SITE INSPECTION REPORT

HIGHWAY 24 MILL SITE
COLORADO SPRINGS, EL PASO COUNTY, COLORADO

U.S. EPA ID NO. CON000821192

Prepared for

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1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA), under authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), tasked the Tetra Tech, Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) to conduct a Site Inspection (SI) of the Highway 24 Mill site (the "Site") located in southwest Colorado Springs, El Paso County, Colorado (Figure 1) (EPA Identification Number [No.] CON000821192). The Site includes the A-1 Mobile Village located on Garner Street and the neighborhoods surrounding the former Golden Cycle Mill and tailings pile. The former Golden Cycle Mill and tailings pile have been addressed by the state Voluntary Cleanup Program (VCUP). The focus of this SI is on the neighborhoods surrounding the former mill and tailings pile. The SI proceeded under Contract No. 68HE0820D0001, Technical Direction (TD) No. 2361-2312-04.

In 2022 and 2023, START conducted a Preliminary Assessment (PA) and Removal Assessment (RA) for the Garner Street Soils Site which focused on the A-1 Mobile Village that is next to the tailings pile (Tetra Tech 2022, 2023a). Soil sampling activities were conducted at the A-1 Mobile Village during May 2022, and the soil analytical results showed that elevated levels of lead and arsenic are present on the residential mobile home park. Based on the analytical results, all the soil samples had at least one metal analyte that met the criteria for observed contamination (three times background). Based on the PA and RA findings at the A-1 Mobile Village residential property, further investigation under an SI was conducted to assess whether the surrounding residential areas had also been impacted by metal contamination from the former milling operations and tailings (Tetra Tech 2022, 2023a). The SI field sampling was conducted in June 2023 and included the collection of surface soil and collocated surface water and sediment samples.

The purpose of this SI report is to present the 2023 data, summarize pertinent results from past studies, and identify potentially hazardous conditions to human health and the environment. This SI report was prepared in accordance with EPA's *Guidance for Performing Site Inspections under CERCLA* (EPA 1992), and the *Hazard Ranking System Final Rule* (EPA 2017).

OBJECTIVES

The objective of this SI is to evaluate whether historical contamination from the former Golden Cycle Mill smokestack emissions and associated tailings pile (also known as Gold Hill tailings) extend beyond the A-1 Mobile Village to nearby surrounding neighborhoods and surface water bodies (via air dispersion such as windblown soil or dust, or surface water runoff). To evaluate the extent of contamination associated with the Site, START collected soil samples at distances up to 3.1 miles from the documented source areas. Three collocated surface water and sediment samples were also collected from along Fountain Creek to assess

whether the stream is impacted by contamination associated with the former Golden Cycle Mill and tailings pile. In addition to reviewing existing information and evaluating current conditions, this SI report also considers analytical results from soil samples collected as part of the 1994 EPA Site Inspection for Gold Hill Tailings (Morrison Knudsen Corporation [Morrison Knudsen] 1994) and the recent EPA RA sampling event conducted by START in May 2022 (Tetra Tech 2022, 2023a).

The specific objectives of this SI are as follows:

- Provide a comprehensive summary of investigation-related information and analytical data collected under CERCLA;
- Obtain a more complete understanding of the spatial distribution of Site-related contaminants in area soils and surface water;
- Identify potential targets and receptors that may be impacted by hazardous substances, affecting human and environmental health.

2.0 SITE BACKGROUND

2.1 SITE LOCATION AND DESCRIPTION

The Site is located southwest Colorado Springs, El Paso County, Colorado (Figure 1). The approximate geographic coordinates are 38.832490 north latitude and -104.845400 west longitude (Figure 1). The metals contamination at the Site originated with the former Golden Cycle Mill facility and its associated tailings pile (Figure 2). All that visibly remains of the former Golden Cycle Mill facility is the smokestack. The investigation boundary for the Site encompasses the neighborhoods within approximately a 3-mile radius from the smokestack at the former Golden Cycle Mill (Figure 3).

