# FIFTH FIVE-YEAR REVIEW REPORT FOR PORTLAND CEMENT (KILN DUST 2 & 3) SUPERFUND SITE SALT LAKE COUNTY, UTAH

**Prepared by**

**Utah Department of Environmental Quality**
**Division of Environmental Response and Remediation**

**For**

**U.S. Environmental Protection Agency**
**Region 8**
**Denver, Colorado**

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Betsy Smidinger, Director
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# LIST OF ABBREVIATIONS & ACRONYMS

| | |
|---|---|
| ACL | Alternate Concentration Limits |
| BLL | Blood Lead Level |
| BLRV | Blood Lead Reference Value |
| BRA | Baseline Risk Assessment |
| CDC | Center for Disease Control |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CKD | Cement Kiln Dust |
| CFR | Code of Federal Regulations |
| COCs | Contaminants of Concern |
| COPCs | Contaminants of Potential Concern |
| EPA | United States Environmental Protection Agency |
| FYR | Five-Year Review |
| ICs | Institutional Controls |
| IEUBK | Integrated Exposure Uptake and Biokinetic Model |
| LEPAC | Lead Exposure Prevention and Advisory Committee |
| LSI | Lone Star Industries |
| MNA | Monitored Natural Attenuation |
| mg/kg | Milligrams per Kilogram |
| mg/L | Milligrams per Liter |
| µg/dL | Micrograms per Deciliter |
| µg/L | Micrograms per Liter |
| $ug/m^3$ | Micrograms per cubic Meter |
| NCP | National Oil and Hazardous Substances Pollution Contingency Plan |
| NPL | National Priorities List |
| O&M | Operation and Maintenance |
| ORP | Oxidation Reduction Potential |
| OU | Operable Unit |
| PA | Preliminary Assessment |
| POC | Point of Compliance |
| PRP | Potentially Responsible Party |
| PCU | Portland Cement Company of Utah |
| PVC | Polyvinyl Chloride |
| RA | Remedial Action |
| RAGS | Risk Assessment Guidance for Superfund |
| RAO | Remedial Action Objectives |
| RI | Remedial Investigation |
| RI/FS | Remedial Investigation/Feasibility Study |
| ROD | Record of Decision |
| RPM | Remedial Project Manager |
| SRE | Streamlined Human Health Risk Evaluation |
| SRI | Streamlined Remedial Investigation |
| TCLP | Toxicity Characteristic Leaching Procedure |
| UDEQ/DERR | Utah Department of Environmental Quality, Division of Environmental Response and Remediation |
| UU/UE | Unlimited Use and Unrestricted Exposure |

# I. INTRODUCTION

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues, if any, found during the review and document recommendations to address them.

The Utah Department of Environmental Quality, Division of Environmental Response and Remediation (UDEQ/DERR) is preparing this FYR report for the U.S. Environmental Protection Agency (EPA) pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP)(40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the fifth FYR for the Portland Cement (Kiln Dust 2 & 3) Superfund Site (Site). The triggering action for this statutory review is the previous FYR completed on September 26, 2017. This FYR has been prepared due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site consists of three Operable Units (OUs) and all three OUs are addressed in this FYR.

- Operable Unit 1 (OU1) addressed Cement Kiln Dust (CKD) at the Site.
- Operable Unit 2 (OU2) addressed chromium-bearing bricks and contaminated soils.
- Operable Unit 3 (OU3) addressed contaminated groundwater.

This Portland Cement (Kiln Dust 2 & 3) Superfund Site FYR was led by Tony Howes, UDEQ/DERR Project Manager. Participants included Athena Jones, EPA Remedial Project Manager (RPM); and Dave Allison, UDEQ/DERR Community Involvement Coordinator and Scott Everett, UDEQ/DERR Toxicologist. The review began on 11/30/2021.

EPA has determined in the Five-Year Review that the cleanup at the Portland Cement (Kiln Dust 2 & 3) Superfund Site is protective of human health and the environment. Land Use Easements that act as Institutional Controls restrict groundwater use and provide procedures for managing contaminated soils during redevelopment activities. UDEQ/DERR provides oversight of redevelopment activities that would impact groundwater monitoring wells and disturb contaminated soils.

**Site Background**

The Site is in Salt Lake City, Utah, on the west side of Redwood Road (1700 west) at 1000 south, within a triangular area defined by Indiana Avenue, Redwood Road and the Jordan River overflow canal (Surplus Canal) (Appendix B - Figure 1). The Site comprises approximately 71 acres and is divided into three smaller adjacent areas known as Site Two (approximately 17 acres), Site Three (approximately 19 acres), and the West Site (approximately 35 acres) (Appendix B - Figure 2). The majority of the Site has been developed and supports a variety of uses including the Wallace Stagner Academy charter school, J.G. Cooksey Boiler Makers Training Center, and the Redwood Depot commercial warehouse retail area.

The Site was used for the disposal of CKD and chromium-bearing refractory bricks from 1963 to 1983. CKD is a by-product of burning raw cement materials in a rotary kiln and chromium-bearing bricks are used as a liner in the kiln. All of the CKD and chromium-bearing bricks disposed of at the Site came from the Portland Cement plant located at 619 West 700 South in Salt Lake City, Utah. The plant was owned and operated by the Portland Cement Company of Utah (PCU) until September 1979, when Lone Star Industries (LSI) purchased the stock of PCU. Although the CKD was placed on the Site by PCU and LSI, neither company owned the land comprising the Site. Land at the Site was owned by the Horman Family Trust, and Williamsen Family Interests. LSI, the

Horman Family Trust, and Williamsen Family Interests were identified by the EPA as Potentially Responsible Parties (PRPs) for the Site.

LSI filed for bankruptcy in 1990, and as part of the settlement claim, a total of 18.5 million dollars in securities was paid to the EPA, US Department of Interior, and the State of Utah. With this action, the liability of LSI relating to the Site was fully resolved. Funds from this settlement were used by UDEQ/DERR to address contamination associated with the disposal of the CKD and chromium-bearing bricks at the Site. The Horman Family Trust resolved their liabilities relating to the Site in 1997 under a settlement agreement with the EPA, and the Williamsen Family Interests resolved their liabilities relating to the Site in 1998 under a settlement agreement with the EPA.

Approximately 500,000 cubic yards of CKD, ranging in thickness from three to eight feet, and 360 tons of chromium-bearing bricks were disposed of at the Site. Disposal of these wastes resulted in the contamination of both soil and groundwater with metal contaminants that exceeded residential health-based action levels. The highly alkaline nature of the CKD also posed human health/environmental risks.

Groundwater aquifers of interest at the Site are the shallow and intermediate aquifers. Both of these aquifers are located above the Salt Lake Valley Principal Aquifer that supplies a majority of the drinking water to the Salt Lake Valley. The shallow aquifer is unconfined, while the intermediate aquifer is confined between two continuous clay layers. Vertical flow between the two aquifers is upward from the intermediate aquifer to the shallow aquifer.

Horizontal groundwater flow in the shallow (contaminated) aquifer is complex due to interaction with local surface water and utility pathways. Primary areas of recharge are the unlined surplus canal along the southern boundary of the Site and underflow along the eastern site boundary. Shallow groundwater discharges to the City Drain, an unlined storm water ditch that bisects the Site and flows east to west. The Site is also bisected from north to south by a sanitary sewer. The sewer line bedding material acts as a conduit removing groundwater from the Site and routing it into the City Drain. Together, these two features ensure that shallow groundwater beneath the Site is discharged into the City Drain.

**FIVE-YEAR REVIEW SUMMARY FORM**

| SITE IDENTIFICATION | | |
|---|---|---|
| **Site Name:** Portland Cement (Kiln Dust 2 & 3) | | |
| **EPA ID:** UTD980718670 | | |
| **Region:** 8 | **State:** UT | **City/County:** Salt Lake City/ Salt Lake County |

| SITE STATUS | |
|---|---|
| **NPL Status:** Final | |
| **Multiple OUs?** Yes | **Has the site achieved construction completion?** Yes |

| REVIEW STATUS |
|---|
| **Lead agency:** State |
| **Author name:** Tony Howes |
| **Author affiliation:** UDEQ/DERR |
| **Review period:** 11/1/2021 - 8/15/2022 |
| **Date of site inspection:** 11/17/2021 |
| **Type of review:** Statutory |
| **Review number:** 5 |
| **Triggering action date:** 9/26/2017 |
| **Due date *(five years after triggering action date)*:** 9/26/2022 |

# II. RESPONSE ACTION SUMMARY

## Basis for Taking Action

The EPA and UDEQ/DERR performed a Preliminary Assessment (PA) of the Site in 1983. The assessment found that there was a potential risk to human health from metal constituents found in the CKD, specifically arsenic and lead. Subsequent investigations also supported the findings of the PA and determined that unacceptable concentrations of arsenic (up to 55 mg/kg), lead (up to 2,730 mg/kg), and other heavy metals were present in the CKD and soils at the Site.

In April 1984, LSI, one of the Site's PRPs, voluntarily began an investigation at the Site. This investigation found that groundwater beneath the Site had been contaminated with metals associated with the CKD and identified arsenic concentrations in groundwater as high as 50 milligrams per liter (mg/L). This investigation also found high pH levels in groundwater that resulted from the high alkalinity of the CKD and soils. The Site was formally placed on the NPL on June 10, 1986.

LSI also completed a Remedial Investigation (RI) in 1986 with UDEQ/DERR oversight in connection with a 1985 Consent Order for Remedial Investigation/Feasibility Study (RI/FS) issued by the State of Utah. The chief objective of the RI was to determine the nature and extent of contamination and the potential risk to human health

and the environment from the CKD and chromium-bearing bricks disposed of at the Site. The RI found levels of arsenic, cadmium, chromium 3, chromium 6, lead, and molybdenum in site soils and groundwater that exceeded background and residential health-based action levels. The RI specifically identified arsenic and lead levels in soils at the Site as a primary concern, since arsenic and lead levels were on average four and ten times higher, respectively, than background soil levels.

A baseline risk assessment (BRA) completed by the EPA in 1991 as part of the OU2 RI evaluated the CKD, chromium-bearing bricks and soil at the Site. The BRA only evaluated risks to human health. The BRA identified arsenic, cadmium, chromium 3, chromium 6, lead, and molybdenum as contaminants of potential concern (COPCs) in the CKD, chromium-bearing bricks, and soils found at the Site. The BRA identified lead levels in soils as a primary concern that would pose an unacceptable risk for hypothetical future residential use of the Site. The 1991 BRA also identified the high alkalinity of the CKD and soils as a health concern since direct contact with skin could result in burns and severe irritation.

UDEQ/DERR completed a Streamlined Human Health Risk Evaluation (SRE) for groundwater in 1995. The SRE evaluated hypothetical future residential exposure to groundwater and determined that contaminated groundwater beneath the Site posed unacceptable risks to human health. The SRE identified arsenic, cadmium, chromium, lead, manganese, molybdenum, and pH (a water quality parameter) as groundwater COPCs. The SRE found that arsenic levels in groundwater posed an unacceptable cancer risk to future residents if they used groundwater for drinking water purposes. The SRE also found that arsenic, cadmium, chromium, manganese, and molybdenum levels in groundwater posed an unacceptable acute (non-cancer) risks to human health. The EPA's Integrated Exposure Uptake and Biokinetic Model (IEUBK) was used in the SRE to evaluate health risks posed by lead concentrations in groundwater. As stated in the SRE, the IEUBK evaluation found that lead concentrations in several wells posed an unacceptable risk to children if groundwater at the site was used for drinking water purposes.

In 1996 UDEQ/DERR completed a Streamlined Remedial Investigation (SRI) for groundwater. The SRI characterized the hydrogeology, nature and extent, and fate and transport of contamination in groundwater. The hydrogeologic characterization was largely based on existing groundwater data collected during previous investigations and determined the following:

- The CKD was the source for groundwater contamination.
- An upward vertical flow of groundwater from the intermediate to the shallow aquifer provides an effective hydraulic barrier that restricts the downward migration of contaminated groundwater found in the shallow aquifer.
- Groundwater in the shallow aquifer is discharged to the City Drain, an unlined storm water ditch, as a result of the natural horizontal groundwater flow direction and flow along the sanitary sewer line.
- Arsenic concentrations above the established cleanup goal will persist in the shallow aquifer for at least 100 years as a result of slow travel times and flat hydraulic gradients.

**Response Actions**

For construction purposes, the Site was divided into three OUs:

- OU1 addressed the CKD.
- OU2 addressed the chromium-bearing bricks and contaminated soils.
- OU3 addressed contaminated groundwater.

A Record of Decision (ROD) for OU1 was signed on July 19, 1990. The selected remedy would address CKD and chromium-bearing refractory kiln brick and dispose of it in the Salt Lake Valley Landfill. The OU1 ROD did not list Remedial Action Objectives (RAOs).

The remedy components listed in the OU1 ROD were:

- Excavation and off-site disposal of CKD in a UDEQ/DERR- and EPA-approved, non-commercial, double-lined, industrial landfill.
- Separation of chromium-bearing refractory kiln brick from the CKD and temporary storage of the kiln brick at an acceptable on-site location for treatment and off-site disposal under OU2.
- Initiation of groundwater monitoring.

A ROD for OU2 was signed on March 31, 1992. The selected remedy would remove and treat additional contaminated soil and chromium-bearing bricks. The OU2 ROD did not list RAOs.

