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Reuse and the Benefit to Community A Beneficial Effects Economic Case Study for the Portland Cement (Kiln Dust 2 & 3) Superfund Site



Introduction

Following waste disposal activities that took place for two decades, EPA, the Utah Department of Environmental Quality (UDEQ) and potentially responsible parties (PRPs) worked together to clean up the Portland Cement (Kiln Dust 2 & 3) Superfund site. Afterwards the agencies and Salt Lake City expected the site to remain vacant. However, several developers saw a potential opportunity and bought the property shortly after cleanup. Today, the site is home to commercial and industrial businesses, a charter school, a regional training center and a recycling center. Site reuse and redevelopment have bolstered the local economy and attracted businesses to the area.

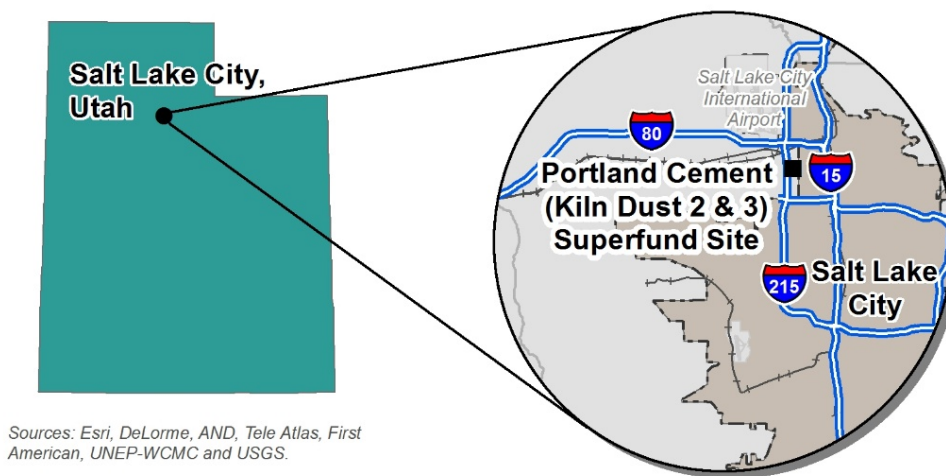
Superfund site restoration and reuse can revitalize local economies with jobs, new businesses, tax revenues and local spending. This case study explores the cleanup and reuse of the Portland Cement (Kiln Dust 2 & 3) Superfund site, illustrating the beneficial effects of Superfund redevelopment.

Beneficial Effects

Site businesses employ about 153 people, providing estimated annual employment income of nearly \$9.8 million and generating almost \$19 million in annual sales revenue.

Site properties are currently valued at nearly \$48 million and generate over \$500,000 in annual property tax revenue.

In addition to many commercial and industrial businesses, a charter school, regional training center and recycling center also operate on site.



Sources: Esri, DeLorme, AND, Tele Atlas, First American, UNEP-WCMC and USGS.

Figure 1. The Portland Cement (Kiln Dust 2 & 3) Superfund site is in Salt Lake City, Utah.

Site History

The 71-acre site is in Salt Lake City in Salt Lake County, Utah. Commercial and industrial properties surround the site to the north, south, east and west. A surplus canal runs along the southern edge of the site. Interstate 215 runs along part of its western edge. A railroad runs along its northern edge. According to the U.S. Census, in 2018 about 200,000 people live in Salt Lake City. Between 1963 and 1983, the Portland Cement Company (later purchased by Lone Star Industries, or LSI) deposited about 500,000 cubic yards of cement kiln dust (CKD) as fill material at the site. CKD contains several heavy metals, including arsenic, lead, chromium, cadmium and molybdenum. In addition, the Portland Cement Company also deposited a few hundred tons of chromium-bearing bricks. These activities contaminated site groundwater, soil and air with heavy metals.

In response to complaints from area residents concerned about windblown CKD, EPA conducted a preliminary assessment in 1984. The assessment indicated a potential for health risks for the nearby community. LSI voluntarily began follow-up environmental investigations at the site. Based on findings from these investigations, EPA placed the site on the Superfund program's National Priorities List (NPL) in June 1986.