The 11.2-acre A-1 Mobile Village consists of 82 mobile home lots, as well as an office, garage, and miscellaneous common areas (El Paso County 2024a). In historical aerial photographs from 1960, trailers appear on the property where A-1 Mobile Village is currently located (Environmental Data Resources, Inc. [EDR] 2022). The only other aerial photograph prior to 1960 available to Tetra Tech was from 1937, and it appears to show that the property was unimproved at the time (EDR 2022).

2.2 SITE HISTORY

The Golden Cycle Mill facility was originally built in 1902 and was also known as the Telluride Mill. It was constructed primarily for concentrating and smelting telluride gold ores produced in the mines of Cripple Creek and Victor, Colorado. Employing a bromide roast process, recoveries were less than expected and the mill soon closed. It was purchased by the Golden Cycle Corporation and reopened using a chloride roast process. In 1906, the mill was destroyed by fire and subsequently rebuilt to operate using a potassium

cyanide vat leaching process. Records indicate that the Memorial Day, 1935 flood of Fountain Creek washed away large volumes of tailings deposited along the creek, and also caused a significant volume of water to be impounded in the tailings impoundment above the mill. The mill ceased operations in 1949 and was subsequently dismantled in 1950 (ENSR Consulting and Engineering [ENSR] 1988; Morrison Knudsen 1993).

The tailings pile historically covered approximately 170 acres and consisted of tailings produced by the milling of ore from the Cripple Creek Mining District in Colorado. In total, 14.3 million tons of ore were processed yielding 12.5 million tons of tailings. The tailings were produced by the Golden Cycle Mill from approximately 1902 until February 1949 (Morrison Knudsen 1993).

A Sanborn fire insurance map from 1907 shows seven furnaces, railroad spurs, various sizes of process and storage tanks inside process buildings, a coal-fired electric generating plant, ore bins, and machine and boiler shops. In 1929, a concentrator unit was constructed to treat complex sulfide ores that contained lead, copper, and zinc. Tailings from the concentrator were further treated with cyanide to recover additional gold and silver. In 1931, a small-capacity cyanide unit was added to the plant (Morrison Knudsen 1993). In 1947, two sprinkler lines were installed on the tailings pile to reduce the amount of fine sand and dust that blew over Colorado Springs during windstorms. Residents near the mill continued to complain about dust blowing off the property. In 1950, a reported 357,440 tons of dirt from hills adjacent to the mill was used to cover the 170-acre tailings pile to a depth of 6 to 8 inches. The mill facility was dismantled in 1950 (Morrison Knudsen 1993).

An aerial photograph from 1969 shows some units of the Villa de Mesa townhomes completed adjacent to and south of the former mill facility (EDR 2022). Most of this 11.5-acre development was constructed on the tailings pile (Morrison Knudsen 1993).

In 1972, the Golden Cycle Corporation sold the mill property to William Wiley. William Wiley formed the Gold Hill Mesa Corporation and formed a joint venture with the Fountain Creek Corporation. The joint venture was granted a conditional use permit by the City of Colorado Springs. The permit allowed for the construction and operation of a pilot scale surface mining operation known as the Gold Hill Recycle Project located on 154 acres of the tailings pile. This project was to test the feasibility of recovering additional gold and silver from the tailings. A 5-acre plot in the southern portion of the property was revegetated in 1973 by Gold Hill Mesa Corporation. Additional revegetation work was conducted on this portion of the tailings by Shuck Corporation in 1974. In 1992, Colorado Springs Regional Building Department condemned the former mill area because of unsafe conditions and frequent use by youths and transients (Morrison Knudsen 1993).

