4 of Subunit 2A and 7,721 cubic yards excavated from the western portion of marsh Area 2 of Subunit 2A. (See Attachment F, Map 3 for location of Areas 4 and Marsh Area 2). Treatment took place in two, 30-cubic yard bins located on Treatment Pad B (see Attachment F, Map 3).

According to UCB's November 4, 2005 submittal (Attachment I), the pre-treatment analytical record for the Type B material consisted of site characterization sampling performed prior to development of the remedial design details (RDDR) addendum (URS 2002a). A summary of the analytical results is shown in the table below.

Sample Location Figures /Tables, (Attachment G, Violation 1.e.)	**Pre-treatment Analytical Results (mg/kg),** Attachment I, See Tables 1,4 and 5 (Appendix B) ( )= Total Threshold limit Concentration, TTLC If concentration is >= TTLC, considered hazardous waste				
	Mercury (20 mg/kg)	Arsenic (500 mg/kg)	Copper (2,500 mg/kg)	Selenium (100 mg/kg)	Zinc (5,000 mg/kg)
Area 4					
2AU-1-4-5	210				
2AU-3-5	120				
2AU-4-7	120				
2AU-4-11	79				
2AU-6-2.5	85				
2AU-6-4.5	150				
2AU-11-8	88				
2AU-13-3.5	60				
2AU-13-4	73				
2AU-14-7.5	56				6,100
2AU-25-4	88		5,300		
2AU-25-7	130				
MF118-6.5	64				
PH2-6.5-SED	140				
PH5-7-SED	94				
Western Portion of Marsh Area 2					
SMAB-8	170	1,800	3,500		
SMAB-9	62	1,700		130	
SMAB-10	160	2,900		260	
SMAB-15	110	640			9,200
SMAB-16 (1.5)	82				
SMAB-17	150	1,600		130	7,500

The treated "Type B materials" were transported to Zeneca for placement at Subunit 1 (Also see Violation 3.f.).

Evidence: Attachment G, Violation 1.e.; Attachment I, Response to DTSC's Request For Information, Phase 2 and 3 Remedial Activities for Subunits 2A and 2B, Meade Street Operable Unit Richmond Field Station,

Richmond, California, dated November 4, 2005; Section 2.2.- 2.2.6, Appendix B, Tables 1, 4 and 5.

Witness: Luz Castillo

f. On or before February 13, 2004, UCRFS treated by solidification with cement kiln dust, approximately 3,785 cubic yards of mercury contaminated material excavated from Area 4 and 3,290 cubic yards excavated from marsh Area M3, containing mercury at concentrations from 850 mg/kg to 5,700 mg/kg (described as greater than 260 mg/kg and referred to by UCRFS as "Type C materials"), and concentrations of arsenic at 1,800 mg/kg, copper from 4,600 to 5,900 mg/kg, and zinc from 6,100 to 8,400 mg/kg. The TTLCs for mercury, arsenic, copper and zinc are 20 mg/kg, 500 mg/kg, 2,500 mg/kg and 5,000 mg/kg respectively. (Attachment F, See Map 3 for location of Areas 4 and Marsh Area M3). The "Type C materials" were treated with CKD in two, 30-cubic yard bins. The treated wastes were shipped offsite to Chemical Waste Management as non-RCRA hazardous waste. See Attachment I, sections 2.3.2 and 2.3.5.

The table below as shown in Tables 1-7 of Attachment J, summarizes the analytical results for the waste characterization samples collected in Subunit 2A-Area 4 and Subunit 2B-Area M3 (Table 7, waste characterization samples on M3 soil). For the pre-treatment analysis, for the M3 soil, see characterization samples for Marsh Area 3 as shown in Appendix B, Table 2 of Attachment I.

Sample Location Figures /Tables, (Attachment G, Violation 1.f.)	**Pre-treatment Analytical Results (mg/kg),** ( )= Total Threshold limit Concentration, TTLC If concentration is >= TTLC, considered hazardous waste			
	Mercury (20 mg/kg)	Arsenic (500 mg/kg)	Copper (2,500 mg/kg)	Zinc (5,000 mg/kg)
Area 4 (Waste Characterization Samples), Tables 1-6, Attachment J				
TS1-CINDER	5,700			
TS1-SEDIMENT	850			
TS1-SEDIMENT-1	3,500			
TS6-CINDER	1,300		5,900	8,400
TS2-CINDER-2	130		4,600	
TS2-SEDIMENT-1	170			
TS5-CINDER	350		3,800	
TS5-SEDIMENT	380			

Sample Location Figures /Tables, (Attachment G, Violation 1.f.)	**Pre-treatment Analytical Results (mg/kg),** ( )= Total Threshold limit Concentration, TTLC If concentration is >= TTLC, considered hazardous waste			
	Mercury (20 mg/kg)	Arsenic (500 mg/kg)	Copper (2,500 mg/kg)	Zinc (5,000 mg/kg)
Area 4 [Continued](Waste Characterization Samples), Tables 1-6, Attachment J				
COMPOSITE (2AU-32A and B)	190			
COMPOSITE (2AU-33A and B)	81			
Marsh Area 3 (Site Characterization Samples), Table 2 (Appendix B) of Attachment I				
SM150 (2' Depth)	1,800	1,800		6,100
SM150 (Dup)	940	910		
M3 (Type C, Waste Characterization Sample Results, Table 7, Attachment J)				
M3-Soil-1-CKD	21			
M3-Soil-2-CKD	35			
M3-Soil-3-CKD	200			
M3-Soil-4-CKD	120			

Evidence: Attachment G, Violation 1.f.; Attachment I, Response to DTSC's Request For Information, Phase 2 and 3 Remedial Activities for Subunits 2A and 2B, Meade Street Operable Unit Richmond Field Station, Richmond, California, dated November 4, 2005; Section 2.3. - 2.3.6., Appendix B, Table 2; Attachment J, Response to DTSC's Request For Information, Phase 2 and 3 Remedial Activities for Subunits 2A and 2B, Meade Street Operable Unit Richmond Field Station, Richmond, California, dated November 28, 2005, Tables 1-7. See Attachment I, Sections 2.3.2. and 2.3.5.