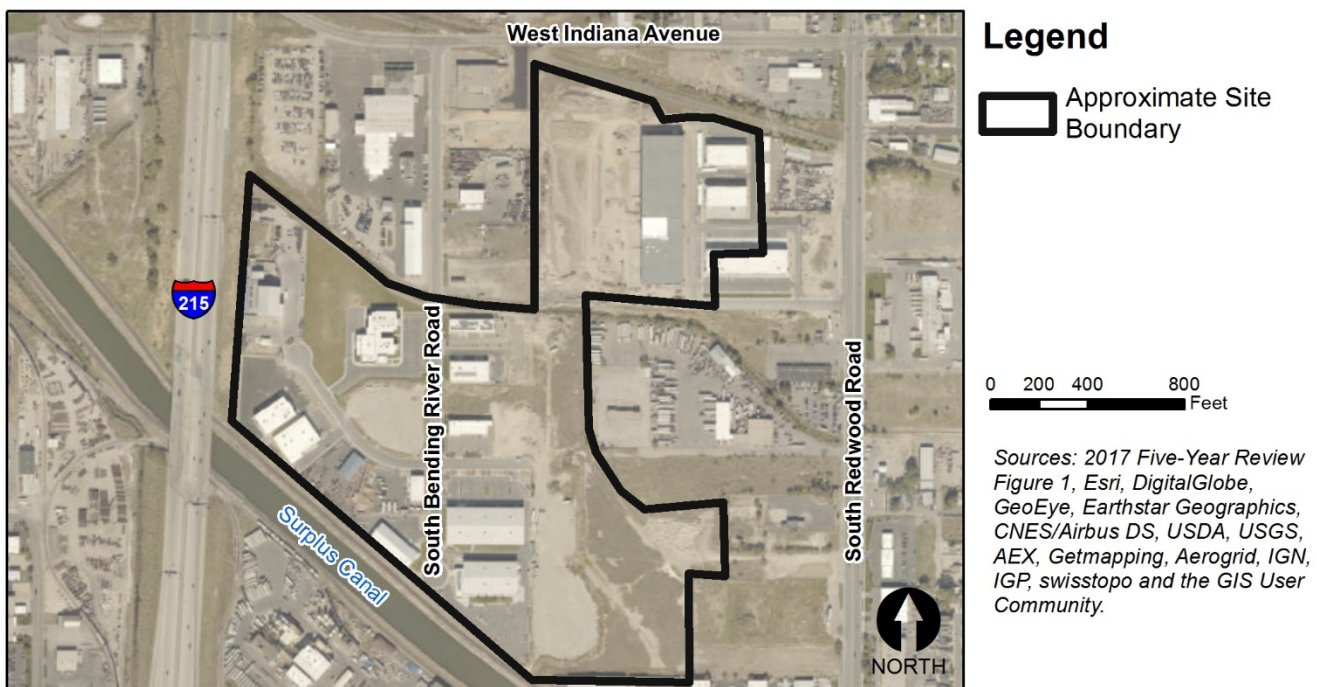


Figure 2. With steady growth and limited developable land opportunities within Salt Lake City, developers saw opportunity at the Portland Cement (Kiln Dust 2 & 3) Superfund site.

Site Cleanup

To manage the cleanup, EPA divided the site into three operable units (OUs) – the “pure” CKD deposited at the site (OU1), chromium-bearing bricks and contaminated site soil (OU2), and contaminated groundwater (OU3). In 1989, LSI completed the remedial investigation/feasibility study (RI/FS) for OU1 and OU2. It confirmed heavy metals contamination in site soil and air and quantified the extent of CKD and chromium-bearing bricks at the site. EPA selected the OU1 remedy in the site’s 1990 Record of Decision (ROD). It consisted of excavation and off-site disposal of CKD, separation of the chromium-bearing bricks from CKD waste and their temporary on-site storage, and groundwater monitoring. In 1992, EPA issued the OU2 ROD. The OU2 remedy consisted of excavation of contaminated soil (lead concentrations greater than 500 milligrams per kilogram [mg/kg] or arsenic concentrations greater than 70 mg/kg), treatment of contaminated soil and chromium-bearing bricks, off-site disposal of treated soil and bricks, and additional groundwater monitoring. It also called for an 18-inch protective layer of clean fill over the site.



Figure 3. Developers saw a blank canvas at the site following cleanup.