The OU2 ROD identified six Contaminants of Concern (COCs) for soil and developed action levels for two of the COCs:

**Table 1: Soil Contaminants of Concern**

| Contaminant | Action Level (mg/kg) |
|---|---|
| Arsenic | 70 |
| Lead | 500 |
| Cadmium | NA |
| Chromium 3 | NA |
| Chromium 6 | NA |
| Molybdenum | NA |

mg/kg = Milligrams per Kilogram
NA = Not applicable

The remedy components listed in the OU2 ROD were:

- Excavation of all soils with lead concentrations greater than 500 mg/kg and/or arsenic concentrations greater than 70 mg/kg.
- Solidification of all excavated soils exceeding 5 mg/L lead as measured by Toxicity Characteristic Leaching Procedure (TCLP) analysis.
- Treatment of chromium-bearing bricks using chemical fixation followed by solidification.
- Disposal of treated bricks and soil at an off-site facility.
- Installation of a protective layer consisting of clean fill at least 18 inches thick over the Site.

An amended ROD signed on September 29, 1995 combined OU1 and OU2 and addressed contaminant sources at the Site including CKD and chromium-bearing brick. The amended ROD also addressed contaminated soil underlying the CKD. The amended ROD did not list RAOs.

The remedy components listed in the amended ROD are:

- Removal and off-site disposal of all CKD (East Carbon Landfill, Carbon County, Utah).
- Removal and off-site disposal of all soils with contaminant concentrations above action levels to a maximum depth of 24 inches (East Carbon Landfill, Carbon County, Utah).
- Removal, off-site treatment, and disposal of chromium-bearing bricks (Grassy Mountain disposal facility, Tooele County, Utah).
- Reuse of non-hazardous debris as Site fill material.
- Installation of a protective layer consisting of clean fill at least 18 inches thick.
- Institutional controls (ICs) for contaminated soil left in place at the Site.

A ROD for OU3 was signed on August 17, 1998, and addressed groundwater contamination which occurred as a direct result of CKD that had been disposed of at the Site. The selected remedy for OU3 was monitored natural attenuation (MNA).

The OU3 ROD identified the following RAOs:

- Prevention of human exposure to Site groundwater that would result in excess cancer risk equal to or exceeding $1x10^{-6}$, or a hazard quotient exceeding one, for a reasonably maximally exposed individual.
- Prevention of off-site migration of contaminants to unprotected groundwater.
- Restoration of groundwater to its beneficial use to the extent practicable.
- Prevention of unacceptable impacts to surface water associated with the Site.

The OU3 ROD established cleanup levels for the shallow aquifer that would result in attainment of the RAOs listed above. The cleanup goals for each COC are shown below:

**Table 2: Cleanup Goals for OU3 Groundwater**

| Contaminant | Cleanup Goal (µg/L) |
|---|---|
| pH | <8.00 |
| Arsenic | 64 |
| Cadmium | 6.2 |
| Chromium | 100 |
| Lead | 15 |
| Manganese | 440 |
| Molybdenum | 182 |

µg/L = Micrograms per Liter

Since contaminated groundwater in the shallow aquifer discharges into the City Drain and eventually the Farmington Bay Waterfowl Management Area of the Great Salt Lake, the OU3 ROD identified surface water performance standards based on 125% of Class 3D Aquatic Wildlife Water Quality standards. The City Drain, where it passes underneath Indiana Avenue (Appendix B - Figure 2), was identified as a Point of Compliance (POC) where the in-stream dissolved concentrations were not to exceed the performance standards as shown below:

**Table 3: Surface Water POC Performance Standards**

| Analyte | Performance Standard (µg/L) | Analyte | Performance Standard (µg/L) |
|---|---|---|---|
| pH | 8.13 - 11.25 | Iron | 1250 |
| Aluminum | 180.75 | Lead | 3.13 |
| Arsenic | 187.5 | Mercury | 0.01 |
| Cadmium | 0.3125 | Nickel | 65 |
| Chromium | 92.5 | Selenium | 5.75 |
| Chromium 6 | 13.75 | Silver | 2 |
| Copper | 11.25 | Zinc | 150 |

µg/L = Micrograms per Liter

The OU3 ROD established alternate concentration limits (ACLs) for groundwater discharging into the City Drain to ensure that in-stream dissolved metal concentrations do not exceed the surface water performance standards. These ACLs were calculated by determining what concentrations of individual chemicals in groundwater would cause an exceedance of the surface water POC performance standards. The groundwater ACLs are shown below:

**Table 4: Alternate Concentration Limits**

| Analyte | ACL (µg/L) | Analyte | ACL (µg/L) |
|---|---|---|---|
| Aluminum | 4,502.33 | Lead | 666.71 |
| Arsenic | 9,832.68 | Mercury | 0.62 |
| Cadmium | 139.08 | Nickel | 20,667.94 |
| Chromium | 26,339.81 | Selenium | 258.75 |
| Chromium 6 | 569.26 | Silver | 6.21 |
| Copper | 1,564.50 | Zinc | 13,914.05 |
| Iron | 25,875.48 | | |

µg/L = Micrograms per Liter

The remedy components listed in the OU3 ROD are:

- Long-term groundwater and surface-water monitoring to ensure the efficacy of the remedy and protection of human health and the environment.
- ICs in the form of groundwater use restrictions.

**Status of Implementation**

The Remedial Action (RA) for the Site was initiated in December 1995. Actual construction work began March 31, 1996, and RA activities for OU1 and OU2 were completed in November 1997. The scope included the following activities:

- Excavation of CKD from Sites 2 and 3.
- Excavation of CKD, debris and soil from West Site.
- Separation of chromium-bearing refractor brick from the CKD in Sites 2 and 3.
- Transportation and off-site disposal of the CKD.
- Transportation and off-site disposal of chromium-bearing refractory bricks.
- Backfilling, contouring and revegetation of the Site.
- Installation of the monitoring well network.
- Establishment of ICs in the form of land-use easements to ensure protectiveness.

The IC land-use easements include prohibitions on: the use or disturbance of groundwater until clean-up levels are achieved, excavation activities, disturbance of clean fill, and any other activities or actions that might interfere with the implemented remedy. The easements require that UDEQ/DERR be notified of activities that would impact the integrity of the cover and requires UDEQ/DERR approval of construction work on the Site. The easements also provide UDEQ/DERR with an irrevocable right of access to the property to perform inspections and groundwater monitoring.

The IC land-use easements for soil were modified in 2007 and 2009 by the property owners and UDEQ/DERR to facilitate property redevelopment. This modification was completed through a Partial Release and Quitclaim of land-use easement that released most of the Site from the original 1998 and 1999 land-use easements for soil and applied the 1998 and 1999 easements to specific locations or "hot spots" where lead concentrations were above 500 mg/kg. The Partial Release and Quitclaims provide descriptions and a map showing the specific locations in

which the IC land-use easements for soil still apply. See Table 5 for a complete list and chronology of the ICs implemented at the Site. See figure 3 for map of hot spots.

Redevelopment activities at the Site over the course of the last five years have complied with institutional controls. UDEQ/DERR received notification of redevelopment construction activities at the Site from a property owner in 2020 and provided oversight for the flush mounting of three monitoring wells. In addition to this, UDEQ/DERR and the property owner discussed compliance with the soil land-use easement and determined that contaminant hot spots located beneath the property that was being developed would remain covered and not be impacted by construction activities. UDEQ/DERR and the EPA were recently notified by a property owner about their plans to construct a new commercial warehouse retail building at the Site and are currently working with the property owner to ensure compliance with the IC land-use easements.

## IC Summary Table

**Table 5: Summary of Planned and/or Implemented ICs**

| Media, engineered controls, and areas that do not support UU/UE based on current conditions | ICs Needed | ICs Called for in the Decision Documents | Impacted Parcel(s) | IC Objective | Title of IC Instrument Implemented and Date (or planned) |
|---|---|---|---|---|---|
| Soil | Yes | Yes | Site 2, and Site 3 | Provides procedures for managing soils during redevelopment and prevents unacceptable human exposure to contaminants that remain on Site. | Land Use Easement Soils Restrictions March 1998 |
| Groundwater | Yes | Yes | Site 2, and Site 3 | Prohibits construction of wells | Land Use Easement Well Ban March 1998 |
| Soil | Yes | Yes | West Site | Provides procedures for managing soils during redevelopment and prevents unacceptable human exposure to contaminants that remain on Site. | Land Use Easement Soils Restrictions March 1999 |
| Groundwater | Yes | Yes | West Site | Prohibits construction of wells | Land Use Easement Well Ban March 1999 |

| Media, engineered controls, and areas that do not support UU/UE based on current conditions | ICs Needed | ICs Called for in the Decision Documents | Impacted Parcel(s) | IC Objective | Title of IC Instrument Implemented and Date (or planned) |
|---|---|---|---|---|---|
| Soil | Yes | Yes | Site 2, and Site 3 | Releases March 1998 restrictions from clean areas of the Site and applies the 1998 restrictions to specific locations where contaminated soil is greater than the lead action level of 500 mg/kg. | Partial Release and Quitclaim of Land Use Easements August 2007 |
| Soil | Yes | Yes | West Site | Releases March 1999 restrictions from clean areas of the Site and applies the 1999 restrictions to specific locations where contaminated soil is greater than the lead action level of 500 mg/kg. | Partial Release and Quitclaim of Land Use Easements January 2009 |

## Systems Operations/Operation & Maintenance

For OU1 and OU2, Operation and Maintenance (O&M) includes maintaining 18" of protective clean backfill over the site as well as assuring vegetative cover meets the requirements set out in the amended OU1 and OU2 ROD. There are no systems requiring active operation for these OUs.

For OU3 Operation and Maintenance, UDEQ/DERR performs routine annual groundwater and surface water monitoring and sampling. Reports summarizing the results of each annual monitoring and sampling event are prepared by UDEQ/DERR and submitted to the EPA. In February 2022, an EPA hydrogeologist completed a groundwater optimization review that evaluated existing groundwater data from 2010 to 2019. Recommendations from this review included the following:

- For purposes of evaluating fluctuation in COC levels, Oxidation Reduction Potential (ORP) should be added to the list of field parameters measured and recorded during each sampling event.
- Perform groundwater sampling and analysis every five years in conjunction with the FYR for intermediate monitoring wells P2M, and PWS.
- Collect groundwater elevations and field parameters annually from intermediate monitoring wells P2M, and PWS.

The previous FYR completed on September 26, 2017, found that several monitoring wells had been removed and recommended that the remaining wells be evaluated to determine if the monitoring well network was sufficient. The EPA evaluated the remaining number of wells in the February 2022 optimization study and found that the number of existing monitoring wells were adequate for evaluating the groundwater remedy. Therefore, replacement of the removed monitoring wells is not necessary.

In October 2021, existing monitoring wells P2CA, P2DA, and P2HA were modified and flush-mounted to accommodate the construction of a new Redwood Depot commercial retail building. UDEQ/DERR worked

closely with the developer to ensure these modifications did not impact the integrity of the monitoring wells and that IC requirements for soil were also followed.

# III. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determinations and statements from the last FYR as well as the recommendations from the last FYR and the current status of those recommendations.

**Table 6: Protectiveness Determinations/Statements from the 2017 FYR**

| OU # | Protectiveness Determination | Protectiveness Statement |
|---|---|---|
| 1 | Protective | The remedy implemented at OU1 is protective of human health and the environment. The immediate threats posed by contamination from the CKD and chromium-bearing brick have been addressed. The excavation and off-site disposal of contaminated soil has effectively eliminated the majority of the risk associated with the COCs. The risk associated with any contaminated soil remaining after construction activities is effectively reduced by clean fill, top soil and vegetation. |
| 2 | Protective | The remedy implemented for OU2 is protective of human health and the environment. The immediate threats posed by contamination associated with OU2 have been addressed. The excavation and off-site disposal of contaminated soil have effectively reduced the risk of exposure to the COCs. The risk associated with any contaminated soil remaining after construction activities is effectively reduced by clean fill, top soil and vegetation. |
| 3 | Protective | The remedy implemented for OU3 appears to be functioning as described in the OU3 ROD. Present levels of COCs in groundwater are consistent with the concentrations and extent of contamination summaries described in the OU3 ROD. Neither off-site migration in the shallow aquifer nor migration of COC from the shallow aquifer to the intermediate aquifer is apparent. Additional data is required to assess the effectiveness of the MNA remedy given the expected time frame of 100 years for cleanup goals to be achieved. Future groundwater monitoring will continue to assist with determining the progress of MNA at the Site. |
| Sitewide | Protective | The Site is protective of human health and the environment. The immediate threats posed by the COCs have been addressed. The excavation and off-site disposal of contaminated soil effectively reduces the risk of exposure to lead and arsenic. Contaminated soil above unrestricted use levels is currently managed through the existing ICs. There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy. There have been no changes in the toxicity factors for the COCs or risk assessment methodology that could affect the protectiveness of the remedies for the Site. |

**Table 7: Status of Recommendations from the 2017 FYR**

| OU # | Issue | Recommendations | Current Status | Current Implementation Status Description | Completion Date (if applicable) |
|---|---|---|---|---|---|
| 1, 2, and 3 | Considerable development has taken place on parcels within the Site, some of which has not been coordinated with UDEQ/DERR. Some property owners are not aware of the existence of the land-use easements nor of the prohibitions on groundwater use, coordination with UDEQ/DERR, or access granted for monitoring associated with the Site. | Increased coordination with Salt Lake City Public Utilities and Salt Lake Valley Health Department regarding construction activities and building permits near and within the Site boundaries. Determine if land-use easements are being attached to property titles during property transfers. | Ongoing | UDEQ/DERR continues to work with Salt Lake City Public Utilities, Salt Lake Valley Health Department, developers and current property owners to inform them of land-use easements, groundwater use restrictions and access. UDEQ/DERR conducted a records search with the Salt Lake County Recorder's Office and determined that land-use easements are being attached to property titles during property transfers. | NA |
| 3 | Due to property ownership changes and development/construction activities, several monitoring wells have been damaged or removed. | Coordinate repair/replacement of wells with property owners. Evaluate effectiveness of remaining wells to determine if monitoring well network is sufficient. | Completed | EPA completed a groundwater optimization review in February 2022 and found that there is an adequate number of existing wells to evaluate the groundwater remedy. | 2/14/2022 |

# IV. FIVE-YEAR REVIEW PROCESS

**Community Notification, Involvement & Site Interviews**

A public notice was made available by a newspaper posting (Appendix C) in the Salt Lake Tribune on 3/13/2022, stating that there was a five-year review and inviting the public to submit any comments to the EPA and UDEQ/DERR. The results of the five-year review and the report will be made available at the Site information repository located at UDEQ/DERR, 195 North 1950 West 1st Floor Salt Lake City, Utah and at http://eqedocs.utah.gov. The report will also be available in the EPA Superfund Records Center 1595 Wynkoop Street, Denver, Colorado 80202-1129, and on the EPA webpage at https://www.epa.gov/superfund/portland-cement. To request an appointment for the EPA Superfund Records Center, please call 303-312-7273.