Witness: Luz Castillo

g. On or about November 17 and 18, 2003, UCRFS treated by solidification with cement kiln dust, 464 cubic yards of material excavated from marsh area M1a in Subunit 2B, containing polychlorinated biphenyls (PCBs) at concentrations of 1,100 mg/kg and 2,000 mg/kg (described as greater than 50 mg/kg and referred to by UCRFS as "Type D materials"). The TTLC for PCBs is 50 mg/kg. (Attachment F, See Map 3 for location of Marsh Area M1a). The treatment took place in the on-site concrete treatment cell (See

Attachment F, Map 3 for location of concrete treatment cell). The treated wastes were shipped offsite to Chemical Waste Management. See Attachment I, section 2.4.

The table below as shown in Table 8 of Attachment J, summarizes the analytical results for waste characterization samples collected in Subunit-2B-Area M1a.

Sample Location, Figures /Tables, (Attachment G, Violation 1.g.)	**Pre-treatment Analytical Results (mg/kg),** See Table 8 of Attachment J ( )= Total Threshold limit Concentration, TTLC If concentration is >= TTLC, considered hazardous waste
	Polychlorinated biphenyls (PCB) (50 mg/kg)
MAOC1-WCAB (0-4)	2,000
MAOC1-WCCD (0-4)	1,100

Evidence: Attachment G, Violation 1.g.; Attachment J, Response to DTSC's Request For Information, Phase 2 and 3 Remedial Activities for Subunits 2A and 2B, Meade Street Operable Unit Richmond Field Station, Richmond, California, dated November 28, 2005, page 1 and Table 8; Attachment I, section 2.4.

Witness: Luz Castillo

h. On or about October 27 and 29, 2003, UCRFS treated with 7.5 % crushed limestone, 2,046 cubic yards of vegetation wastes from Zeneca, containing arsenic at a total concentration of 270 mg/kg and a soluble concentration of 10 mg/l. The TTLC and STLC for arsenic are 500 mg/kg and 5 mg/l, respectively. The vegetation wastes were treated on Treatment Pad B (see Attachment F, Map 3). [Note: the vegetation wastes excavated from UCRFS Marsh Areas 2 and 3 (Attachment F, See Map 2 for location of Areas 2 and 3), during Phase 1 activities were shipped to Subunit 1 for stockpiling on October 13, 2002]. (Also see violations 2.a. and 4.).

The treated vegetation wastes were transported off-site as non-hazardous waste to Keller Canyon on November 11 and 17, 2003. The total and soluble concentrations of arsenic after treatment were 360 mg/kg and 0.5 mg/l, respectively.

According to UCB's January 13, 2006 letter, (Attachment K, response no.2.), Zeneca's consultant collected a screening sample of the vegetative material that was excavated from Marsh Areas 2 and 3 at the beginning of Phase 1. (See Attachment K, Table D-1 of Attachment D).

Evidence: Attachment G, Violation 1.h.; Attachment I, Response to DTSC's Request For Information, Phase 2 and 3 Remedial Activities for Subunits 2A and 2B, Meade Street Operable Unit Richmond Field Station, Richmond, California, dated November 4, 2005, Section 2.5.3; Attachment K, Response to DTSC's Request For Information, Phase 2 and 3 Remedial Activities for Subunits 2A and 2B, Meade Street Operable Unit Richmond Field Station, Richmond, California, dated January 13, 2006, Response no.2, Table D-1 (Attachment D).

Witness: Luz Castillo

i. On or about September 3, October 4, 6, 8, 9 and 10, 2003, UCRFS treated with 7.5 % crushed limestone, 978 cubic yards of soil and vegetation excavated from the western portion of Marsh Area 2 (Attachment F, See Map 3 for location of Marsh Area 2), containing concentrations of arsenic from 850 to 2,000 mg/kg arsenic, and zinc at 13,000 mg/kg. The TTLCs for arsenic and zinc are 500 mg/kg and 5,000 mg/kg respectively. This material was treated on Treatment pad C (see Attachment F, Map 3).

The treated Area 2 vegetative wastes were transported off-site as non-hazardous waste to Keller Canyon between November 11 and November 17, 2003. The total and soluble concentrations of metals after treatment of Area 2 vegetative wastes were below hazardous waste regulatory levels as follows: arsenic- 330 mg/kg (total), and 0.5 mg/l (soluble); zinc- 760 mg/kg. (See Attachment K, Table E-1, Area 2-Veg-LS of Attachment E).

According to UCB's January 13, 2006 letter (Attachment K, response no. 2, 2nd paragraph), pre-treatment sampling of all remaining vegetative materials excavated in Marsh Area 2 consisted of samples collected from the underlying soft Bay sediments during site characterization activities prior to Phase 1 and 2 activities. Samples were not collected from overlying vegetative material prior to excavation/treatment.