Later in 1992, EPA merged OU1 and OU2 into a single OU through a ROD Amendment so that both selected remedies could be implemented at the same time. The ROD Amendment also eliminated the soil treatment selected in the original OU2 ROD. From 1995 to 1997, UDEQ implemented the revised cleanup approach for the combined OUs under EPA oversight.

In 1995, EPA completed a streamlined human health risk evaluation. It found that heavy-metal contamination in site groundwater (OU3) posed an unacceptable risk to humans. In 1998, EPA issued the OU3 ROD. The remedy called for monitored natural attenuation and groundwater use restrictions. In addition to groundwater cleanup goals, it also established surface water performance standards since the shallow aquifer discharges into the sanitary sewer and city drain, which eventually discharge into the Great Salt Lake. As part of cleanup efforts, EPA worked with property owners to file land use easements on site properties. These easements also restrict groundwater use until cleanup goals are met and prohibit soil removal or excavation activities that might interfere with the remedy. Following developer-led remedy enhancements, EPA and UDEQ later modified these land use easements in 2007 and 2009, releasing most site soil from the land use restrictions previously filed in 1998 and 1999, to facilitate development.

Site Transformation

During the initial remedial design and remedial action activities, EPA and UDEQ staff assumed that cleaned-up areas would remain vacant after cleanup. However, with steady growth and limited land availability across Salt Lake City, two developers saw an opportunity. The site was one of the last large undeveloped areas within city limits. The developers – Morray Yates and Chuck Harmon – started discussions with the property owners and EPA and UDEQ staff about the possibility of purchasing and redeveloping the site property after cleanup. In 2000, the two developers purchased the site properties for development as an industrial park.

After acquiring the properties, the developers identified a need for more extensive coordination between Salt Lake City, EPA and UDEQ. A lack of familiarity with Superfund sites and contaminated property resulted in the city denying the developers permits for redevelopment activities. In addition, city staff expressed concern that development activities could potentially contaminate a city drainage canal that runs across the site. In response, the developers and UDEQ reached out to work with city staff, showing them that the site had been remediated, that the remedy was compatible with commercial and industrial uses, and that redevelopment activities would not lead to contamination of the city drainage canal. The developers also directly addressed the city's concerns, increasing the grade of proposed development areas on site by about 5 feet. This primed the property for "slab on grade" development and eliminated the need for soil restrictions on the majority of the site. After three years of close coordination and the addition of clean fill to increase the site's grade, Salt Lake City granted building permits to the developers.



Figure 4. New buildings at the site.

After receiving the building permits in 2003, the developers began implementing their plans for the site. Morray Yates sold several parcels and construction activities for their development followed. However, construction workers quickly encountered difficulties accessing the development areas of the site. A high-water table saturated soil, resulting in vehicles getting bogged down in waterlogged soil. To mitigate this issue and expedite construction activities, developers brought in additional clean fill to raise the grade in areas used to access the development parcels and built access roads across the site.

Site developers further enhanced the remedy through their development. Buildings, paved parking areas, concrete pads and roadways create an impermeable surface at the site, and surface stormwater that falls on the impermeable areas is directed to storm water outfalls. Areas that remain undeveloped are maintained with appropriate fill and landscaping or other vegetative cover to prevent erosion of fill.

Residences and businesses at the site and in the surrounding area are connected to the municipal water supply, and restrictions prohibit local groundwater use. A clay cap, covered with 5 feet of clean fill and vegetative cover or, in development portions of the site, impermeable surface infrastructure, protect people who work, live and visit the area from any possible exposures to contaminated soil remaining at the site following cleanup. The section below describes the results of these efforts and the status of the site's redevelopment.

Beneficial Effects

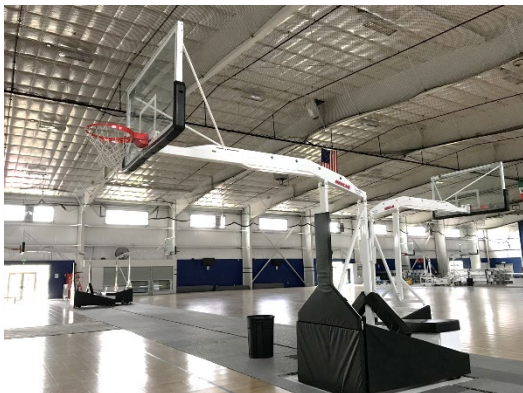
Today, the site hosts a thriving commercial and industrial area. Businesses that operate on site bolster the local economy and help generate local and state tax revenues. In addition, a charter school, recycling center and regional training center also operate on site. This section describes the beneficial effects of these reuses at the site.