In 2000 and in 2002, ERSH, LLC (the owner representative) entered the Gold Hill Mesa development into a

VCUP agreement with the Colorado Department of Public Health and Environment (CDPHE) for the cleanup and redevelopment of the former Golden Cycle Mill property and associated tailings pile (Spectrum Services [Spectrum] 2000a, 2000b, 2002). Under the CDPHE-approved VCUP agreement and associated materials management plan, the tailings pile was to remain on site. As the Gold Hill Mesa property has been developed, the tailings have been capped with hardscape (that is, sidewalks, streets, buildings, driveways, and concrete patio surfaces) or with an engineered soil cap. The design for the engineered soil cap included a geotextile identification barrier, overlain with at least 2 feet of a fill mixture (60 percent clean material [clay] and 40 percent tailings), which was in turn to be overlain with at least 2 feet of clean material or topsoil depending on vegetation requirements (Spectrum 2002, Casey Resources, Inc. 2006). A review of aerial photographs shows that construction of the Gold Hill Mesa housing development on the former Golden Cycle Mill property was underway by 2005 (EDR 2022). Aerial photographs from June 2006 show potential soil cap work began on the face of the tailings pile just west of and adjacent to the A-1 Mobile Village. Additional earth moving activities are noticeable in this area until June 2017. The most recent aerial photograph (from 2017) shows that approximately three-quarters of the former mill property have been redeveloped and the exposed portion of the tailings pile has been significantly reduced and graded to continue expansion of the housing development.

A 196-foot-tall concrete smokestack associated with the former mill (Morrison Knudsen 1993) was still intact at the time of the 2023 SI field work. The smokestack appeared to be the only remaining structure of the former mill facility.

2.3 PREVIOUS INVESTIGATIONS

2.3.1 *Gold Hill Tailings - Preliminary Assessment, 1993*

In 1993, EPA conducted a PA of the Gold Hill Tailings site. The Gold Hill Tailings site included the 170-acre tailings pile associated with the former Golden Cycle Mill facility. During the PA, it was observed that the tailings pile sloped steeply toward the adjacent Fountain Creek to the north and northeast, and toward A-1 Mobile Village to the east, forming a depositional area. The edge of this depositional area extended onto the A-1 Mobile Village property and appeared to be within 200 feet of 17 trailers. At the time of the PA, it was unknown if cover material that had been placed on the pile in 1949 and 1950 had been eroded to expose tailings material (Morrison Knudsen 1993).

2.3.2 *Gold Hill Tailings - Site Inspection, 1994*

In 1994, EPA conducted an SI of the Gold Hill Tailings site, including the collection of soil samples from the mill area, tailings piles, A-1 Mobile Village, and background soil samples for comparison. Contaminants in the soil samples collected from the mill, tailings pile, and mobile home village were considered significantly above background if concentrations were at least three times the concentrations in the background samples (that is, observed contamination criteria). Two background samples were collected from approximately 1.0 mile and 1.7 miles north of the Gold Hill Tailings site. Laboratory analytical results of the soil samples from the SI are summarized below (Morrison Knudsen 1994):

- Three soil samples were collected from the mill area. Two of the samples indicated the presence of arsenic (up to 385 milligrams per kilogram [mg/kg]) and lead (up to 1,630 mg/kg) at concentrations significantly above their respective background levels of 12.2 and 175 mg/kg. Mercury (up to 4.7 mg/kg), and cyanide (up to 393 mg/kg) were detected in all three samples at concentrations significantly above background levels. Mercury and cyanide were not detected in background samples; therefore, their background levels were set at the detection limits of 0.12 and 0.61 mg/kg, respectively.

- Two soil samples were collected from the northeast face of the tailings pile. These samples indicated the presence of arsenic (up to 157 mg/kg) and cyanide (up to 25.4 mg/kg) at concentrations significantly above background. Lead (1,240 mg/kg) and mercury (0.34 mg/kg) were present in one sample each at concentrations significantly above background levels.

- One sample was collected just upstream of the Fountain Creek retaining wall, along the bank of the creek. The sample indicated the presence of arsenic (290 mg/kg) and cyanide (1.4 mg/kg) at concentrations significantly above background levels.

- Three soil samples were collected from the depositional area at A-1 Mobile Village. All three of the samples indicated the presence of arsenic (up to 103 mg/kg), lead (up to 779 mg/kg), and cyanide (up to 1.7 mg/kg) at concentrations significantly above background. Mercury (up to 0.19 mg/kg) was detected in two samples at concentrations significantly above background levels.