Sample Location Figures/Tables (Attachment G, Violation 1.i.)	**Pre-treatment Analytical Results (mg/kg),** See Attachment I, Table 5 (Appendix B) ( )= Total Threshold limit Concentration, TTLC If concentration is >= TTLC, considered hazardous waste	
	Arsenic (500 mg/kg)	Zinc (5,000 mg/kg)
SMAB13 (veg)	850	13,000
SMAB17 (veg)	2,000	
SMAB 8 (veg)	980	

Evidence: Attachment G, Violation 1.i.; Attachment I, Response to DTSC's Request For Information, Phase 2 and 3 Remedial Activities for Subunits 2A and 2B, Meade Street Operable Unit Richmond Field Station, Richmond, California, dated November 4, 2005, Section 2.5.1., Table 5 (Appendix B); Attachment K, Response to DTSC's Request For Information, Phase 2 and 3 Remedial Activities for Subunits 2A and 2B, Meade Street Operable Unit Richmond Field Station, Richmond, California, dated January 13, 2006, response no. 2, 2nd paragraph.

Witness: Luz Castillo

j. On or about November 6 and 24, 2003, UCRFS treated with 7.5 % crushed limestone, 273 cubic yards (Attachment Q, Section Five Summary, page 5-2) of vegetation containing total concentrations of arsenic from 650 to 1,400 mg/kg and mercury from 40 to 100 mg/kg, excavated in marsh Area M3, Subunit 2B. The TTLCs for arsenic and mercury are 500 mg/kg and 20 mg/kg, respectively. Treatment occurred on Treatment Pad C (see Attachment F, Map 3 for location of Marsh Area M3 and Treatment Pad C).

The Marsh Area M3 vegetative wastes were shipped as non-hazardous waste to Keller Canyon on November 1, 2003 and January 17 and 23, 2004. The total concentrations of metals after treatment of Marsh Area M3 vegetative wastes were below hazardous waste regulatory levels as follows: arsenic- 40 mg/kg; mercury- 0.56 mg/kg. (See Attachment K, Table E-1, M3-Veg-CKD of Attachment E).

According to UCB's January 13, 2006 letter (Attachment K), response no. 2, 2nd paragraph, pre-treatment sampling of all remaining vegetative materials excavated in Marsh Area M3 consisted of samples collected from the underlying soft Bay

sediments during site characterization activities prior to Phase 1 and 2 activities (Attachment I, Table 2 of Appendix B) . Samples were not collected from overlying vegetative material prior to excavation/treatment.

Sample Location Figures/Tables (Attachment G, Violation 1.j.)	**Pre-treatment Analytical Results (mg/kg),** See Attachment I, Table 2 (Appendix B) ( )= Total Threshold limit Concentration, TTLC If concentration is >= TTLC, considered hazardous waste	
	Mercury (20 mg/kg)	Arsenic 500 mg/kg
B5MA (1' depth)		674
SM126 (0 depth)		650
SM147 (2' depth)	46	1,300
SM148 (0'depth)		1,400
SM148 (1' depth)	40	
SM149 (2' depth)	100	
SM150 (4' depth)	94	

Evidence: Attachment G, Violation 1.j.; Attachment I, Response to DTSC's Request For Information, Phase 2 and 3 Remedial Activities for Subunits 2A and 2B, Meade Street Operable Unit Richmond Field Station, Richmond, California, dated November 4, 2005, page 13, Table 2 (Appendix B); Attachment K, Response to DTSC's Request For Information, Phase 2 and 3 Remedial Activities for Subunits 2A and 2B, Meade Street Operable Unit Richmond Field Station, Richmond, California, dated January 13, 2006, response no. 2, 2nd paragraph; Attachment Q, Section Five, Summary, page 5-2.

Witness: Luz Castillo

Corrective Action

Although no further action is required regarding the above violations, please be advised that any future treatment of hazardous waste would require a permit or other grant of authorization from DTSC.

2. Shipment of Hazardous Waste to an Unpermitted Facility

UCRFS violated HSC section 25189.2 (b) in that UCRFS shipped hazardous wastes to a facility not permitted or authorized to receive hazardous waste, which is a violation of HSC Section 25189.5(c),to wit:

On or about October 13, 2002, UCRFS shipped to Zeneca's subunit 1 for stockpiling until Phase 2, approximately 2,046 cubic yards of vegetation, containing soluble arsenic at a concentration of 10 mg/l. The STLC for arsenic is 5 mg/l.

The vegetation wastes were excavated from marsh Areas 2 and 3 during Phase 1 activities at UCRFS. The stockpiled vegetation wastes were returned to UCRFS on October 27 and 29, 2003 (Also see violation 1.h. and 4).

According to UCB's January 13, 2006 letter (Attachment K, response no.2.), Zeneca's consultant collected a screening sample of the vegetative material that was excavated from marsh Areas 2 and 3 at the beginning of Phase 1 activities prior to its delivery to the Zeneca site (subunit 1). The result of the sample screening is shown in the table below.

Sample ID Figures /Tables, (Attachment G, Violation 1.h.)	**Pre-treatment Analytical Results (mg/kg),** See Attachment K, Table D-1 (Attachment D) [ ] = Soluble threshold Limit Concentration, STLC If soluble concentration is >=STLC, considered hazardous waste
	Arsenic [5 mg/l, STLC]
Veg. Marsh Phase 1 Comp	10

Evidence: Attachment G, Violation 1.h., Attachment I, Response to DTSC's Request For Information, Phase 2 and 3 Remedial Activities for Subunits 2A and 2B, Meade Street Operable Unit Richmond Field Station, Richmond, California, dated November 4, 2005, Section 2.5.3; Attachment K, Response to DTSC's Request For Information, Phase 2 and 3 Remedial Activities for Subunits 2A and 2B, Meade Street Operable Unit Richmond Field Station, Richmond, California, dated January 13, 2006, Response no.2, Table D-1 (Attachment D).