Current Commercial and Industrial Uses

The site is now home to 14 commercial and industrial businesses and a charter school. They range from an indoor sports complex to a landscaping business to a medical device wholesaler. Together, they employ about 153 people and generate an estimated \$9.8 million in annual employee income. In 2018, combined annual sales revenues generated by the on-site businesses reached almost \$19 million.

Riverbend Sports Complex

Built in 2015, this indoor sports and event complex spans two large buildings. During the winter, the facility hosts soccer events, including tournaments, practices and league games, and can accommodate up to five indoor fields in total across the two buildings. Because the turf fields are built over dirt instead of concrete, many indoor soccer players have noted they prefer the complex over other indoor athletic venues in the area. During the summer, the facility hosts basketball events, including tournaments, practices and league games, and can accommodate up to nine indoor basketball courts across the two buildings. It also hosts concerts and private events, including parties, quinceañeras, baby showers and receptions. The facility includes a full kitchen and catering is available for all types of events. In 2018, the complex provided over \$103,000 in estimated employee income.



Figures 5, 6 and 7. The Riverbend Sports Complex is one of the few indoor sports complexes in Salt Lake City.

Procast Marble, Inc.

Operating out of a 5,500-square foot facility, this business provides fabrication and installation services of natural stone, quartz, solid surface and cultured marble counter tops in the Salt Lake City area. Areas of expertise include kitchens, bathrooms and fireplaces. In 2018, the business generated \$4.6 million in sales revenue and provided over \$1.8 million in estimated employee income.

Reliable Logistics Services

Operating since 1999, this business provides delivery and fleet services for a variety of companies, including manufacturers, healthcare companies and wholesalers. In addition, the company also provides logistics consulting. It has four locations across the country, in Salt Lake City, Houston, Denver and Kansas City. In 2018, the Salt Lake City branch provided over \$138,000 in estimated employee income.

Big City Recycling

Established in 1996, this business provides waste-removal services ranging from small residential projects to larger industrial programs. The company operates its recycling center on site, providing public drop-off services for residents and businesses five days a week. The company is proud to help divert trash away from landfills by offering this alternative environmental solution. In 2018, the recycling center generated over \$11.8 million in sales revenue and provided over \$545,000 in estimated employee income.

Western States Joint Apprenticeship (WSJAC) J.G. Cooksey Training Center

Open since 2018, this facility provides advanced welding, fabrication and rigging training for journeymen, apprentices and helpers in the boilermaker industry. The training center is one of eight new regional training facilities across the West that provide training services to address forecasted industry labor shortages. Several area companies provided robotic welding machines, training and equipment. The Bank of Labor provided financing for the facility.

Wallace Stegner Academy

This free public charter school serves students in kindergarten through eighth grade. Established in 2016, the school aims to prepare children in the Salt Lake City area for high school, post-secondary education and beyond. During the



Figure 8. Reliable Logistic Services operates out of this building.



Figure 9. Recycled cardboard at Big City Recycling.



Figure 10. The WSJAC J.G. Cooksey Training Center provides training services for aspiring boilermakers.

planning stages for the school, UDEQ worked extensively with city engineers to help make the charter school a reality. The school provided over \$1 million in estimated employee income in 2018.

Looking Ahead

Construction for additional redevelopment on site is now underway. These projects include a warehouse for commercial and industrial uses. With over 130,000 square feet of space, the building will be the last and largest of five buildings in a commercial/industrial development called Redwood Depot. Development plans are also in place for several other areas of the site.