The UDEQ/DERR conducted community interviews with individuals knowledgeable about the Site. Individuals that were interviewed included personnel with Salt Lake City Public Utilities, which maintains the City Drain, and Terramerica Corporation & Affiliates, which is the primary developer and property owner at the Site. None of the interviewees expressed any health or environmental concerns.

The Terramerica Corporation & Affiliates was aware of the land-use easements and has consulted with UDEQ/DERR numerous times to ensure compliance with the requirements of the easements. Salt Lake City Public Utilities was aware of the cleanup activities and land-use easements that have been completed at the Site and was not aware of any recent Site activities or conditions that would impact the City Drain. Reports summarizing the interviews are included in Appendix D.

## Data Review

OU1 and OU2 are not subject to monitoring due to the nature of the cleanup that was completed for these two OUs.

Annual groundwater monitoring and sampling is performed by UDEQ/DERR for OU3 in accordance with the OU3 ROD and O&M Plan. Reports summarizing the results of each monitoring and sampling event are prepared and provided to the EPA.

The groundwater monitoring system for OU3 consists of ten shallow aquifer monitoring wells, four intermediate aquifer monitoring wells, and one surface water point of compliance sampling location along the City Drain (Appendix B - Figure 2). Five of the shallow aquifer monitoring wells located near the City Drain and sanitary sewer line are used for comparing dissolved metal concentration to ACLs. The ACLs are values that if exceeded would result in an exceedance of the surface water performance standard applicable to the City Drain.

Contaminant concentrations in samples collected within the last five years (i.e., May 2017 to June 2021) from the shallow and intermediate aquifer monitoring wells, surface water point of compliance, and comparison of dissolved metal concentrations to ACLs for wells near the City Drain and sewer line are provided in Appendix E. A discussion of groundwater and surface monitoring data for the last five years is provided in the following paragraphs.

### Groundwater Flow Direction:

Based on a review of the Annual Groundwater and Surface Water Monitoring and Sampling Reports completed within the last five years, horizontal and vertical groundwater flow directions at the Site were consistent with previously observed flow directions. Horizontal groundwater flow direction in the shallow aquifer was towards the City Drain and vertical flow direction was upward from the intermediate aquifer to the shallow aquifer.

*COCs in the Shallow Aquifer*

### pH:

pH levels in the shallow aquifer were above the established cleanup goal of less than 8 standard units over the period of the last five years with levels as high as 10.1 standard units in monitoring well P3FA.

### Arsenic:

Arsenic concentrations in the shallow aquifer were above the established cleanup goal of 64 µg/L over the course of the last five years with concentrations as high as 1,000 µg/L in monitoring well P3CC.

**Cadmium:**

Laboratory detection limits for cadmium were above the cleanup goal of 6.2 µg/L for the majority of sample events completed within the last five years. Detection limits for the June 2021 sampling event were below the cleanup goal and cadmium was detected above the cleanup goal in two monitoring wells (P2FA and P3CC). The June 2021 cadmium concentrations in monitoring wells P2FA and P3CC were 7.4 µg/L and 7.8 µg/L, respectively and exceeded the cleanup goal of 6.2 µg/L.

**Chromium**

With the exception of the May 2017 chromium concentration in monitoring well P2FA and the June 2018 chromium concentration in monitoring well P3FA, chromium levels in the shallow aquifer during the last five years were below the cleanup goal of 100 µg/L. The May 2017 chromium concentration in well P2FA was 160 µg/L and the June 2018 chromium concentration in monitoring well P3FA was 106 µg/L. These exceedances appear to have been an isolated event since chromium concentrations after the May 2017 sample event in well P2FA were below the cleanup goal and chromium concentrations in well P3FA were below the cleanup goal before and after the June 2018 sample event.

**Lead**

With the exception of monitoring well P3FA, lead concentrations in the shallow aquifer during the last five years were below the cleanup goal of 15 µg/L. The June 2018 and June 2019 lead concentrations in well P3FA were 165 µg/L and 106 µg/L, respectively and exceeded the cleanup goal. These exceedances appear to have been an isolated event since lead concentrations in well P3FA before June 2018 and after June 2019 were below the cleanup goal.

**Manganese**

With the exception of monitoring well P3FA, Manganese concentrations in the shallow aquifer during the last five years were below the cleanup goal of 440 µg/L. The June 2018 and June 2019 manganese concentrations in well P3FA were 3,640 µg/L and 2,070 µg/L, respectively and exceeded the cleanup goal. These exceedances appear to have been an isolated event since manganese concentrations before June 2018 and after June 2019 were below the cleanup goal.

**Molybdenum**

Molybdenum concentrations in the shallow aquifer were above the cleanup goal of 182 µg/L over the course of the last five years with concentrations as high as 31,000 µg/L in monitoring well P3CC.

*COCs in the Intermediate Aquifer*

**pH:**

pH levels in the intermediate aquifer fluctuated slightly above the cleanup goal of 8 standard units six times during the last five years with levels as high as 8.48 standard units in monitoring well P3EA.

**Arsenic:**

With the exception of monitoring well P2M, arsenic concentrations in the intermediate aquifer were less than the cleanup goal of 64 µg/L. The May 2017 laboratory detection limit for arsenic in well P2M was greater than the cleanup goal of 64 µg/L and does not appear to be a concern since arsenic concentrations detected after May 2017 sample event were below the cleanup goal.

**Cadmium:**

With the exception of the May 2017 sampling event, cadmium concentrations in the intermediate aquifer during the last five years were below the cleanup goal of 6.2 µg/L. The May 2017 laboratory detection limit for cadmium in all four intermediate monitoring wells was greater the cleanup goal and the results may have exceeded the cleanup goal. Cadmium is believed to not be a concern since cadmium levels after the May 2017 sampling event were below the cleanup goal.

**Lead**

With the exception of monitoring well P3EA, lead concentrations in the intermediate aquifer over the period of the last five years were below the cleanup goal of 15 µg/L. The lead concentrations in the intermediate aquifer monitoring well P3EA for the June 2018 and June 2021 sampling events were 34.7 µg/L and 36 µg/L, respectively and appear to be increasing.

Manganese, molybdenum, and chromium concentrations in the intermediate aquifer over the course of the last five years were below their respective cleanup goals.

*Comparison of dissolved metal concentrations to ACL values*

With the exception of the June 2018 aluminum and iron concentrations in monitoring well P3FA, dissolved metal concentrations detected in the five shallow aquifer monitoring wells located near the City Drain and sewer line were below ACL values during the period of the last five years. In the last five years, silver was detected only in 2021 which concentrations being below the ACL. In 2017-2019 samples, the detection limit was above the ACL for silver which was corrected in 2021. The June 2018 aluminum and iron concentrations in well P3FA were 8,960 µg/L and 37,500 µg/L, respectively. These exceedances appear to have been an isolated event since dissolved concentrations in well P3FA before and after the June 2018 sampling event were below their ACL values.

With the exception of the June 2021 sample event, the laboratory detection limit for dissolved silver were greater than the ACL value during the last five years. The laboratory detection limit for the June 2021 sample event was below the ACL value for silver in all five ACL wells and detected silver concentrations were well below the ACL of 6.21 µg/L.

*Surface water point of compliance*

The laboratory detection limits for dissolved cadmium, mercury, selenium, and silver were greater than the performance standards and the results may have exceeded the performance standards. This was corrected in 2021 for cadmium, selenium, and silver. However, mercury detection limits must be further reduced to assess whether the concentration of mercury at the POC exceeds performance standards. It is unlikely that cadmium, mercury, selenium, and silver releases from the Site are a concern since concentrations in the shallow aquifer near the City Drain (PWEA) and sewer line (P3CC, PF2A) were less than their ACL values and an exceedance of the ACL in the shallow aquifer would result in an exceedance of the surface water performance standard.

**Site Inspection**

The inspection of the Site was conducted on 11/17/2021 by UDEQ/DERR Project Manager Tony Howes. The purpose of the inspection was to assess the protectiveness of the remedy.

Redevelopment activities were observed during the inspection along with existing monitoring wells, the City Drain, the surface water point of compliance sample location, and overall general condition of the Site. With the exception of well P2M, all monitoring wells were found to be intact and accessible. The protective steel “stick

up" casing and polyvinyl chloride (PVC) casing for monitoring well P2M were damaged and broken at the ground surface. Photographs of the Site are provided in Appendix F and the completed Site Inspection check list is included in Appendix G.

# V. TECHNICAL ASSESSMENT

**QUESTION A:** Is the remedy functioning as intended by the decision documents?

**Question A Summary:**

The remedies for OU1, OU2 and OU3 are functioning as intended by the decision documents.

The excavation and disposal of CKD and contaminated soils, removal of chromium-bearing bricks, backfilling with clean soil and revegetation at OU1 and OU2 effectively removed the majority of the source of groundwater contamination. IC land use easements for soil establish procedures for managing contaminated soils that remain on Site at specific locations where lead concentrations are greater than the cleanup goal of 500 mg/kg and prevents unacceptable human exposure. See figure 3 for the map of remaining hot spots on Site.

The OU3 groundwater MNA remedial action continues to function as intended by the ROD and O&M Plan. Annual groundwater and surface water monitoring and sampling is conducted and indicates that arsenic and molybdenum concentrations and pH in the shallow aquifer were consistently above their cleanup goals during the last five years as they have been in previous FYRs. Monitoring data from the past five years shows that horizontal and vertical groundwater flow directions have remained consistent and groundwater contamination remains confined to the Site and is not migrating to unprotected groundwater. Surface water sample results collected in 2021 from the City Drain Point of Compliance indicate contaminant levels are below performance standards with the exception of mercury for which the detection limits remained above performance standards. The samples collected from 2017-2019 were analyzed with detection levels above performance standards which is noted in the findings of this FYR as an area of improvement in future data collection. . IC land use easements prohibit the use or disturbance of groundwater until clean up levels are achieved and prevents unacceptable human exposure to contaminated groundwater at the Site. Soil ICs remain in place for hot spots on site as shown in figure 3 in appendix A. Redevelopment is monitored by UDEQ to ensure awareness and compliance with ICs.

Given the expected time frame of 100 years for cleanup goals to be achieved, additional groundwater data and trend evaluation is required in order to assess the effectiveness of the groundwater MNA remedy in reducing contaminant levels. Future groundwater monitoring and sampling events will provide data for evaluating the effectiveness of the groundwater MNA remedy.

**QUESTION B:** Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

**Question B Summary:**

The clean-up numbers were derived from the exposure assumptions and toxicity data in the HHRA for the Portland Cement (Kiln Dust 2 &3) Site. There have been changes to the exposure assumptions and toxicity information since those documents. Because these documents were developed prior to the EPA's Risk Assessment Guidance for Superfund (RAGS) Part F (2009), the exposure assumptions for the inhalation exposure pathway were conducted differently. The exposure metric that was used in the RODs and the HHRA used inhalation concentrations that were based on ingestion rate and body weight (mg/kg)-day). The updated methodology uses the concentration of chemical in the air, with the exposure metric of micrograms per cubic meter ($ug/m^3$). The inhalation pathway is minor compared to the soil ingestion pathway which is the major risk factor at the Site.

Under the current EPA Office of Land and Emergency Management policy, the soil lead screening level was established so that a typical child or similarly exposed group of children would have an estimated probability of no more than 5 percent of exceeding a blood lead level (BLL) of 10 micrograms per deciliter (µg/dL). The 10 µg/dL BLL target concentration is based (in part) on the 1991 Center for Disease Control's (CDC) blood lead "level of concern." In 2012, CDC accepted the recommendations of its Advisory Committee on Childhood Lead Poisoning Prevention that the "level of concern" be replaced by a reference value based on the 97.5th percentile of the National Health and Nutrition Examination Survey-generated BLL distribution in children 1-5 years old (i.e., 5 µg/dL). In 2021CDC updated its blood lead reference value (BLRV) from 5 µg/dL to 3.5 µg/dL in response to the Lead Exposure Prevention and Advisory Committee (LEPAC) recommendations.

For lead in soil, the EPA's Office of Solid Waste and Emergency Response Directives 9355.4-12 (EPA, 1994) and 9200.4-27P (EPA, 1998), were identified as federal chemical-specific To Be Considered guidance documents. However, since 1994 and 1998 when those documents were issued, increasing evidence has shown that blood lead levels below 10 µg/dL may also have negative health impacts. The EPA is currently evaluating its lead cleanup policy based on recent studies that suggest adverse health effects are associated with blood levels less than 10 µg/dL. The EPA will continue using current lead policy until the Agency provides modified guidance for sites with lead contamination.

**QUESTION C:** Has any other information come to light that could call into question the protectiveness of the remedy?

No additional information has come to light that could call into question the protectiveness of the remedy.