2.3.3 *Gold Hill Tailings – Sampling Activities and Analytical Results Report, 1995*

In February 1995, EPA Emergency Response Branch investigated the Gold Hill Tailings site including the collection of soil samples from the A-1 Mobile Village and the tailings pile as well as 13 interior dust samples from 12 mobile homes at the A-1 Mobile Village. All soil samples were analyzed in the field using X-ray fluorescence (XRF); based on XRF results, seven soil samples from the tailings pile and three soil samples from A-1 Mobile Village were submitted to a fixed laboratory for analysis. The criteria used to select samples for submission for laboratory analysis were not provided in the sampling report. Dust samples were collected with a high-volume sampler that was modified to vacuum a premeasured area. A one-third square meter template was used in three locations, resulting in a total vacuumed area of 1 square meter. One home was vacuumed in six locations for a total vacuumed area of 2 square meters. The interior dust samples were

analyzed for total suspended particulates, arsenic, and lead. Laboratory analytical results of the dust and soil samples are summarized below (Ecology and Environment, Inc.1995):

- All 13 dust samples collected from the interiors of 12 mobile homes indicated the presence of arsenic (up to 65.9 mg/kg) and lead (up to 432 mg/kg).
- Three soil samples collected from the A-1 Mobile Village indicated the presence of arsenic (up to 80 mg/kg), lead (up to 527 mg/kg), and cyanide (up to 1.8 mg/kg).
- Seven soil samples collected from the tailings pile indicated the presence of arsenic (up to 272 mg/kg), lead (up to 1,570 mg/kg), and cyanide (up to 13 mg/kg).

2.3.4 *Gold Hill Tailings – Sampling and Analysis Plan, 1996*

In 1996, EPA had developed a sampling plan to collect air samples from nearby residential areas to evaluate whether residential populations were being exposed to hazardous substances associated with contaminated soil at the mill property and tailings pile (URS 1996). Subsequent to this investigation, the Gold Hill Tailings site entered the state VCUP which resulted in soil cover and dust mitigation measures. Based on available information, it does not appear that EPA conducted air sampling in residential areas at this time.

2.3.5 *Gold Hill Mesa Property – Limited Phase II Subsurface Investigation, 1999*

In 1999, Dames and Moore completed a limited Phase II subsurface investigation of the 212-acre Gold Hill Mesa property on behalf of Gold Hill Mesa JV, LLC. The Gold Hill Mesa property included the former Golden Cycle Mill area, the smokestack, and nearly all of the former tailings pile. The only portion of the 170-acre tailings pile not on the Gold Hill Mesa property appears to be an approximately 4.5-acre portion that underlies the Villa de Mesa townhomes property. The limited Phase II investigation included soil and groundwater sampling. Nine surface soil samples were collected from 0 to 6 inches below ground surface (bgs) and analyzed for Resource Conservation and Recovery Act (RCRA) eight metals. Thirteen subsurface soil samples were collected from three soil borings at four depths (2.5, 5, 10, and 15 feet bgs), including a duplicate sample at a depth of 5 feet, and analyzed for RCRA eight metals and total cyanide. Five groundwater samples were collected from four monitoring wells (including one duplicate sample) and analyzed for dissolved RCRA eight metals, amenable cyanide, and weak acid dissociable (WAD) cyanide. Laboratory analytical results of the soil and groundwater samples from the limited Phase II investigation are summarized below (Dames and Moore 1999a):

- Nine surface soil samples collected from 0 to 6 inches bgs indicated the presence of arsenic (up to 150 mg/kg) and lead (up to 140 mg/kg).
- Thirteen soil samples collected from soil borings at four depths (2.5, 5, 10, and 15 feet bgs) indicated the presence of arsenic (up to 140 mg/kg at 2.5 feet bgs; up to 160 mg/kg at 5 feet bgs; up to 13

mg/kg at 10 feet bgs; and up to 28 mg/kg at 15 feet bgs) and lead (up to 410 mg/kg at 2.5 feet bgs; up to 110 mg/kg at 5 feet bgs; up to 20 mg/kg at 10 feet bgs; and up to 17 mg/kg at 15 feet bgs). Cyanide was detected in four subsurface soil samples with concentrations up to 15 mg/kg.