Witness: Luz Castillo

Corrective Action

Although no further action is required regarding this violation, in the future, UCRFS must ensure that hazardous wastes shall only be shipped to a

permitted or otherwise authorized hazardous waste, treatment, storage, and/or disposal facility.

3. Disposal of Hazardous Waste at An Unauthorized Point

UCRFS violated HSC section 25189.2 (c) in that UCRFS caused the disposal of hazardous wastes at a point not authorized by DTSC, to wit:

a. [Upon further consideration of the facts and circumstances surrounding this count in the Summary of Violations, DTSC will not pursue this alleged violation.]

On or about September 18 through November 4, 2002, UCRFS shipped to Zeneca for treatment and placement into Subunit 1, approximately 12,140 cubic yards of excavated cinders and sediment from Areas 1 and 4, containing mercury at a concentration of 32 mg/kg (described by UC as less than 50 mg/kg mercury), copper from 7,800 mg/kg to 20,000 mg/kg and zinc from 7,100 to 22,000 mg/kg. The TTLCs for mercury, copper and zinc are 20 mg/kg, 2,500 mg/kg and 5,000 mg/kg respectively.

b. On or about November 15, 16, 25 and 26, 2002, UCRFS shipped to Zeneca, 122 truckloads (1,700 cubic yards before treatment as described in violation 1.a.) of treated excavated cinders and sediment containing mercury concentrations at 24 mg/kg and 28 mg/kg. The TTLC for mercury is 20 mg/kg.

According to UCB's June 30, 2005 letter (Attachment H), response 1.a., seven post-treatment samples were collected and submitted for analysis for total mercury. Dissolved mercury concentration in the leachate from the treated soil samples was also requested for analysis. The results showed that mercury levels in the leachate ranged from 0.00024 to 0.00168, which were below Zeneca's acceptance criteria of 0.25 µg/l. See table below.

Sample ID	Post Treatment Sample Results (mg/kg), Attachment H, Table 1. ( )= Total Threshold limit Concentration, TTLC If concentration is >=TTLC, considered hazardous waste	
	Mercury (20 mg/kg)	Dissolved Mercury Concentration in leachate (µg/l)
Treated Hg-1	12	0.00085
Treated Hg-2	9.6	0.00032
Treated Hg-3	28	0.00044

Sample ID	Post Treatment Sample Results (mg/kg), Attachment H, Table 1. ( )= Total Threshold limit Concentration, TTLC If concentration is >=TTLC, considered hazardous waste	
	Mercury (20 mg/kg)	Dissolved Mercury Concentration in leachate (µg/l)
Treated Hg-4	8.3	0.00032
Treated Hg-5	13	0.00168
Treated Hg-6	14	0.00033
Treated Hg-7	24	0.00024

Evidence: Attachment H, Response to DTSC's Request For Information, Phase 1 Implementation Report, Subunit 2A, Meade Street Operable Unit Richmond Field Station, Richmond, California, dated June 30, 2005; response 1.a., Table 1.

Witness: Luz Castillo

c. [Upon further consideration of the facts and circumstances surrounding this count in the Summary of Violations, DTSC will not pursue this alleged violation.]

On or about October 11, 18, 23, 25, 28 through 31, 2002, November 1 through 3, 2002, and on December 5 through 6, 2002, UCRFS shipped to Zeneca, 842 and 66 truckloads (Attachment H, section 2.e. page 9), respectively (14,000 cubic yards before treatment as described in violation 1.b.) of treated soft marsh cinders and sediment.

d. [Upon further consideration of the facts and circumstances surrounding this count in the Summary of Violations, DTSC will not pursue this alleged violation.]

On or between September 11 and 16, and on or about October 1, and 2, and on October 21, 22, and 25, 2003, UCRFS shipped to Zeneca, a total of 681 truckloads of treated "Type A materials" (6,274 cubic yards before treatment as described in violation 1.c.) for placement into Subunit 1.

e. [Upon further consideration of the facts and circumstances surrounding this count in the Summary of Violations, DTSC will not pursue this alleged violation.]

On or before September 8 to September 10, 2003, UCRFS shipped to Zeneca, a total of 109 truckloads of treated "UC Berkeley Type A materials" (1,496 cubic yards before treatment as described in violation 1.d.) for placement into Subunit 1. The treated UC Berkeley Type A materials were transported to the Zeneca site, placed along with cinders excavated and treated on Subunit 1, then compacted and capped.

f. On or about September 23 through October 25, 2003, UCRFS shipped to Zeneca, a total of 1,115 truckloads (11,987 cubic yards before treatment as described in violation 1.e.) of treated "Type B materials" for placement into Subunit 1.

Analytical results of post-treatment sampling for the Type B materials showed total mercury concentrations from 20 mg/kg to 110 mg/kg, as shown in the table below.