# VI. ISSUES/RECOMMENDATIONS

| **Issues/Recommendations** |
|---|
| **OU(s) without Issues/Recommendations Identified in the FYR:** |
| 1, 2 and 3 |
| **Issues and Recommendations Identified in the FYR:** |
| None |

**OTHER FINDINGS**

The following are recommendations that were identified during the FYR that do not affect current and/or future protectiveness:

- Based on the EPAs February 2022 optimization review, UDEQ/DERR will perform groundwater sampling and analysis every five years in conjunction with the FYR for intermediate monitoring wells P2M, and PWS. Groundwater elevations and field parameters will continue to be collected for these wells during each sampling event. UDEQ/DERR will also add the measurement, recording, and reporting of the ORP field parameter for surface water and shallow monitoring wells.
- Oxidation Reduction Potential (ORP) should be added to the list of field parameters measured and recorded during each sampling event
- Development activities associated with the completion of the Redwood Depot is anticipated in the near future. UDEQ/DERR will work with property developer to ensure compliance with ICs and preservation of existing groundwater monitoring system.
- The protective steel "stick up" casing and PVC casing for monitoring well P2M were broken at the ground surface and need to be repaired. It is anticipated that well P2M will be modified in the near future

to be flush with the existing grade in order to accommodate the construction of a new Redwood Depot building. UDEQ/DERR will work with the property developer to ensure that well P2M is properly modified and the integrity of the well is maintained.

- The O&M Plan needs to be updated by UDEQ/DERR to reflect reduction in the number of monitoring wells sampled at the Site, additional field parameters recorded during each sampling event and the change in frequency of monitoring and sampling events from semiannual to annual.
- The laboratory detection limits for cadmium, chromium, mercury, selenium and silver were greater than the established action levels for these contaminants. UDEQ/DERR will work with the contract laboratory to ensure that detection limits are below the established action levels and performance standards.
- Recommend conducting an optimization study of the MNA remedy for OU3 to determine current performance.

# VII. PROTECTIVENESS STATEMENT

| **Protectiveness Statement** | |
|---|---|
| *Operable Unit:* 1 | *Protectiveness Determination:* Protective |
| *Protectiveness Statement:* The remedy at OU1 is protective of human health and the environment. The immediate threats posed by contamination from the CKD have been addressed. The excavation and off-site disposal of the CKD has effectively eliminated the majority of the risk associated with the COCs. | |

| **Protectiveness Statement** | |
|---|---|
| *Operable Unit:* 2 | *Protectiveness Determination:* Protective |
| *Protectiveness Statement:* The remedy at OU2 is protective of human health and the environment. The immediate threats posed by contamination associated with OU2 have been addressed. The off-site disposal of chromium bearing bricks and the excavation and off-site disposal of contaminated soils and have effectively reduced the risk of exposure to the COCs. The risk associated with any contaminated soil remaining after construction activities is effectively reduced by clean fill, top soil and vegetation. IC land-use easements provide procedures for managing soils during redevelopment and prevents unacceptable human exposure to contaminants that remain on Site at specific locations. | |

| **Protectiveness Statement** | |
|---|---|
| *Operable Unit:* 3 | *Protectiveness Determination:* Protective |
| *Protectiveness Statement:* The remedy at OU3 is protective of human health and the environment. The remedy implemented for OU3 is functioning as intended by the OU3 ROD. COC levels in groundwater are consistent with levels documented in annual groundwater reports and previous FYRs. Groundwater contamination remains confined to the Site and is not migrating to unprotected groundwater. There are no unacceptable impacts from groundwater discharging to surface water. IC land use easements prohibit the use or disturbance of groundwater and prevent unacceptable human exposure to contaminated groundwater | |

| **Sitewide Protectiveness Statement** |
| --- |
| *Protectiveness Determination:* Protective |
| *Protectiveness Statement:* The Site is protective of human health and the environment. The remedial actions implemented for OU1 and OU2 effectively addressed risks associated with source materials and contaminated soil. The OU3 groundwater remedy is functioning as intended since COC levels are consistent with previous concentrations and are not migrating to unprotected groundwater. IC land use easements prohibit the use or disturbance of groundwater and provide procedures for managing contaminated soil during redevelopment activities. |

# VIII. NEXT REVIEW

The next five-year review report for the Portland Cement (Kiln Dust 2 & 3) Superfund Site is required five years from the completion date of this review.

# APPENDIX A – REFERENCE LIST


Dames and Moore, 1986, Remedial Investigation Cement Kiln Dust Waste Disposal Sites First Report Submitted January 1986 Lone Star Industries, 173p. SEMS 1613376

State of Utah, 1985, Consent Order between State of Utah and Lone Star Industries Inc, dba Portland Cement Company of Utah, 16p.

Utah Department of Health, US Environmental Protection Agency Region VIII, 1990, Record of Decision, Portland Cement Co. (Kiln Dust #2 & #3) Operable Unit 1 Salt Lake City Utah, 144p. SEMS 1611134

Utah Department of Environmental Quality Division of Environmental Response and Remediation, 1995, Streamlined Human Health Risk Evaluation; Portland Cement Operable Unit No. 3 Site; Salt Lake City Utah. SEMS 1064255, 1612742

Utah Department of Environmental Quality Division of Environmental Response and Remediation, 1996, Streamlined Remedial Investigation Portland Cement Operable Unit No. 3 Site Salt Lake City, Utah, 373p. SEMS 1612462

Utah Department of Environmental Quality Division of Environmental Response and Remediation, 2017, Semi-annual Monitoring Report November 2017 Portland Cement Site OU3, 183p.

Utah Department of Environmental Quality Division of Environmental Response and Remediation, 2018, Annual Monitoring Report Portland Cement Site OU3, 155p.

Utah Department of Environmental Quality Division of Environmental Response and Remediation, 2019, Annual Groundwater and Surface Water Monitoring and Sampling Report Portland Cement OU3 Site, 133p.

Utah Department of Environmental Quality Division of Environmental Response and Remediation, 2021, Annual Groundwater and Surface Water Monitoring and Sampling Report Portland Cement OU3 Site, 109p.

U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response, 1994, Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities Directive 9355.4-12. SEMS 123472

U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response. 1998, Clarification to the 1994 Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, 16p. SEMS 140867

U.S. Environmental Protection Agency Office of Superfund Remediation and Technology Innovation Environmental Protection Agency, 2009, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment), 68p. SEMS 1772070

US Environmental Protection Agency Region VIII, 1991, Portland Cement Company of Utah Waste Cement Kiln Dust Disposal Site Salt Lake City, Utah Remedial Investigation Report Operable Unit 2 and Base Line Risk Assessment, 229p.

US Environmental Protection Agency Region VIII, 1992, Record of Decision Portland Cement Co. (Kiln Dust #2 & #3) Operable Unit No. 2 Salt Lake City, Utah, 29p. SEMS 1051898

US Environmental Protection Agency Region VIII, 1995, Record of Decision Amendment: Portland Cement (Kiln Dust 2 & 3) EPA ID: UTD 980718670 OU2 Salt Lake City, UT, 27p. SEMS 1050948

US Environmental Protection Agency Region VIII, 1998, Portland Cement Superfund Site (Kiln Dust #2 and #3) Salt Lake City, Utah Record of Decision Operable Unit Three – Ground Water, 240p. SEMS 493505

US Environmental Protection Agency Region VIII, 2022, Portland Cement OU3 Optimization Review, 31p.

US Environmental Protection Agency Region VIII, 2017, Fourth Five-Year Review Report for Portland Cement Superfund Site, 83p. SEMS 100001612

# APPENDIX B – SITE MAPS

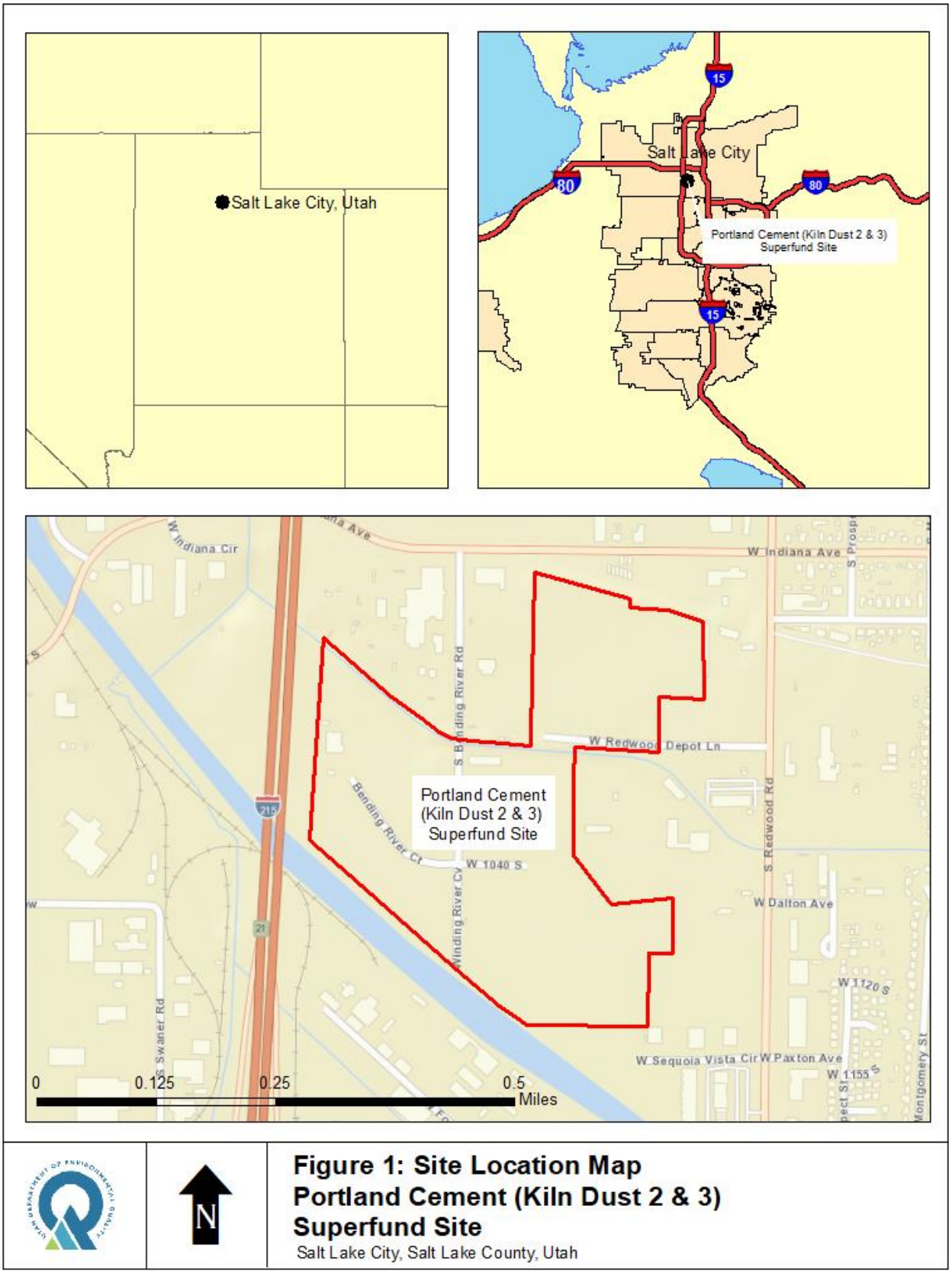


**Figure 1: Site Location Map**
**Portland Cement (Kiln Dust 2 & 3)**
**Superfund Site**
Salt Lake City, Salt Lake County, Utah

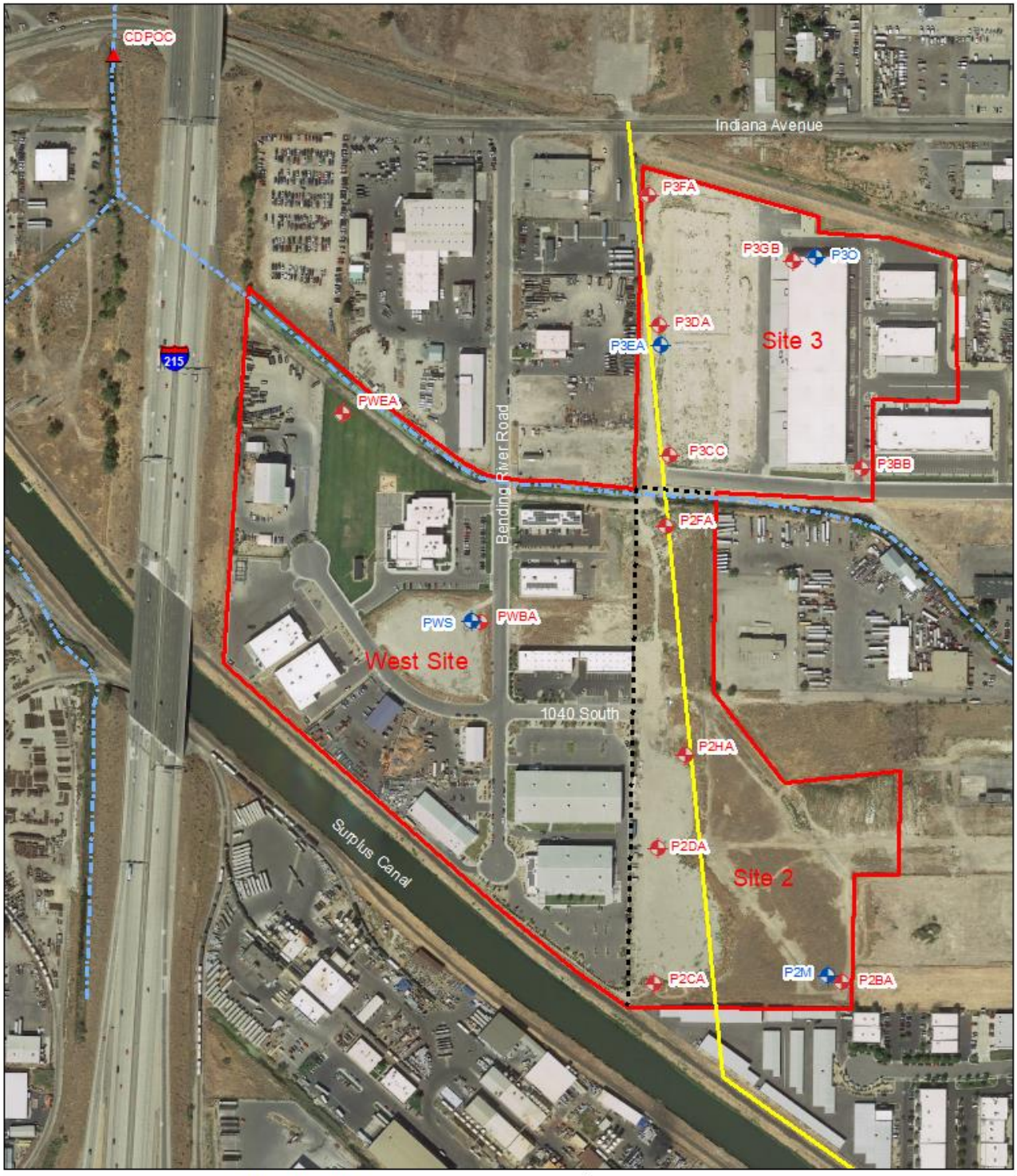


**Figure 2:**
**Monitoring Well and Surface Water Sample Locations**
**Portland Cement (Kiln Dust 2 & 3) Superfund Site**
Salt Lake City, Salt Lake County, Utah