- Five groundwater samples collected from four monitoring wells (including one duplicate sample) indicated the presence of arsenic in three samples (up to 0.0085 milligram per liter [mg/L]). Lead was below the laboratory reporting limit of 0.0014 mg/L. Amenable cyanide was below the reporting limit of 0.01 mg/L for all five samples and WAD cyanide was detected in one sample at 0.04 mg/L.

2.3.6 *Highway 24 Mill Site, A-1 Mobile Village – Removal Assessment and Preliminary Assessment, 2022*

In May 2022, EPA returned to the A-1 Mobile Village to conduct an RA of metals in surface and subsurface soils. Five-point composite samples were collected from two depth intervals (0 to 1 inch and 1 to 6 inches bgs) at 93 separate locations. Three background samples were collected from Sondermann Park, which is approximately 2 miles north of the A-1 Mobile Village. The breakdown of these locations is as follows:

- A total of 79 individual lots (including the 77 occupied trailer properties, one vacant trailer property, and one office property); and
- Fourteen common areas such as unoccupied areas along roadways located throughout the mobile village.

In addition, three off-site samples were collected to assess background metal concentrations:

- Three areas located approximately 2 miles north of the A-1 Mobile Village at Sondermann Park.

Arsenic and lead concentrations in soil samples collected at the A-1 Mobile Village were consistently higher than background concentrations. Concentrations of arsenic in soils from the A-1 Mobile Village in the 0- to 1-inch depth interval ranged from 19 to 100 mg/kg, and lead ranged from 50 to 640 mg/kg. In the 1- to 6-inch depth interval, arsenic concentrations ranged from 15 to 140 mg/kg, and lead concentrations ranged from 48 to 700 mg/kg (Tetra Tech 2023a). Average background soil concentrations for the 0- to 1-inch depth interval were 9.7 mg/kg for arsenic and 32 mg/kg for lead. Average background soil concentrations for the 1- to 6-inch depth interval were 9.5 mg/kg for arsenic and 29 mg/kg for lead.

In November 2022, a PA was completed that focused on assessing impacts caused by overland flow runoff or aerial deposition from the former Golden Cycle Mill and tailings pile on individual lots and common areas at the A-1 Mobile Village (Tetra Tech 2022). The PA summarized the initial analytical results of soil samples collected during May 2022. Additional bioavailability analyses for arsenic and lead were performed on the May 2022 soil samples and the results are presented in a March 2023 letter report (Tetra Tech 2023a). The 2022 PA and RA documented observed contamination for at least one metal analyte at all 77 occupied lots sampled (START was unable to access four of the 81 occupied lots). In total, 64 occupied lots met the

observed contamination criterion for arsenic and exceeded the residential soil Regional Screening Level (RSL) (EPA 2022). In total, 15 occupied lots met the observed contamination criterion for lead and exceeded the residential soil RSL in place at the time. In addition to lead and arsenic, two other metals (cadmium and manganese) exceeded the residential soil RSLs in at least one sample and five other metals (antimony, cadmium, copper, silver, and zinc) were also detected in soil samples at concentrations exceeding three times the background level in at least one sample (Tetra Tech 2022, 2023a).

In 2024, EPA issued new guidelines that changed the residential RSL for lead from 400 to 200 mg/kg, or 100 mg/kg for locations that are likely to have additional sources of lead exposure (such as lead water service lines, lead-based paint, or other sources) (EPA 2024b). As part of this SI, the results were reevaluated using the updated guidance. Since it is not known whether there may be multiple sources of lead associated with the A-1 Mobile Village, the reevaluation includes a comparison of results to both the 200 and 100 mg/kg residential RSLs for informational purposes. A summary of the results is presented below:

- In the 0- to 1-inch interval, 29 of the 79 A-1 Mobile Village lots sampled are found to have concentrations exceeding 200 mg/kg and 61 of the lots are found to have concentrations exceeding 100 mg/kg.