Sample ID (Treated Type B Materials)	**Treated Type B Analytical Results** See Attachment I, Table 2 (Appendix A) ( )= Total Threshold limit Concentration, TTLC If concentration is >=TTLC, considered hazardous waste	
	TTLC, Mercury (20 mg/kg)	
Area 4 Treated Samples	Total Mercury Concentration (mg/kg)	Leachable Mercury Concentration (µg/l)
Treated Hg-092203-2, Area 4 Treated Soil Sample #1	84	0.054
Treated Hg-092203-3, Area 4 Treated soil Sample #2	110	<0.030
Treated Hg-092403, Area 4 Treated Soil Screening Sample	70	No leachate sample
Treated Hg-092603, Area 4 Treated Soil Sample #3	66	
Treated Hg leachate-092703		<0.20
Treated Hg-100303, Area 4, Treated Soil Sample #4	28	
Treated Hg leachate-100403		<0.20

Area 2 Treated Samples	Total Mercury Concentration (mg/kg)	Leachable Mercury Concentration (µg/l)
Treated Hg-100603-1, Area 2 Treated Soil Sample #1	29	
Hg leachate -100603-1		<0.20
Treated Hg-100603-2, Area 2 Treated Soil Sample #2	28	
Hg leachate-1006-03-2		<0.20
Treated Hg-100603-3, Area 2 Treated Soil Sample #3	23	
Treated Hg leachate-100803		<0.20
Treated Hg-100803, Area 2 Treated Soil Sample #4	28	
Treated Hg leachate-100903		<0.20
Treated Hg-101403, Area 2 Treated Soil Sample #5	41	
Treated Hg leachate-101503		<0.20
Treated Hg-101603, Area 2 Treated Soil Sample #6	20	
Treated Hg leachate-101703		<0.20
Treated Hg-101803, Area 2 Treated Soil Sample #7	21	
Treated Hg leachate-101903		<0.20
Treated Hg- 4.3%AC-1-2403, Area 2, 4.3% PAC Treated Soil Sample #9	30	
Treated Hg- 4.3%AC-leachate-102503		<0.20

Evidence: Attachment I, Response to DTSC's Request For Information, Letter Dated September 26, 2005, Regarding the Phase 2 and 3 Activities for Subunits 2A and 2B, Phase 1 Implementation Report, Subunit 2A, Meade Street Operable Unit Richmond Field station, Richmond, California, dated November 4, 2005, Response 2.2 to 2.2.5., and Table 2 (Appendix A).

Witness: Luz Castillo

Corrective Action

Within 15 days of receipt of this Summary of Violations, UCRFS shall contact the DTSC Northern California Cleanup Operations Coastal Branch, to initiate and establish a schedule to remove the contaminated

cinders and otherwise restore the Subunit 1 areas at Zeneca, where the treated contaminated cinders were disposed of.

4. Storage and/or Acceptance of Hazardous Waste Without a Permit or Authorization

UCRFS violated Health and Safety Code 25201(a) in that UCRFS accepted hazardous waste without a permit or authorization from the DTSC to wit:

On or about October 27 and October 29, 2003, UCRFS received from Zeneca, approximately 2,046 cubic yards of vegetation wastes containing soluble arsenic at a concentration of 10 mg/l. The Soluble Threshold Limit Concentration for arsenic is 5 mg/l.

According to UCB's January 13, 2006 letter (See Attachment K, response no.2.), Zeneca's consultant collected a screening sample of the vegetative material that was excavated from marsh Areas 2 and 3 at the beginning of Phase 1. Pre-treatment analytical result showed soluble concentration of mercury at 10 mg/l. See Attachment K, Table D-1 (Attachment D).

[Note: the above vegetation wastes were excavated from UCRFS marsh areas 2 and 3 (See Map 2 for location of Areas 2 and 3), during Phase 1 activities and were sent to Subunit 1 for stockpiling on October 13, 2002. The above vegetation wastes were shipped back to UCRFS for treatment (See violation 1.h.).] (Also see violation 2].

Evidence: Attachment G, Violation 1.h.; Attachment I, Response to DTSC's Request For Information, Phase 2 and 3 Remedial Activities for Subunits 2A and 2B, Meade Street Operable Unit Richmond Field Station, Richmond, California, dated November 4, 2005, Section 2.5.3; Attachment K, Response to DTSC's Request For Information, Phase 2 and 3 Remedial Activities for Subunits 2A and 2B, Meade Street Operable Unit Richmond Field Station, Richmond, California, dated January 13, 2006, Response no.2, Table D-1 (Attachment D).

Witness: Luz Castillo

Corrective Action

Although no further action is required regarding this violation, please be advised that in the future, storage and/or acceptance of hazardous waste from off-site would require a permit or authorization from DTSC.

5. Transfer of Custody of Hazardous Waste to an Unregistered Transporter

UCRFS violated Health and Safety Code section 25163 (a)(1) in that UCRFS transferred custody of hazardous waste to a transporter who does not hold a valid registration issued by DTSC to wit:

a. On or about October 8, 2004 UCRFS transferred one truckload of hazardous waste soil contaminated with mercury to American Pacific, on manifest 23455573 on October 8, 2004.

American Pacific did not hold a valid registration at that time. American Pacific was registered (No. 5228) from November 23, 2004 to November 30, 2005, and has not held a registration from December 1, 2005 to present.

Evidence: Attachment O, Evidence of Search for Record, American Pacific, Registration Number 5228 and Manifest no. 23455573.

Witness: Carl Josephson, Staff Services Manager I, Custodian of Records, DTSC, Registered Transporter Database.

b. UCRFS transferred hazardous waste soil contaminated with mercury to Baires Trucking, EPA ID CAR000112425 (*was shown as CAR000112925 in the SOV)* on or about the following dates accompanied by these manifests

1. One truckload, Manifest No. 22813706, October 29, 2003
2. One truckload, Manifest No. 22813733, October 30, 2003

Baires Trucking, EPA ID CAR000112425 held a transporter registration from February 14, 2002 to February 28, 2003 and from December 23, 2003 to December 31, 2004. Baires Trucking has not held a transporter registration from January 1, 2005 to the present.