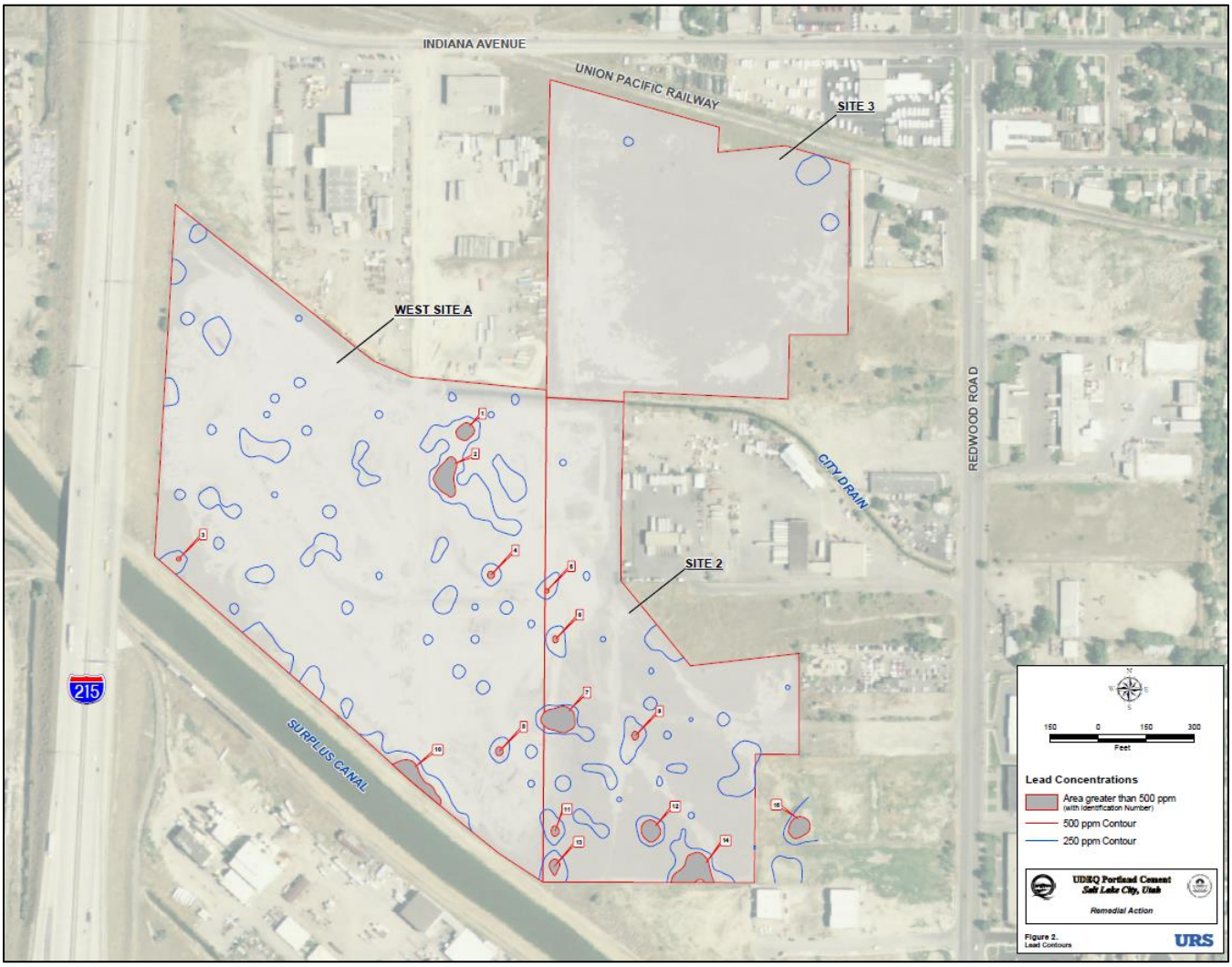

Figure 3: Map of lead hot spots remaining on the Site

# APPENDIX C – PUBLIC NOTICE

**PUBLIC NOTICE**
**Five-Year Review Planned for the**
**Portland Cement (Kiln Dust #2 & #3) Superfund Site**
**Salt Lake City, Utah**

The Utah Department of Environmental Quality, Division of Environmental Response and Remediation (UDEQ/DERR) and the U.S. Environmental Protection Agency (EPA) is conducting the fifth Five-Year Review of the remedial actions performed for the Portland Cement Superfund site. The purpose of a Five-Year Review is to evaluate the implementation and performance of a remedy in order to determine if it is or will be protective of human health and the environment. The Five-Year Review is scheduled to be completed by September 30, 2022.

The Portland Cement Site is 71 acres of land near 100 South Redwood Road in Salt Lake City, Utah. Approximately 825,000 tons of Cement Kiln Dust (CKD) and contaminated soil was excavated and removed off site for proper disposal. The site was backfilled with clean soil, re-graded, and seeded to complete remedy construction in 1998. Restrictions on future property use were imposed to protect the soil cover. The UDEQ and EPA agreed on the use of monitored natural attenuation as the most appropriate method for addressing groundwater contamination. Long-term monitoring and administrative restrictions on the use of site ground water ensure that public health and the environment are protected until the ground water is clean.

**UDEQ and EPA invites community participation in the Five-Year Review process:** As part of the Five-Year Review process, community members are encouraged to contact UDEQ staff with any information that may help EPA make its determination regarding the protectiveness and effectiveness of the remedies at the site. Additional site information is available at: DERR Offices located on the 1st Floor, at 195 North 1950 West, Salt Lake City, Utah, 84114. Please call for an appointment to review records at (801) 536-4100, Monday through Friday, from 8:30 A.M. to 4:30 P.M. Project documents are available online at: http://eqedocs.utah.gov/ using the search phrase "Portland Cement." **Or visit the EPA website at: https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0800690**

If you would like more information about the review, please contact:

**Tony Howes**
**UDEQ Project Manager**
Phone: (385) 391-5917
Email: thowes@utah.gov

**Dave Allison**
**UDEQ Community Involvement**
Phone: (385) 391-8143
Email: dallison@utah.gov

**Athena Jones**
**EPA Remidial Project Manager**
Phone: (303) 312-6497
Email: Jones.Athena@epa.gov

# APPENDIX D – COMMUNITY INTERVIEW SUMMARY REPORTS

## Portland Cement (Kiln Dust 2 & 3) Superfund Site
## Five-Year Review Interview

| | |
|---|---|
| Site Name:<br>EPA ID: UTD980718670 | March 10, 2022 |
| Type of Contact: Remote Meeting | Contact Made By: Dave Allison, UDEQ/DERR Community Involvement Coordinator and Tony Howes, UDEQ/DERR Project Manager |
| **Person Contacted** | |
| Chris Howells, President | Terramerica Corporation & Affiliates<br>5320 S 900 E #250<br>Salt Lake City, UT 84117 |

1. **Is your organization/department aware of the Superfund Site and the actions taken/underway to address environmental contamination?** Chris Howells is the President and Real Estate Broker of Terramerica Corporation, a real estate brokerage and property management company which developed a Master Plan in 2015 and began constructing buildings over approximately 45 acres of the former Portland Cement cleanup Site in 2016/17. Howells oversees the day to day operations of Terramerica and the Horman Group of Companies and is active in leasing it's industrial, retail, and office spaces, particularly at the former Superfund Site.

2. **What's your overall impression (your general sentiment) of the actions taken/underway at the Superfund Site?** Howells said the development of property at a Superfund Site can be daunting if you don't realize what you're working with. Once you develop an understanding and a willingness to comply to the measures, working with UDEQ has been great and without any issues. The Superfund history really hasn't slowed development and is more of a market driven indicator and if construction costs weren't as high we would be onto the next building.

3. **Does your office conduct routine communications and/or activities (site visits, inspections, reporting activities, participation in meetings, etc.) which pertain to or involve the Superfund Site? If so, please briefly summarize the purpose and results of these communications and/or activities over the last five years.** As a property owner, Howells said he is on Site regularly overseeing the overall master plan and development process. Howells works with the engineers, architects, and City to get approvals and his company maintains ownership after leasing. "So we're out there all the time," said Howells.

4. **Are you aware of any community concerns regarding the Superfund Site, as it pertains to actions taken or underway to address environmental contamination? If so, please give details.** Howells said no one has ever approached him with any environmental concerns. From a leasing standpoint, Howells said they have standard disclosure language regarding the Site, and it's only come up once where a client was unable to lease a building based upon their company's policy. Maintaining ownership keeps any liability with their company as well.

5. **Over the past five years, have there been any complaints, violations, or other incidents (e.g., vandalism, trespassing, or emergency responses) at or related to the Superfund Site requiring your office to respond? If so, please give details of the events and results of the response.** Nothing which is related to impacting the Superfund Site and the naturally monitored groundwater remedy. Howells said there is a trespassing history with transient or homelessness on their undeveloped properties which have required a considerable expense. Also, Howells said a

major issue with company vehicles having batteries removed or even stolen has occurred. Howells said the local police have been great to respond but have limitations going onto private property for the property owner to handle the issue.

6. **Do you feel well informed about the activities and progress over the last five years at the Superfund Site? Do you know how to contact the Environmental Protection Agency and/or UDEQ – DERR if you have questions or concerns about the Superfund Site?** Howells said when building a building on Site they contact DERR Project Managers first to discuss concepts and go over the management plan on the property to coordinate protocols, make sure contractors know about the monitoring wells and any hot spots within the Site footprint. Any hot spots are identified in case they dig in a suspect area, and work prescribes placing compromised soil back in the trench or haul it off Site. Howells said he's worked well with DERR Project Managers and knows the easement requirements and has no issues contacting DERR.

7. **Over the past five years, have there been any changes in your department's policies or regulations that might impact the Superfund Site from a perspective of land use, water rights, redevelopment, and site management? Any changes to your role? If so, please describe the changes and potential impact each might have**. Howells said any regulations he's familiar with haven't changed since Terramerica has developed property at the Site.

8. **Over the past five years, have there been any changes in land use surrounding the Superfund Site to your knowledge? Are you aware of potential future changes in land use? If so, please describe including any concerns you and/or your agency might have with land use changes.** Howells said land use has not changed from the Site's current M-1 industrial commercial use.

9. **Do you have any comments, suggestions, or recommendations regarding the Superfund Site management (for example, questions pertaining to institutional controls)? If you have questions or are aware of potential problems in the future, what problems might arise?** "No problems," said Howells, "working on this Site is unique and made getting the development off the ground challenging. We've been aware of the Site history forever and it wasn't a big deal. The biggest challenge might be educating tenants or lenders about the groundwater monitoring if they have any concerns, but we've been able to work through that and it just hasn't been an issue." Howells requested to be kept informed on any Site activities.

## Portland Cement (Kiln Dust 2 & 3) Superfund Site
## Five-Year Review Interview

| | |
|---|---|
| Site Name:<br>EPA ID: UTD980718670 | March 31, 2022 |
| Type of Contact: Phone | Contact Made By: Dave Allison, UDEQ/DERR Community Involvement Coordinator |
| **Person Contacted** | |
| Scott Swanger, Drainage Maintenance Supervisor | Salt Lake City Public Utilities<br>Operations & Maintenance<br>1530 South West Temple<br>Salt Lake City, Utah 84115 |

1. **Is your organization/department aware of the Superfund Site and the actions taken/underway to address environmental contamination?** Scott Swanger is a Drainage Maintenance Supervisor and has worked for the Salt Lake Public Utilities Department for 31 years. Swanger said he doesn't know the extent of the Portland Cement Superfund Site history as the Site has remained the same since he has worked in the area. Public Utilities maintains the storm drain system throughout the City including the portion of the City Drain that runs through the middle of the former Superfund Site and what is known as the Redwood Road Industrial Depot. Swanger's department routinely cleans the drain and monitors for storm drain pollution, which is fed from runoff of streets, sidewalks, businesses, yards and gutters. Swanger's department also works to inform the public on keeping toxic and hazardous materials from running into storm drains and ultimately harming our water.