Property Values and Tax Revenues

On-site properties help generate property tax revenues that support local government and public services. Today, site properties have a combined value of nearly \$48 million. In 2018, site properties generated over \$510,000 in total property tax revenues. On-site businesses also generate tax revenues through the collection of sales taxes, which support state and local governments.¹

Conclusion

Collaboration and cooperation among EPA, UDEQ, property owners and developers have been vital to the successful cleanup and beneficial reuse of the Portland Cement (Kiln Dust 2 & 3) Superfund site. EPA and UDEQ’s carefully designed cleanups protect public health and the environment while allowing redevelopment projects to move forward. Property owners and developers saw the site’s potential and made redevelopment possible through extensive outreach and hard work. The presence of developers and businesses on the site has also provided greater long-term stewardship of the remedy.

This once-contaminated area now supports businesses that provide jobs and services to the community; it is one of the last industrial and commercial areas to be developed in Salt Lake City. Today, on-site businesses support local economic growth, providing about 153 jobs and nearly \$9.8 million in estimated annual employee income. In 2018, combined sales revenue for on-site businesses reached almost \$19 million.



Figure 11. The Wallace Stegner Academy is one of the more recent developments at the site.



Figure 12. New construction at the site.

¹ The Salt Lake City combined sales tax rate is 7.75 percent. For more information, see <https://tax.utah.gov/sales/rates>.



Figure 13. Commercial development at the site.

*For more information about EPA's Superfund Redevelopment Initiative, visit:
<https://www.epa.gov/superfund-redevelopment-initiative>.*



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Technical Appendix

Employment Information for On-Site Jobs

EPA obtained the data included in this appendix directly from reputable sources and reported the data as presented by those sources. Information on the number of employees and sales volume for on-site businesses came from the Hoovers/Dun & Bradstreet ([D&B](#)) database.¹ D&B maintains a database of over 300 million businesses worldwide. When Hoovers/D&B database research was unable to identify employment and sales volume for on-site businesses, EPA used the ReferenceUSA database.² These databases include data reported by businesses. Accordingly, some reported values might be underestimates or overestimates. While sales values typically exceed estimated totals of annual income, sales can sometimes be lower than estimated income. This could be attributed to a number of business conditions and/or data reporting.

Wage and Income Information for On-Site Jobs

EPA obtained wage and income information from the U.S. Bureau of Labor Statistics (BLS). Part of the U.S. Department of Labor, the BLS is the principal federal agency responsible for measuring labor market activity, working conditions and price changes in the economy. All BLS data meet high standards of accuracy, statistical quality and impartiality.

EPA used the BLS Quarterly Census of Employment and Wages database to obtain average weekly wage data for businesses at the Portland Cement (Kiln Dust 2 & 3) Superfund site. Average weekly wage data were identified by matching the North American Industry Classification System (NAICS) codes for each type of business with weekly wage data for corresponding businesses in Salt Lake County. If weekly wage data were not available at the county level, EPA sought wage data by state or national level, respectively. In cases where wage data were not available for the six-digit NAICS code, EPA used higher-level (less-detailed) NAICS codes to obtain the wage data.

To determine the annual wages (mean annual) earned from jobs generated by each of the selected businesses at the Portland Cement (Kiln Dust 2 & 3) Superfund site, EPA multiplied the average weekly wage figure by the number of weeks in a year (52) and by the number of jobs (employees) for each business.

¹ <http://www.dnb.com>

² <http://resource.referenceusa.com>

Table 1. Portland Cement (Kiln Dust 2 & 3) Superfund Site: Information for On-Site Organizations and Businesses

On-Site Business	NAICS Code ^a	NAICS Title	Number of Employees ^b	Average Weekly Wage (2018) ^c	Annual Wage (Mean Annual) per Employee	Total Annual Employee Income ^d	Annual Sales (2018) ^b
AAA Barricade	532412 ^e	Construction, Mining, and Forestry Machinery and Equipment Rental and Leasing	NA	\$1,416	\$73,632	NA	NA
Atlas Tree Service and Firewood	561730 ^e	Landscaping Services	2	\$674	\$35,048	\$70,096	\$137,000
Big City Recycling LLC	423930 ^f	Recyclable Material Merchant Wholesalers	10 ^f	\$1,049	\$54,548	\$545,480	\$11,814,000 ^f
Executive Parcel, LLC	492110 ^e	Couriers and Express Delivery Services	NA	\$745	\$38,740	NA	NA
Gentox Medical Services, LLC	423450	Medical, Dental, and Hospital Equipment and Supplies Merchant Wholesalers	50	\$2,060	\$107,120	\$5,356,000	\$870,000 ^g
J.G. Cooksey WSJAC Boilermaker Training Center	611519 ^e	Other Technical and Trade Schools	NA	\$548	\$28,496	NA	NA
J J Shutters Inc	337920	Blind and Shade Manufacturing	9	\$722	\$37,544	\$337,896	\$1,000,000
Procast Marble, Inc	423320	Brick, Stone, and Related Construction Material Merchant Wholesalers	32	\$1,113	\$57,876	\$1,852,032	\$4,600,000
Reliable Logistics Services	488999	All Other Support Activities for Transportation	4	\$664	\$34,528	\$138,112	\$182,000
Riverbend Sports Complex	713940 ^e	Fitness and Recreational Sports Centers	8	\$248	\$12,896	\$103,168	\$105,000
Space Rails, LLC	339930 ^e	Doll, Toy, and Game Manufacturing	2	\$413	\$21,476	\$42,952	\$160,000