Evidence: Attachment O, Evidence of Search For Record, Baires Trucking, Registration Number 4172, and Manifest nos. 22813706 and 22813733.

Witness: Carl Josephson, Staff Services Manager I, Custodian of Records, DTSC, Registered Transporter Database.

c. UCRFS transferred hazardous waste soil contaminated with trace metals to Chapman Trucking, EPA ID CAR000092296 on or about the following dates accompanied by these manifests:

1. Two truckloads, Manifest No. 24281959, October 21, 2004
2. Two truckloads, Manifest No.24286802, October 25, 2004 *(was shown as October 21, 2004 in the SOV)*

Chapman Trucking held a transporter registration from March 7, 2003 to March 31, 2004 and from March 15, 2006 to March 31, 2007. Chapman Trucking does not currently hold a transporter registration.

Evidence: Attachment O, Evidence of Search For Record, Chapman Trucking, Registration Number 4031, and Manifest nos. 24281959 and 24286802.

Witness: Carl Josephson, Staff Services Manager I, Custodian of Records, DTSC, Registered Transporter Database.

d. UCRFS transferred hazardous waste soil to G.A. Grau, EPA ID CAR000090985 on or about the following dates accompanied by these manifests:

1. Two truckloads of hazardous waste soil contaminated with trace metals on Manifest No. 24281958, October 21, 2004
2. Two truckloads of hazardous waste soil contaminated with trace metals on Manifest No. 24281976, October 22, 2004
3. Two truckloads of hazardous waste soil contaminated with trace metals, Manifest No. 24281787, October 25, 2004
4. Two truckloads of hazardous waste soil contaminated with trace metals and PCB's, Manifest No. 24281876, November 1, 2004

G.A. Grau held a transporter registration from March 2, 2001 to March 31, 2003, from June 12, 2003 to June 30, 2004, from January 27, 2005 to January 31, 2006 and from February 2, 2006 to February 28, 2007. G.A. Grau has not held a transporter registration from March 1, 2007 to the present.

Evidence: Attachment O, Evidence of Search For Record, G.A. Grau, Registration Number 4051, and Manifest nos. 24281958, 24281976, 24281787, 24281876.

Witness: Carl Josephson, Staff Services Manager I, Custodian of Records, DTSC, Registered Transporter Database.

e. UCRFS transferred hazardous waste soil contaminated with trace metals and PCB's to Rufino Hernandez dba Hernandez Trucking,

EPA ID CAR00095885 on or about the following dates accompanied by these manifests:

1. One truckload, Manifest No. 24281833, October 29, 2004
2. One truckload, Manifest No. 24281899, November 3, 2004

Rufino Hernandez dba Hernandez Trucking held a transporter registration from May 3, 2001 to May 31, 2003, from September 8, 2003 to September 30, 2004, and from August 1, 2005 to the present.

Evidence: Attachment O, Evidence of Search For Record, Rufino Hernandez dba Hernandez Trucking, Registration Number 4171, and Manifest nos. 24281833 and 24281899.

Witness: Carl Josephson, Staff Services Manager I, Custodian of Records, DTSC, Registered Transporter Database.

f. UCRFS transferred hazardous waste soil to L & M Express, EPA ID CAR000090977 on or about the following dates accompanied by these manifests:

1. One truckload of PCB and metals contaminated soil, on Manifest No. 22813836, November 19, 2003
2. One truckload of soil contaminated with mercury, on Manifest 23455572, December 22, 2003
3. One truckload of soil contaminated with mercury, on Manifest 23530095, January 23, 2004

L & M Express held a transporter registration from March 12, 2002 to April 30, 2003 from February 18, 2004 to February 28, 2005, April 21, 2005 to April 30, 2006, and July 6, 2006 to the present.

Evidence: Attachment O, Evidence of Search For Record, L & M Express, Registration Number 4111, and Manifest nos. 22813836, 23455572 and 23530095.

Witness: Carl Josephson, Staff Services Manager I, Custodian of Records, DTSC, Registered Transporter Database.

g. UCRFS transferred hazardous waste soil with trace metals and PCB's to Mark Doss Trucking, EPA ID CAR000053736 (items 1 and 2) and CAR000467512 (item 3), on or about the following dates accompanied by these manifests:

1. One truckload, Manifest No. 24281869, November 1, 2004

2. One truckload, Manifest No. 24281874, November 1, 2004
3. Two truckloads, Manifest No. 24281850, October 29, 2004. NOTE: The EPA identification number used for this manifest was not a valid number.

Mark Doss Trucking held a transporter registration from July 26, 1999 to August 31, 2003 and from November 17, 2004 to the present.

Evidence: Attachment O, Evidence of Search For Record, Mark Dross Trucking, Registration Number 3827, and Manifest nos. 24281869, 24281874, and 24281850.

Witness: Carl Josephson, Staff Services Manager I, Custodian of Records, DTSC, Registered Transporter Database.

h. On or about December 19, 2003 UCRFS transferred hazardous waste soil contaminated with mercury to Marzette Transportation, EPA CAR000073411 on Manifest No. 22925620, on December 19, 2003.

Marzette Trucking held a transporter registration from May 26, 2000 to June 30, 2001, from July 20, 2001 to August 31, 2002, from March 4, 2004 to March 31, 2005, and from August 29, 2005 to the present.