2. **What's your overall impression (your general sentiment) of the actions taken/underway at the Superfund Site?** As a portion of the City Drain runs across the middle of the former cleanup Site, Swanger is only familiar with the location and condition of the drain at the Site. The drain (the City Drain – CWA-1) is unlined and on the ground or surface level and is 12 feet in depth in areas of the Site, initiating a few blocks away at 1700 West. Swanger said the drain does not release or leak water onto the property. Swanger said the drain is part of an intricate drainage system and a critical public service that protects both private and public property from water damage. Swanger said the drain has remained unchanged over the last five years and since he has worked on the Site. Swanger said to his knowledge, the City Drain does not contribute or affect groundwater conditions at the Site and is above the aquifer conditions monitored by UDEQ for arsenic.

3. **Does your office conduct routine communications and/or activities (site visits, inspections, reporting activities, participation in meetings, etc.) which pertain to or involve the Superfund Site?** Swanger said his department mows weeds regularly along this portion of the drain, monthly during growing periods. No communications would be necessary unless a problem with the drain would occur.

4. **Are you aware of any community concerns regarding the Superfund Site, as it pertains to actions taken or underway to address environmental contamination? If so, please give details.** Swanger said he has not heard of any health or environmental community concerns regarding the drain and the Superfund Site.

5. **Over the past five years, have there been any complaints, violations, or other incidents (e.g., vandalism, trespassing, or emergency responses) at or related to the Superfund Site requiring your office to respond? If so, please give details of the events and results of the response.** Swanger said he is not aware of any incidents or emergency responses for this portion of the drain. Swanger says his department has dredged the drain four or five times over the last five years to keep the phragmites weeds down, even dredging to where the root balls start. They've also

had to pull construction debris out of the drain over the years but nothing requiring emergency measures over the last five years.

6. **Do you feel well informed about the activities and progress over the last five years at the Superfund Site? Do you know how to contact the Environmental Protection Agency and/or UDEQ – DERR if you have questions or concerns about the Superfund Site?** Swanger has not had any reason to contact the EPA or State regulators and has the UDEQ contact information provided during the Five-Year Review. Swanger said any communication to the EPA or UDEQ would probably come from SLC Managers, and he would have no problem notifying UDEQ if any issues related to the Site raised a concern regarding the drain.

7. **Over the past five years, have there been any changes in your department's policies or regulations that might impact the Superfund Site from a perspective of land use, water rights, redevelopment, and site management? Any changes to your role? If so, please describe the changes and potential impact each might have.** Swanger said there have not been any changes to the City Drain permit over the last five years and nothing which would affect groundwater conditions on Site.

8. **Over the past five years, have there been any changes in land use surrounding the Superfund Site to your knowledge? Are you aware of potential future changes in land use? If so, please describe including any concerns you and/or your agency might have with land use changes.** Swanger said the City Drain fills an important role for the drainage network system and he does not foresee any anticipated scenarios where the drain would be redirected or removed from the Site. Swanger said any development alterations may involve piping sections of the drain, which would have to be coordinated with construction permits and communicated with property managers. Construction digging or placement of the pipe may require coordination with UDEQ but Swanger can't imagine any drain alterations happening anytime soon.

9. **Do you have any comments, suggestions, or recommendations regarding the Superfund Site management (for example, questions pertaining to institutional controls)? If you have questions or are aware of potential problems in the future, what problems might arise?** Swanger offered any assistance his department could be regarding drain maintenance and its location on the former Superfund Site. Swanger did not have any recommendations and would want to be informed as necessary with any City Drain related developments.

# APPENDIX E – ANALYTICAL RESULTS FOR GROUNDWATER AND SURFACE WATER

| Shallow Aquifer Monitoring Well - PWEA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Analyte µg/L | | | | | | | |
| | pH | Arsenic | Cadmium | Chromium | Chromium 6 | Lead | Manganese | Molybdenum |
| Cleanup Goals | <8.00 | 64 | 6.2 | 100 | ** | 15 | 440 | 182 |
| May-17 | 9.66 | 83 | <10 | <100 | <5 | <10 | <25 | 3150 |
| June-18 | 9.7 | 86.9 | <10 U | <100 U | <5 | <10 U | <25 U | 2830 |
| June-19 | 9.62 | 161 J | <10 U | <100 U | <5 | <10 U | <50 U | 6170 J |
| June-20 | NS | NS | NS | NS | NS | NS | NS | NS |
| June-21 | 9.89 | 430 | 2.7 | 2.2 | <5 | 1 UJ | 9 J | 9600 |

| Shallow Aquifer Monitoring Well - PWBA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Analyte µg/L | | | | | | | |
| | pH | Arsenic | Cadmium | Chromium | Chromium 6 | Lead | Manganese | Molybdenum |
| Cleanup Goals | <8.00 | 64 | 6.2 | 100 | ** | 15 | 440 | 182 |
| May-17 | 9.7 | 74.5 | <10 | <100 | NA | <10 | <25 | 1600 |
| June-18 | 9.61 | 168 | <10 U | <100 U | NA | <10 U | 51.3 | 4850 |
| June-19 | 9.66 | 70.1 J | <10 U | <100 U | NA | <10 U | <25 U | 2140 J |
| June-20 | NS | NS | NS | NS | NA | NS | NS | NS |
| June-21 | 9.72 | 73 | 0.37 | 3.8 | NA | 1 UJ | 7.6 J | 1600 |

| Shallow Aquifer Monitoring Well - P2BA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Analyte µg/L | | | | | | | |
| | pH | Arsenic | Cadmium | Chromium | Chromium 6 | Lead | Manganese | Molybdenum |
| Cleanup Goals | <8.00 | 64 | 6.2 | 100 | ** | 15 | 440 | 182 |
| May-17 | 8.39 | <100 | <10 | <100 | NA | 14 | <25 | 325 |
| June-18 | 8.33 | 29.0 J | <10 U | <100 U | NA | <10 U | 15.7 J | 109 |
| June-19 | 8.29 | <100 UJ | <10 U | <100 U | NA | <10 U | 33.7 | 150 J |
| June-20 | NS | NS | NS | NS | NA | NS | NS | NS |
| June-21 | 8.32 | 7.3 | 0.2 U | 0.53 J | NA | 1 UJ | 34 J | 300 |

| Shallow Aquifer Monitoring Well - P2FA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Analyte µg/L | | | | | | | |
| | pH | Arsenic | Cadmium | Chromium | Chromium 6 | Lead | Manganese | Molybdenum |
| Cleanup Goals | <8.00 | 64 | 6.2 | 100 | ** | 15 | 440 | 182 |
| May-17 | 9.22 | 287 | <10 | 160 | 76 | <10 | <25 | 81200 |
| June-18 | 8.75 | 57.7 | <5 U | <50 U | <5 | <5 U | <25 | 6770 |
| June-19 | 8.97 | 70.6 J | <10 U | <100 U | <5 | <10 U | 12 J | 16800 J |
| June-20 | NS | NS | NS | NS | NS | NS | NS | NS |
| June-21 | 9.22 | 35 | 7.4 | 5.6 | <5 | 1 UJ | 36 J | 31000 |

µg/L Micro grams per Liter
NA Not Analyzed
NS Not Sampled
U Undetected
J Estimated positive result
UJ Undetected; the associated quantitation or reporting limit is considered to be an estimatedvalue.
Note: Values are total concentrations
The OU3 ROD did not establish a cleanup goal for chromium 6 and values are provided for comparision purposes.

| Shallow Aquifer Monitoring Well - P2HA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Analyte µg/L | | | | | | | |
| | pH | Arsenic | Cadmium | Chromium | Chromium 6 | Lead | Manganese | Molybdenum |
| Cleanup Goals | <8.00 | 64 | 6.2 | 100 | ** | 15 | 440 | 182 |
| May-17 | 9.8 | 461 | <10 | <100 | NA | <10 | <25 | 14400 |
| June-18 | 9.3 | 274 | <10 U | <100 U | NA | <10 U | <25 U | 21500 |
| June-19 | 9.36 | 252 J | <10 U | <100 U | NA | <10 U | <25 U | 20800 J |
| June-20 | NS | NS | NS | NS | NA | NS | NS | NS |
| June-21 | 9.38 | 250 | 4.5 | 1.7 J | NA | 1 UJ | 20 J | 8900 |

| Shallow Aquifer Monitoring Well - P3BB | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Analyte µg/L | | | | | | | |
| | pH | Arsenic | Cadmium | Chromium | Chromium 6 | Lead | Manganese | Molybdenum |
| Cleanup Goals | <8.00 | 64 | 6.2 | 100 | ** | 15 | 440 | 182 |
| May-17 | NS | NS | NS | NS | NA | NS | NS | NS |
| June-18 | 8.14 | 56.7 | <1 U | <10 U | NA | <1 U | 39.1 | <5.00 U |
| June-19 | 8.48 | 48.2 J | <1 U | <10 U | NA | <1 U | 40.8 | <5.00 J |
| June-20 | NS | NS | NS | NS | NA | NS | NS | NS |
| June-21 | 8.99 | 44 | 0.2 U | 1.9 J | NA | 1 UJ | 130 J | 420 |

| Shallow Aquifer Monitoring Well - P3CC | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Analyte µg/L | | | | | | | |
| | pH | Arsenic | Cadmium | Chromium | Chromium 6 | Lead | Manganese | Molybdenum |
| Cleanup Goals | <8.00 | 64 | 6.2 | 100 | ** | 15 | 440 | 182 |
| May-17 | 9.98 | 790 | <10.0 | <100 | <5 | <10 | <25 | 24400 |
| June-18 | NS | NS | NS | NS | NS | NS | NS | NS |
| June-19 | NS | NS | NS | NS | NS | NS | NS | NS |
| June-20 | NS | NS | NS | NS | NS | NS | NS | NS |
| June-21 | 9.99 | 1000 | 7.8 | 4.3 | <5 | 1 UJ | 29 J | 31000 |

| Shallow Aquifer Monitoring Well - P3DA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Analyte µg/L | | | | | | | |
| | pH | Arsenic | Cadmium | Chromium | Chromium 6 | Lead | Manganese | Molybdenum |
| Cleanup Goals | <8.00 | 64 | 6.2 | 100 | ** | 15 | 440 | 182 |
| May-17 | 9.78 | 562 | <10 | <100 | <5 | <10 | <25 | 5400 |
| June-18 | 8.72 | 70.7 | <2 U | 11.2 J | <5 | <2 U | 28.7 | 131 |
| June-19 | NS | NS | NS | NS | NS | NS | NS | NS |
| June-20 | NS | NS | NS | NS | NS | NS | NS | NS |
| June-21 | 8.51 | 110 | 0.37 | 6.7 | <5 | 3 J+ | 48 J | 1300 |

µg/L Micro grams per Liter
NA Not Analyzed
NS Not Sampled
U Undetected
J Estimated positive result
UJ Undetected; the associated quantitation or reporting limit is considered to be an estimatedvalue.
Note: Values are total concentrations
The OU3 ROD did not establish a cleanup goal for chromium 6 and values are provided for comparision purposes.

| Shallow Aquifer Monitoring Well - P3FA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Analyte µg/L | | | | | | | |
| | pH | Arsenic | Cadmium | Chromium | Chromium 6 | Lead | Manganese | Molybdenum |
| Cleanup Goals | <8.00 | 64 | 6.2 | 100 | ** | 15 | 440 | 182 |
| May-17 | 10.1 | 868 | <10 | <100 | <5 | <10 | 20.6 | 7470 |
| June-18 | 10 | 916 | 4.31 J | 106 | <10 | 165 | 3640 | 5150 |
| June-19 | 9.77 | 572 J | 3.42 | 41.4 | <5 | 106 | 2070 | 2790 J |
| June-20 | NS | NS | NS | NS | NS | NS | NS | NS |
| June-21 | 9.99 | 780 | 1 J- | 16 | <5 | 25 J | 320 J | 3200 |

| Shallow Aquifer Monitoring Well - P3GB | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Analyte µg/L | | | | | | | |
| | pH | Arsenic | Cadmium | Chromium | Chromium 6 | Lead | Manganese | Molybdenum |
| Cleanup Goals | <8.00 | 64 | 6.2 | 100 | ** | 15 | 440 | 182 |
| May-17 | 8.48 | <100 | <10 | <10 | NA | <10 | <25 | 202 |
| June-18 | 8.4 | <100 U | <10 U | <10 U | NA | <10 U | 182 | 886 |
| June-19 | 8.63 | 5.15 J | <1 U | <1 U | NA | <1 U | 12.3 J | 95.4 J |
| June-20 | NS | NS | NS | NS | NA | NS | NS | NS |
| June-21 | 8.63 | 13 | 0.42 | 0.42 | NA | 1 UJ | 16 J | 1800 |

µg/L Micro grams per Liter
NA Not Analyzed
NS Not Sampled
U Undetected
J Estimated positive result
UJ Undetected; the associated quantitation or reporting limit is considered to be an estimatedvalue.
Note: Values are total concentrations
The OU3 ROD did not establish a cleanup goal for chromium 6 and values are provided for comparision purposes.