On-Site Business	NAICS Code ^a	NAICS Title	Number of Employees ^b	Average Weekly Wage (2018) ^c	Annual Wage (Mean Annual) per Employee	Total Annual Employee Income ^d	Annual Sales (2018) ^b
Stevens Equipment Supply	423830 ^e	Industrial Machinery and Equipment Merchant Wholesalers	NA	\$1,533	\$79,716	NA	NA
Vincit Amor Event Center LLC	812990	All Other Personal Services	4	\$766	\$39,832	\$159,328	\$109,000 ^f
Wallace Stegner Academy	611110	Elementary and Secondary Schools	32	\$706	\$36,712	\$1,174,784	NA
			153			\$9,779,848	\$18,977,000

^a NAICS code provided in the D&B database, unless otherwise noted.

^b Data are from the D&B database, unless otherwise noted.

^c Average weekly wage per employee based on BLS 2018 Average Weekly Wage data.

^d Total annual employee income figures derived by multiplying “Number of Employees” by “Annual Wage (Mean Annual) per Employee.”

^e Assumed NAICS code based on business type.

^f Data are from the ReferenceUSA database.

^g While sales values typically exceed estimated totals of annual employee income, annual reported sales can sometimes be lower than estimated annual income. This atypical condition of estimated income exceeding sales can be a result of business conditions, estimated business wages not accurately reflecting actual wages for the site-specific business, annual sales being under-reported, a business loss for the year or a combination of those factors. NA = not available

Property Values and Local Tax Revenue Generated from Property Taxes

EPA obtained data on the most recently assessed values for property parcels at the Portland Cement (Kiln Dust 2 & 3) Superfund site in May 2019 through property records accessible through Salt Lake County’s online property appraisal database.³ EPA also obtained 2018 property tax information for the site parcels.

Table 2. Property Value and Tax Summary for Taxes Payable in 2018

Parcel ID No.	Total Market Value of Land and Improvements (2018)	Total Property Tax (2018)
15101510240000	\$1,501,200	\$20,033.51
15101510270000	\$9,671,000	\$0.00 ^a
15101520070000	\$787,900	\$10,514.53

³ <https://slco.org/auditor/notice-of-valuation>.

Parcel ID No.	Total Market Value of Land and Improvements (2018)	Total Property Tax (2018)
15101770210000	\$4,888,900	\$65,242.37
15101770230000	\$7,347,500	\$98,052.39
15101770240000	\$1,688,900	\$22,538.37
15103010090000	\$530,500	\$7,079.52
15103020010000	\$2,348,500	\$31,340.73
15103020020000	\$1,440,300	\$19,220.80
15103020030000	\$898,000	\$11,983.81
15103020040000	\$1,056,400	\$14,097.66
15103020050000	\$1,267,900	\$16,920.13
15103030010000	\$1,120,500	\$14,953.07
15103030020000	\$311,300	\$4,154.30
15103030030000	\$1,058,500	\$14,125.68
15103040040000	\$4,094,800	\$54,645.11
15103040050000	\$3,848,200	\$51,354.23
15103260160000	\$4,037,800	\$53,884.44
Road (Null)	NA	NA
	\$47,898,100	\$510,140.65

^a A value of \$0 indicates the property is exempt from property taxes.

NA = not available