Evidence: Attachment O, Evidence of Search For Record, Marzette Trucking, Registration Number 4014, and Manifest no. 22925620.

Witness: Carl Josephson, Staff Services Manager I, Custodian of Records, DTSC, Registered Transporter Database.

i. UCRFS transferred hazardous waste soil contaminated with mercury to Remedial Transportation Services, Inc., EPA ID CAR000127910 on or about the following dates accompanied by these manifests:

1. One truckload, Manifest No. 22813988, November 12, 2003
2. One truckload, Manifest No. 22813989, November 12, 2003
3. One truckload, Manifest No. 22813990, November 12, 2003

Remedial Transportation Services, Inc. (RTS) held a transporter registration from September 26, 2002 to October 31, 2003 and from November 24, 2003 to the present.

Evidence: Attachment O, Evidence of Search for Record, Remedial Transportation Services, Inc., Registration Number 4276, and Manifest nos. 22813988, 22813989, 22813990.

Witness: Carl Josephson, Staff Services Manager I, Custodian of Records, DTSC, Registered Transporter Database.

Corrective Action

Although no further action is required regarding this violation, UCRFS must ensure that in the future, all custody transfers of hazardous wastes must be to a Hazardous Waste Transporter holding a valid registration with DTSC.

The following violations were not included in the Summary of Violations sent to UC on June 29, 2007.

6. Failure to Make a Hazardous Waste Determination

UCRFS violated California Code of Regulations, title 22, section 66262.11 in that UCRFS failed to conduct the required hazardous waste determination on the following treated wastes prior to shipment and placement in Subunit 1, Zeneca site, to wit:

a. On or before November 15 and 16, and November 25 and 26, 2002, 122 truckloads of treated excavated cinders and sediment were not analyzed for total and/or soluble zinc, and for soluble mercury. Analyses conducted on the treated wastes were for total mercury and dissolved leachate concentrations. Also see Violations 1.a. and 3.b.

Evidence: Attachment H, Response to DTSC's Request For Information, Phase 1 Implementation Report, Subunit 2A, Meade Street Operable Unit Richmond Field Station, Richmond, California, dated June 30, 2005; response 1.a., Table 1.

Witness: Luz Castillo

b. On or before October 11, October 18, 23, 25, and from October 28-31, 2002, 908 truckloads of treated soft marsh cinders and sediment were not analyzed for total and/or soluble mercury, arsenic, copper, zinc and lead. The only analysis conducted for the treated waste was for pH level. Also see Violations 1.b. and 3.c.

Evidence: Attachment H, Response to DTSC's Request For Information, Phase 1 Implementation Report, Subunit 2A, Meade Street Operable Unit Richmond Field Station, Richmond, California, dated June 30, 2005; response 2.

Witness: Luz Castillo

c. On or before September 11, 16, October 2, 21, 22 and 25, 2003, 681 truckloads of treated Type A materials were not analyzed for total and/or soluble mercury, arsenic, cadmium, copper and zinc. The only analysis conducted on the treated wastes was for pH levels. Also see Violations 1.c. and 3.d.

Evidence: Attachment I, Response to DTSC's Request For Information, Letter Dated September 26, 2005, Regarding the Phase 2 and 3 Activities for Subunits 2A and 2B, Phase 1 Implementation Report, Subunit 2A, Meade Street Operable Unit Richmond Field station, Richmond, California, dated November 4, 2005, Response 2.1.3 and Table 1 (Appendix A).

Witness: Luz Castillo

d. On or before September 8 through 10, 2003, 109 truckloads of treated UCB Type A materials were not analyzed for total and/or soluble mercury. The only analysis conducted on the treated wastes was for pH levels. Also see Violations 1.d. and 3.e.

Evidence: Attachment I, Response to DTSC's Request For Information, Letter Dated September 26, 2005, Regarding the Phase 2 and 3 Activities for Subunits 2A and 2B, Phase 1 Implementation Report, Subunit 2A, Meade Street Operable Unit Richmond Field station, Richmond, California, dated November 4, 2005, Response 2.1.3 and Table 1 (Appendix A).

Witness: Luz Castillo

e. On or before September 23 through October 25, 32003, 1,115 truckloads of treated Type B materials were not analyzed for total and/or soluble mercury, arsenic, copper, selenium, and zinc, and for soluble mercury. Analyses conducted on the treated wastes were for total mercury and dissolved leachate concentrations. Also see Violations 1.e. and 3.f.

Evidence: Attachment I, Response to DTSC's Request For Information, Letter Dated September 26, 2005, Regarding the Phase 2 and 3 Activities for Subunits 2A and 2B, Phase 1 Implementation Report, Subunit 2A, Meade Street Operable Unit Richmond Field Station, Richmond, California, dated November 4, 2005, Response 2.2 to 2.2.5., and Table 2 (Appendix A).

Witness: Luz Castillo

Corrective Action

UCRFS shall coordinate with the DTSC Northern California Cleanup Operations Coastal Branch, to determine the appropriate sampling and analysis methods required for the removal and/or restoration actions for the Subunit 1 areas at Zeneca.