| Intermediate Aquifer Monitoring Well - PWS | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Analyte µg/L | | | | | | |
| | pH | Arsenic | Cadmium | Chromium | Lead | Manganese | Molybdenum |
| Cleanup Goals | <8.00 | 64 | 6.2 | 100 | 15 | 440 | 182 |
| May-17 | 7.61 | 30.4 | <10 | <100 | <10 | 30 | <50 |
| June-18 | 7.74 | 29.4 | <1 U | <10 U | <1 U | 25.5 | <5 U |
| June-19 | 7.94 | 35.5 J | <1 U | <10 U | <1 U | 45.2 | <5 UJ |
| June-20 | NS | NS | NS | NS | NS | NS | NS |
| June-21 | 8.13 | 35 | 0.2 U | 0.53 J | 1 UJ | 33 J | 10 U |

| Intermediate Aquifer Monitoring Well - P2M | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Analyte µg/L | | | | | | |
| | pH | Arsenic | Cadmium | Chromium | Lead | Manganese | Molybdenum |
| Cleanup Goals | <8.00 | 64 | 6.2 | 100 | 15 | 440 | 182 |
| May-17 | 7.8 | <100 | <10 | <100 | <10 | 42.4 | <50 |
| June-18 | 7.8 | 25.6 | <1 U | <10 U | <1 U | 40.1 | <5 U |
| June-19 | 7.87 | 24.8 J | <1 U | <10 U | <1 U | 44.1 | 9.76 J |
| June-20 | NS | NS | NS | NS | NS | NS | NS |
| June-21 | 7.91 | 28 | 0.34 | 0.43 J | 1 UJ | 42 J | 10 U |

| Intermediate Aquifer Monitoring Well - P3EA | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Analyte µg/L | | | | | | |
| | pH | Arsenic | Cadmium | Chromium | Lead | Manganese | Molybdenum |
| Cleanup Goals | <8.00 | 64 | 6.2 | 100 | 15 | 440 | 182 |
| May-17 | 7.93 | 33.5 | <10 | <100 | <10 | 90.3 | <50 |
| June-18 | 8.31 | 45 | <1 U | 8.3 J | 34.7 | 179 | 153 |
| June-19 | NS | NS | NS | NS | NS | NS | NS |
| June-20 | NS | NS | NS | NS | NS | NS | NS |
| June-21 | 8.48 | 50 | 3.6 | 12 J | 36 J | 160 J | 53 |

| Intermediate Aquifer Monitoring Well - P3O | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Analyte µg/L | | | | | | |
| | pH | Arsenic | Cadmium | Chromium | Lead | Manganese | Molybdenum |
| Cleanup Goals | <8.00 | 64 | 6.2 | 100 | 15 | 440 | 182 |
| May-17 | 8.16 | 32.7 | <10 | <100 | <10 | 40.5 | 173 |
| June-18 | NS | NS | NS | NS | NS | NS | NS |
| June-19 | 8.44 | 30.8 J | <1 U | 26.7 | 14.5 | 102 | 80.6 J |
| June-20 | NS | NS | NS | NS | NS | NS | NS |
| June-21 | 8.17 | 29 J | 0.2 U | 1.8 J | 1 UJ | 44 J | 54 J |

µg/L Micro grams per Liter
NS Not Sampled
U Undetected
J Estimated positive result
UJ Undetected; the associated quantitation or reporting limit is considered to be an estimatedvalue.
Note: Values are total concentrations

| ACL Monitoring Well Dissolved Concentrations - P2FA | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Analyte µg/L | | | | | | | | | | | | |
| | Aluminum | Arsenic | Cadmium | Chromium | Chromium 6 | Copper | Iron | Lead | Mercury | Nickel | Selenium | Silver | Zinc |
| **ACL** | **4502.33** | **9832.68** | **139.08** | **26339.81** | **569.26** | **1564.50** | **25875.48** | **666.71** | **0.62** | **20667.94** | **258.75** | **6.21** | **13914.05** |
| May-17 | <250 | 274 | 7.76 | 297 | NA | 41.9 | <1250 | <10 | NA | <50 | 169 | <50 | <100 |
| June-18 | 179 J | 35.8 J | <5 U | 39.7 J | NA | <10 U | <1250 U | <5 | NA | <50 U | <50 U | <25 U | <100 U |
| June-19 | 217 J | <100 U | <10 U | 105 | NA | 14.5 | <1250 U | <10 U | NA | NA | <100 U | <50 | <100 U |
| June-20 | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| June-21 | 20 UJ | 22 | 8 | 5.2 | NA | 1.8 J | 24 J | 1 UJ | 0.2 U | 11 | 5 U | 0.18 J | 4.9 J |

| ACL Monitoring Well Dissolved Concentrations - P3CC | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Analyte µg/L | | | | | | | | | | | | |
| | Aluminum | Arsenic | Cadmium | Chromium | Chromium 6 | Copper | Iron | Lead | Mercury | Nickel | Selenium | Silver | Zinc |
| **ACL** | **4502.33** | **9832.68** | **139.08** | **26339.81** | **569.26** | **1564.50** | **25875.48** | **666.71** | **0.62** | **20667.94** | **258.75** | **6.21** | **13914.05** |
| May-17 | <250 | 661 | <10 | 138 | NA | 12.2 | <1250 | <10 | NA | <50 | <100 | <50 | <100 |
| June-18 | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| June-19 | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| June-20 | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| June-21 | 20 UJ | 1100 | 7.5 | 4.3 | NA | 2 J | 52 J | 1 UJ | 0.2 U | 6.3 | 5 U | 1 U | 4.4 J |

| ACL Monitoring Well Dissolved Concentrations - P3DA | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Analyte µg/L | | | | | | | | | | | | |
| | Aluminum | Arsenic | Cadmium | Chromium | Chromium 6 | Copper | Iron | Lead | Mercury | Nickel | Selenium | Silver | Zinc |
| **ACL** | **4502.33** | **9832.68** | **139.08** | **26339.81** | **569.26** | **1564.50** | **25875.48** | **666.71** | **0.62** | **20667.94** | **258.75** | **6.21** | **13914.05** |
| May-17 | <250 | 565 | <10 | <100 | NA | <10 | <1250 | <10 | NA | <50 | <100 | <50 | <100 |
| June-18 | <250 U | 73.3 | <5 U | <50 U | NA | <10 U | <1250 U | <5 | NA | <50 U | <50 U | <25 U | <100 U |
| June-19 | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| June-20 | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| June-21 | 260 J | 100 | 0.32 | 2.6 J | NA | 3.3 J | 320 J | 1.5 J | 0.2 U | 1.5 J | 5 U | 0.17 J | 4.8 J |

µg/L Micro grams per Liter
NA Not Analyzed
NS Not Sampled
U Undetected
J Estimated positive result
UJ Undetected; the associated quantitation or reporting limit is considered to be an estimatedvalue.
Note: Values are dissolved concentrations

| ACL Monitoring Well Dissolved Concentartions - P3FA | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Analyte µg/L | | | | | | | | | | | | |
| | Aluminum | Arsenic | Cadmium | Chromium | Chromium 6 | Copper | Iron | Lead | Mercury | Nickel | Selenium | Silver | Zinc |
| ACL | 4502.33 | 9832.68 | 139.08 | 26339.81 | 569.26 | 1564.50 | 25875.48 | 666.71 | 0.62 | 20667.94 | 258.75 | 6.21 | 13914.05 |
| May-17 | <250 | 863 | <10 | 74.1 | NA | <10 | <1250 | <10 | NA | <50 | <100 | <50 | <100 |
| June-18 | 8960 | 767 | <5 U | 106 | NA | <2 U | 37500 | 19.3 | NA | <10 U | <50 U | <25 U | 165 |
| June-19 | <250 U | 620 | <2 U | 61.2 | NA | <10 U | <1250 U | <2 U | NA | NA | <20 U | <10 U | <100 U |
| June-20 | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| June-21 | 860 J | 780 | 0.85 | 2.1 J | NA | 7 J | 1100 J | 1.9 J+ | 0.2 U | 12 | 13 | 0.17 J | 8.3 J |

| ACL Monitoring Well Dissolved Concentraions - PWEA | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Analyte µg/L | | | | | | | | | | | | |
| | Aluminum | Arsenic | Cadmium | Chromium | Chromium 6 | Copper | Iron | Lead | Mercury | Nickel | Selenium | Silver | Zinc |
| ACL | 4502.33 | 9832.68 | 139.08 | 26339.81 | 569.26 | 1564.50 | 25875.48 | 666.71 | 0.62 | 20667.94 | 258.75 | 6.21 | 13914.05 |
| May-17 | 258 | 77.9 | <10 | 63.8 | NA | <10 | <1250 | <10 | NA | <50 | <100 | <50 | <100 |
| June-18 | 347 | 125 | <10 U | 80.4 | NA | <10 U | <1250 U | <10 U | NA | <50 U | 14.1 J | <50 U | <100 U |
| June-19 | 332 J | 51.4 J | <10 U | 91 J | NA | <20 U | <2500 U | <10 U | NA | NA | <100 U | <50 U | <200 U |
| June-20 | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| June-21 | 11 J | 420 | 2.6 | 1.8 J | NA | 3.3 J | 32 J | 1 UJ | 0.2 U | 17 | 5 U | 0.23 J | 9.2 J |

ACL Alternate concentration limits
µg/L Micro grams per Liter
NA Not Analyzed
NS Not Sampled
U Undetected
J Estimated positive result
UJ Undetected; the associated quantitation or reporting limit is considered to be an estimatedvalue.

| Surface Water Sample Dissolved Concentrations - CDPOC | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Analyte µg/L | | | | | | | | | | | | |
| | pH | Aluminum | Arsenic | Cadmium | Chromium | Chromium 6 | Copper | Iron | Lead | Mercury | Nickel | Selenium | Silver | Zinc |
| **Performance Standard** | **8.13 - 11.25** | **180.75** | **187.5** | **0.3125** | **92.5** | **13.75** | **11.25** | **1250** | **3.13** | **0.01** | **65** | **5.75** | **2** | **150** |
| May-17 | 8.16 | 77 | 143 | <2 | 18.9 | NA | 6.97 | <250 | <2 | NA | <10 | <20 | <10 | <20 |
| June-18 | 7.90 | 30.8 J | 51 | <2 U | 23.1 | NA | <2 U | <250 U | <2 U | NA | <10 U | <20 U | <10 U | <20 U |
| June-19 | 8.06 | 53.2 | 76.1 | <2 U | 26.3 J | NA | 2.67 | 112 J | <2 U | NA | NA | <20 U | <10 U | <20 U |
| June-20 | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| June-21 | 8.29 | 19J | 74 | 0.1 J | 1 J | NA | 3.4 J | 67 J | 1 UJ | 0.2 U | 4.5 J | 5 U | 0.29 J | 7.6 J |

| Surface Water Sample Total Concentrations - CDPOC | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Analyte µg/L | | | | | | | | | | | | |
| | pH | Aluminum | Arsenic | Cadmium | Chromium | Chromium 6 | Copper | Iron | Lead | Mercury | Nickel | Selenium | Silver | Zinc |
| May-17 | 8.16 | 112 | 148 | <2 | <20 | <5 | 22.9 | <1,250 | <2.00 | <0.1 | <50 | <20 | <10 | <100 |
| June-18 | 7.90 | 309 | 52.0 | <2 U | <20 U | <5 | 9.58 | 505 | 2.99 | <0.1 U | <10 U | <20 U | <10 U | 37.1 |
| June-19 | 8.06 | 90.6 | 74.7 | <2 U | <20 U | <5 | 6.23 | 256 | 1.18 J | <0.1 U | NA | <20 U | <10 U | 12.2 J |
| June-20 | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| June-21 | 8.29 | 880 | 80 | 0.16 J | 3.9 J | < 5 | 14 | 1300 | 7.3 J+ | 0.2 U | 5.5 | 5 U | 0.2 J | 37 |

µg/L Micro grams per Liter
NA Not Analyzed
NS Not Sampled
U Undetected
J Estimated positive result
UJ Undetected; the associated quantitation or reporting limit is considered to be an estimated value

# APPENDIX F – SITE INSPECTION PHOTOS

Commercial area along Bending River Road

Monitoring wells PWS and PWBA

City Drain adjacent to the Wallace Stagner Academy

City Drain POC sample location

Monitoring well P2CA

Damaged and broken monitoring well P2M

New Redwood Depot building

# APPENDIX G – SITE INSPECTION CHECKLIST

**FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST**

**I. SITE INFORMATION**

| | |
|---|---|
| **Site name: Portland Cement** | **Date of inspection: November 17, 2021** |
| **Location and Region: Salt Lake County, UT Region 8** | **EPA ID: UTD980718670** |
| **Agency, office, or company leading the five-year review:** Utah Department of Environmental Quality Division of Environmental Response and Remediation | **Weather/temperature: Clear/39° Fahrenheit** |

**Remedy Includes**: (Check all that apply)

☒ Landfill cover/containment
☐ Access controls
☒ Institutional controls
☐ Groundwater pump and treatment
☐ Surface water collection and treatment
☐ Other
☒ Monitored natural attenuation
☐ Groundwater containment
☐ Vertical barrier walls

**Attachments:** ☐ Inspection team roster attached ☐ Site map attached

**II. INTERVIEWS** (Check all that apply)

1. **O&M site manager** Name: _____ Title: _____ Date: _____

Interviewed ☐ at site ☐ at office ☐ by phone Phone no.
Problems, suggestions; ☐

2. **O&M staff** Name: _____ Title: _____ _____ Date

Interviewed ☐ at site ☐ at office ☐ by phone Phone no. _____
Problems, suggestions; ☐

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; □ Report attached _____
_____

4. **Other interviews** (optional) ☒ Reports attached as Appendix D

Individuals that were interviewed included personnel with Salt Lake City Public Utilities and Terramerica Corporation & Affiliates.

**III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)**

1. **O&M Documents**

| | | | |
|---|---|---|---|
| ☒ O&M manual | ☒ Readily available | ☒ Up to date | ☐ N/A |
| ☐ As-built drawings | ☐ Readily available | ☐ Up to date | ☒ N/A |
| ☐ Maintenance logs | ☐ Readily available | ☐ Up to date | ☒ N/A |

Remarks: _____

| | | | |
|---|---|---|---|
| 2. **Site-Specific Health and Safety Plan** | ☐ Readily available | ☐ Up to date | ☒ N/A |
| ☐ Contingency plan/emergency response plan | ☐ Readily available | ☐ Up to date | ☒ N/A |
| Remarks: _____ | | | |
| 3. **O&M and OSHA Training Records** | ☐ Readily available | ☐ Up to date | ☒ N/A |
| Remarks: _____ | | | |
| 4. **Permits and Service Agreements** | | | |
| ☐ Air discharge permit | ☐ Readily available | ☐ Up to date | ☒ N/A |
| ☐ Effluent discharge | ☐ Readily available | ☐ Up to date | ☒ N/A |
| ☐ Waste disposal, POTW | ☐ Readily available | ☐ Up to date | ☒ N/A |
| ☐ Other permits _____ | ☐ Readily available | ☐ Up to date | ☒ N/A |
| Remarks: _____ | | | |
| 5. **Gas Generation Records** | ☐ Readily available | ☐ Up to date | ☒ N/A |
| Remarks: _____ | | | |
| 6. **Settlement Monument Records** | ☐ Readily available | ☐ Up to date | ☒ N/A |
| Remarks: _____ | | | |
| 7. **Groundwater Monitoring Records** | ☒ Readily available | ☒ Up to date | ☐ N/A |
| Remarks: UDEQ/DERR conducts annual groundwater monitoring and reports are provided to EPA. | | | |
| 8. **Leachate Extraction Records** | ☐ Readily available | ☐ Up to date | ☒ N/A |
| Remarks: _____ | | | |
| 9. **Discharge Compliance Records** | | | |
| ☐ Air | ☐ Readily available | ☐ Up to date | ☒ N/A |
| ☐ Water (effluent) | ☐ Readily available | ☐ Up to date | ☒ N/A |
| Remarks: _____ | | | |
| 10. **Daily Access/Security Logs** | ☐ Readily available | ☐ Up to date | ☒ N/A |
| Remarks: _____ | | | |

**IV. O&M COSTS**

1. **O&M Organization**

| | |
|---|---|
| ☐ State in-house | ☐ Contractor for State |
| ☐ PRP in-house | ☐ Contractor for PRP |
| ☐ Federal Facility in-house | ☐ Contractor for Federal Facility |
| ☐ _____ | |

2. **O&M Cost Records**

☐ Readily available ☐ Up to date

☐ Funding mechanism/agreement in place ☐ Unavailable

Original O&M cost estimate _____ ☐ Breakdown attached

Total annual cost by year for review period if available

| | | | |
|---|---|---|---|
| From mm/dd/yyyy | To mm/dd/yyyy | _____ | ☐ Breakdown attached |
| Date | Date | Total cost | |
| From mm/dd/yyyy | To mm/dd/yyyy | _____ | ☐ Breakdown attached |
| Date | Date | Total cost | |
| From mm/dd/yyyy | To mm/dd/yyyy | _____ | ☐ Breakdown attached |
| Date | Date | Total cost | |
| From mm/dd/yyyy | To mm/dd/yyyy | _____ | ☐ Breakdown attached |
| Date | Date | Total cost | |
| From mm/dd/yyyy | To mm/dd/yyyy | _____ | ☐ Breakdown attached |
| Date | Date | Total cost | |

3. **Unanticipated or Unusually High O&M Costs During Review Period**

**V. ACCESS AND INSTITUTIONAL CONTROLS** ☒ Applicable ☐ N/A

**A. Fencing**

1. **Fencing damaged** ☐ Location shown on site map ☐ Gates secured ☒ N/A

Remarks: The Site has been developed and is a commercial warehouse retail area.

**B. Other Access Restrictions**

1. **Signs and other security measures** ☐ Location shown on site map ☒ N/A

Remarks: _____

**C. Institutional Controls (ICs)**

**1. Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (e.g., self-reporting, drive by) Routine Inspections

Frequency Semiannual

Responsible party/agency UDEQ/DERR

Contact Tony Howes (Name) Environmental Scientist (Title) 801-536-4100 (Phone no.)

Reporting is up-to-date ☒ Yes ☐ No ☐ N/A

Reports are verified by the lead agency ☒ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☒ Yes ☐ No ☐ N/A

Violations have been reported ☐ Yes ☐ No ☒ N/A

Other problems or suggestions: ☐ Report attached

**2. Adequacy** ☒ **ICs are adequate** ☐ **ICs are inadequate** ☐ **N/A**

**Remarks:** Land use easements that act as ICs are adequate and restrict groundwater use and provide procedures for managing contaminated soil that may be encountered during redevelopment activities.

**D. General**

| | | |
|---|---|---|
| **1. Vandalism/trespassing** ☐ **Location shown on site map** | | ☒ **No vandalism evident** |
| **Remarks:** | | |
| **2. Land use changes on site** ☐ **N/A** | | |
| **Remarks:** The site continues to be developed for commercial warehouse and retail use | | |
| **3. Land use changes off site** ☒ **N/A** | | |
| **Remarks:** | | |
| **VI. GENERAL SITE CONDITIONS** | | |
| **A. Roads** ☒ **Applicable** ☐ **N/A** | | |
| **1. Roads damaged** ☐ **Location shown on site map** ☐ **Roads adequate** ☒ **N/A** | | |
| **Remarks:** The Site has been developed and is accessible by city streets and parking areas | | |
| **B. Other Site Conditions** | | |
| **Remarks:** | | |
| **VII. LANDFILL COVERS** ☒ **Applicable** ☐ **N/A** | | |
| **A. Landfill Surface** | | |
| 1. **Settlement** (Low spots)<br>Arial extent _____<br>Remarks: _____ | ☐ Location shown on site map | ☒ Settlement not evident<br>Depth _____ |
| 2. **Cracks**<br>Lengths _____<br>Remarks: _____ | ☐ Location shown on site map<br>Widths _____ | ☒Cracking not evident<br>Depths _____ |
| 3. **Erosion**<br>Arial extent _____<br>Remarks: _____ | ☐ Location shown on site map | ☒ Erosion not evident<br>Depth _____ |
| 4. **Holes**<br>Arial extent _____<br>Remarks: _____ | ☐ Location shown on site map | ☒ Holes not evident<br>Depth _____ |
| 5. **Vegetative Cover**<br>☐ No signs of stress<br>Remarks: The Site has been developed and a vegetative grass cover is no longer needed | ☐ Grass<br>☐ Trees/Shrubs (indicate size and locations on a diagram) | ☐ Cover properly established |
| 6. **Alternative Cover** (armored rock, concrete, etc.)<br>Remarks: _____ | | ☒ N/A |
| 7. **Bulges**<br>Arial extent _____<br>Remarks: _____ | ☐ Location shown on site map | ☒ Bulges not evident<br>Height _____ |
| 8. **Wet Areas/Water Damage**<br>☐ Wet areas<br>☐ Ponding<br>☐ Seeps<br>☐ Soft subgrade<br>Remarks: _____ | ☒ Wet areas/water damage not evident<br>☐ Location shown on site map<br>☐ Location shown on site map<br>☐ Location shown on site map<br>☐ Location shown on site map | <br>Arial extent _____<br>Arial extent _____<br>Arial extent _____<br>Arial extent _____ |
| 9. **Slope Instability**<br>☒ No evidence of slope instability<br>Arial extent _____<br>Remarks: _____ | ☐ Slides | ☐ Location shown on site map |

**B. Benches** ☐ Applicable ☒ N/A

(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map ☐ N/A or okay
Remarks: _____

2. **Bench Breached** ☐ Location shown on site map ☐ N/A or okay
Remarks: _____

3. **Bench Overtopped** ☐ Location shown on site map ☐ N/A or okay
Remarks: _____

**C. Letdown Channels** ☐ Applicable ☒ N/A

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ No evidence of settlement
Arial extent _____ Depth _____
Remarks: _____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
Material type_____ Arial extent _____
Remarks: _____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
Arial extent _____ Depth _____
Remarks: _____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Arial extent _____ Depth _____
Remarks: _____

5. **Obstructions** Type _____ ☐ No obstructions
☐ Location shown on site map Arial extent _____
Size _____
Remarks: _____

6. **Excessive Vegetative Growth** Type _____
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Arial extent _____
Remarks: _____

**D. Cover Penetrations** ☐ **Applicable** ☒ **N/A**

1. **Gas Vents** ☐ Active ☐ Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☒ N/A
Remarks: _____

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs maintenance ☒ N/A
Remarks: _____

3. **Monitoring Wells** (within surface area of landfill)

☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition

☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A

Remarks: The protective steel "stick up" casing and PVC casing for monitoring well P2M were damaged and broken at the ground surface.

4. **Extraction Wells Leachate**

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs Maintenance ☒ N/A

Remarks: _____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☒ N/A

Remarks: _____

**E. Gas Collection and Treatment** ☐ Applicable ☒ N/A

1. **Gas Treatment Facilities**

☐ Flaring ☐ Thermal destruction ☐ Collection for reuse

☐ Good condition ☐ Needs Maintenance

Remarks: _____

2. **Gas Collection Wells, Manifolds and Piping**

☐ Good condition ☐ Needs Maintenance

Remarks: _____

3. **Gas Monitoring Facilities** (e.g., gas monitoring of adjacent homes or buildings)

☐ Good condition ☐ Needs Maintenance ☐ N/A

Remarks: _____

**F. Cover Drainage Layer** ☐ Applicable ☒ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A

Remarks: _____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A

Remarks: _____

**G. Detention/Sedimentation Ponds** ☐ Applicable ☒ N/A

1. **Siltation** Area extent _____ Depth _____ ☐ N/A

☐ Siltation not evident

Remarks: _____

2. **Erosion** Area extent _____ Depth _____

☐ Erosion not evident

Remarks: _____

3. **Outlet Works** ☐ Functioning ☐ N/A

Remarks: _____

4. **Dam** ☐ Functioning ☐ N/A

Remarks: _____

**H. Retaining Walls** ☐ Applicable ☒ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident

Horizontal displacement _____ Vertical displacement _____

Rotational displacement _____

Remarks: _____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident

Remarks: _____

**I. Perimeter Ditches/Off-Site Discharge** ☒ Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map ☒ Siltation not evident
Area extent _____ Depth _____
Remarks: _____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
☒ Vegetation does not impede flow
Area extent _____ Type _____
Remarks: _____

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident
Area extent _____ Depth _____
Remarks: _____

4. **Discharge Structure** ☒ Functioning ☐ N/A
Remarks: The shallow aquifer discharges to the city drain. The city drain was observed to be flowing and functioning as intended.

**VIII. VERTICAL BARRIER WALLS** ☐ **Applicable** ☒ **N/A**

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
Area extent _____ Depth _____
Remarks: _____

2. **Performance Monitoring** Type of monitoring _____
☐ Performance not monitored
Frequency _____ ☐ Evidence of breaching
Head differential _____
Remarks: _____

**IX. GROUNDWATER/SURFACE WATER REMEDIES** ☒ **Applicable** ☐ **N/A**

**A. Groundwater Extraction Wells, Pumps, and Pipelines** ☐ **Applicable** ☒ **N/A**

1. **Pumps, Wellhead Plumbing, and Electrical**
☐ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A
Remarks: _____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☐ Good condition ☐ Needs Maintenance
Remarks: _____

3. **Spare Parts and Equipment**
☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
Remarks: _____

**B. Surface Water Collection Structures, Pumps, and Pipelines** ☐ Applicable ☒ N/A

1. **Collection Structures, Pumps, and Electrical**
☐ Good condition ☐ Needs Maintenance
Remarks: _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☐ Good condition ☐ Needs Maintenance
Remarks: _____

3. **Spare Parts and Equipment**
☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
Remarks: _____

**C. Treatment System** ☐ Applicable ☒ N/A

1. **Treatment Train** (Check components that apply)

☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
☐ Air stripping ☐ Carbon absorbers
☐ Filters _____
☐ Additive (e.g., chelation agent, flocculent) _____
☐ Others _____
☐ Good condition ☐ Needs Maintenance
☐ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☐ Equipment properly identified
☐ Quantity of groundwater treated annually _____
☐ Quantity of surface water treated annually _____
Remarks: _____

2. **Electrical Enclosures and Panels** (properly rated and functional)

☐ N/A ☐ Good condition ☐ Needs Maintenance

Remarks: _____

3. **Tanks, Vaults, Storage Vessels**

☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance

Remarks: _____

4. **Discharge Structure and Appurtenances**

☐ N/A ☐ Good condition ☐ Needs Maintenance

Remarks: _____

5. **Treatment Building(s)**

☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair

☐ Chemicals and equipment properly stored
Remarks: _____

6. **Monitoring Wells** (pump and treatment remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks: _____

**D. Monitoring Data**

1. **Monitoring Data**

☒ Is routinely submitted on time ☒ Is of acceptable quality

2. **Monitoring data suggests:**

☒ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

**E. Monitored Natural Attenuation**

1. **Monitoring Wells** (natural attenuation remedy)

☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition

☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks: With the exception monitoring well P2M in which the protective steel "stick up" casing and PVC casing were damaged and broken at the ground surface, monitoring wells were found to be in good condition.

**X. OTHER REMEDIES**

If there are remedies applied at the site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

**XI. OVERALL OBSERVATIONS**

**A. Implementation of the Remedy**

The remedy for OU1 and OU2 is complete and consisted of removing and disposing of the CKD and chromium bearing bricks which were the source material for groundwater contamination at the Site. A series of groundwater monitoring wells were installed at the Site to ensure that groundwater RAOs are being achieved.

**B. Adequacy of O&M**

Annual groundwater and surface water monitoring and sampling is completed at the Site by UDEQ/DERR. Groundwater and surface water monitoring and sampling ensures that contaminated groundwater is not migrating to unprotected groundwater and surface water. An optimization review completed in February 2022 by EPA found that the current number of existing monitoring wells is adequate for evaluating the groundwater remedy.

**C. Early Indicators of Potential Remedy Problems**

None

**D. Opportunities for Optimization**

Not applicable at this time.