7. Shipment of Hazardous Waste to an Unpermitted Facility

UCRFS violated HSC section 25189.2 (b) in that UCRFS shipped hazardous wastes to a facility not permitted or authorized to receive hazardous waste, which is a violation of HSC Section 25189.5(c),to wit:

On or about September 18 through November 4, 2002, UCRFS shipped to Zeneca for treatment and placement into Subunit 1, approximately 12,140 cubic yards of excavated cinders and sediment from Areas 1 and 4, containing mercury at a concentration of 32 mg/kg (described by UC as less than 50 mg/kg mercury), copper from 7,800 mg/kg to 20,000 mg/kg and zinc from 7,100 to 22,000 mg/kg. The TTLCs for mercury, copper and zinc are 20 mg/kg, 2,500 mg/kg and 5,000 mg/kg respectively.

According to UCB's June 30, 2005 submittal (Attachment H, Response no.1), pre-treatment analytical results for the mercury-affected cinders and sediment in Area 1 and Area 4 consisted of site characterization sampling performed prior to development of the remedial design details (RDDR) addendum (URS 2002a). A summary of the analytical results is shown in the table below.

Sample Location Figures /Tables, (Attachment G, Violation 7)	**Pre-treatment Analytical Results (mg/kg),** See Tables 1 and 4 (Attachment A) ( )= Total Threshold limit Concentration, TTLC If concentration is >=TTLC, considered hazardous waste		
	Mercury (20 /kg)	Copper (2,500 mg/kg)	Zinc (5,000 mg/kg)
2AU-17-13	1	7,800	22,000
B-3 (8.5' depth)	1.3	20,000	7,900
B-5 (4' depth)	10	9,300	
B-5 (8' depth)	32	17,000	
B-6 (8.5' depth)	32		7,100

Evidence: Attachment G, Violation 7; Attachment H, Response to DTSC's Request For Information, Phase 1 Implementation Report, Subunit 2A, Meade Street Operable Unit Richmond Field station, Richmond, California, dated June 30, 2005; See Response no. 3 and Tables 1 and 4 (Attachment A).

Witness: Luz Castillo

Corrective Action

Although no further action is required regarding this violation, in the future, UCRFS must ensure that hazardous wastes shall only be shipped to a permitted or otherwise authorized hazardous waste, treatment, storage, and/or disposal facility.

D. ATTACHMENTS[1]

Attachment A – Complaint Log No. 0305-0132

Attachment B- California Regional Water Quality Control Board, Site Clean-Up Order No. 01-102 (Copy obtained from the San Francisco Bay Regional Water Quality Control Board Website).

Attachment C - Information Request Letters Sent to University of California

Attachment D- Approval of Remedial Actions From Regional Water Quality Control Board

[1] Due to the volume of documents submitted by 4 Leaf for the University of California, only records referenced in the investigation report are included in Attachments H, I, J K, L, M, and N. The original submittals are available for review in separate files.

Attachment E-	Summary of Violations
Attachment F-	Maps-Locations and Boundaries, Phase 1 and 2 Remediation Areas
Attachment G-	Figures/Tables In Support of Violations
Attachment H-	June 30, 2005, Response to DTSC Request For Information, Phase 1 Implementation Report, subunit 2A, Meade Street Operable Unit Richmond Field Station, Richmond, California
Attachment I-	November 4, 2005, Response to DTSC Request For Information, Phase 2 and 3 Remedial Activities for Subunits 2A and 2B, Meade Street Operable Unit Richmond Field Station, Richmond, California
Attachment J-	November 28, 2005, Response To DTSC Request For Additional Information Regarding Phase 2 and 3 Activities for Subunits 2A and 2B, Meade Street Operable Unit, Richmond Field Station, Richmond, California
Attachment K-	January 13, 2006, Response to DTSC Request for Additional Information Regarding Phase 2 and 3 Remedial activities for Subunits 2A and 2B, Meade Street Operable Unit, Richmond Field Station, Richmond, California
Attachment L-	February 8, 2006, Response to DTSC Request for Additional Information Regarding Phase 2 and 3 Remedial Activities for Subunits 2A and 2B, Meade Street Operable Units Richmond Field Station, Richmond, California
Attachment M-	August 2, 2006, Response to DTSC's Request for Additional Information for Subunits 2A and 2B, Meade Street Operable Unit, Richmond Field Station, Richmond, California
Attachment N-	November 20, 2006, Response to Supplemental Information Request Issued Pursuant to Health and Safety Code Section 25185.6 (October 25, 2006), University of California, Berkeley, Richmond Field Station, Richmond, California

Attachment O-	Evidence of Search For a Record, Registered Transporter Database
Attachment P[2]-	Final Implementation Report Phase, Phase 1, Subunit 2A, Meade Street Operable Unit, University of California, Richmond Field Station, Richmond California, Tasks 2E and 3E, RWQCB Order No. 01-102
Attachment Q[3]-	Final Implementation Report Phase, Phase 2, Subunit 2A and 2B, Meade Street Operable Unit, University of California, Richmond Field Station, Richmond California, Tasks 2E, 3E, and 5D, RWQCB Order No. 01-102
Attachment R[4]-	Implementation Report Phase, Phase 3, Upland Portion of Subunit 2B, Meade Street Operable Unit, University of California, Richmond Field Station, Richmond California, Task 4D, RWQCB Order No. 01-102

E. SIGNATURES

Report Prepared By:

Luz J. Castillo — JULY 18, 2008

Luz Castillo — Date
Senior Hazardous Substances Scientist
Enforcement and Emergency Response Program

Report Reviewed By:

for Patricia Burns — 7-18-08

Charlene Williams — Date
Senior Hazardous Substances Scientist
Enforcement and Emergency Response Program

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2 The attached Phase 1 Implementation report does not include tables and figures.
3 The attached Phase 2 Implementation report does not include tables and figures.
4 The attached Phase 3 Implementation report does not include tables and figures.