- In the 1- to 6-inch interval, 39 of the 79 A-1 Mobile Village lots sampled are found to have concentrations exceeding 200 mg/kg and 63 of the lots are found to have concentrations exceeding 100 mg/kg.

2.4 SOURCE DESCRIPTION

A source is defined as an area where a hazardous substance has been deposited, stored, or placed, as well as those soils that have become contaminated from the migration of a hazardous substance. The potential sources of contamination identified with the Highway 24 Mill Site are described below and shown on Figure 2.

Source 1: The 170-acre tailings pile associated with the Golden Cycle Mill.

Source 2: Historical emissions from the former Golden Cycle Mill smokestack.

As discussed in Section 2.2, the Golden Cycle Mill operated from approximately 1902 to 1949 milling gold ore. During its years of operation, an approximately 170-acre tailings pile was created on the property. An estimated 12.5 million tons of tailings were generated between 1902 until February 1949 (Morrison Knudsen Corporation 1993). The tailings pile was covered with 6 to 8 inches of soil in 1950 after milling operations ceased. However, based on samples collected from the tailings pile in 1994, as discussed below, the soil

cover placed on the tailings pile in 1950 has likely eroded over time.

In 1994, soil samples collected from the mill area indicated the presence of arsenic (up to 385 mg/kg), lead (up to 1,630 mg/kg), mercury (up to 4.7 mg/kg), and cyanide (up to 393 mg/kg). Soil samples collected from the tailings pile indicated the presence of arsenic (up to 290 mg/kg), lead (up to 1,240 mg/kg), mercury (up to 0.34 mg/kg), and cyanide (up to 25.4 mg/kg), all at concentrations significantly above background levels.

Since 2002, the former Golden Cycle Mill area and associated tailings pile has been undergoing redevelopment. The redevelopment is the subject of a state VCUP agreement, with the mine waste being capped by hardscape or an engineered soil cap and a housing development constructed on the property.

3.0 FIELD ACTIVITIES

The June 2023 SI sampling activities were conducted in accordance with the Site Assessment Programmatic Quality Assurance Project Plan (QAPP) (Tetra Tech 2023b) and the EPA-approved Sampling and Analysis Plan (Tetra Tech 2023c). The sample design focused on areas within an approximately 3-mile radius of the former Golden Cycle Mill (Figure 3).

Sampling activities were conducted at 32 locations within the surrounding residential neighborhoods to assess the concentrations of heavy metals that may have been dispersed from smokestack emissions or windblown tailings from Site sources. Of the 32 locations, 31 were public properties (such as parks, open spaces, and recreational areas) and one was a commercial property. Soil samples were collected at 30 locations (29 on public property and one on commercial property) and two depth intervals (0 to 1 inch and 1 to 6 inches bgs) were sampled at each location. Collocated surface water and sediment samples were collected at three locations (all on public property). Available wind rose data were inconclusive for identifying the predominant wind direction from the source areas; therefore, representative areas from all cardinal directions within 3 miles were sampled.

The SI sampling focused on openly accessed public parks and city properties that are interspersed within private residential properties within 3 miles of the former Golden Cycle Mill. Public property sampling was intended to approximate residential soil conditions and help refine the preliminary investigation boundary for more detailed sampling of residential properties, if warranted. In June 2023, START personnel, accompanied by EPA Site Assessment personnel, collected the following 74 samples:

- A total of 34 surface soil samples including 4 field duplicates (collected from 0 to 1 inch bgs),
- A total of 34 subsurface soil samples including 4 field duplicates (collected from 1 to 6 inches bgs), and

- Three collocated surface water and sediment samples (total of 6 samples).

Soil sampling targeted native soils that appeared to be of the same composition (color and texture) as those previously sampled in the A-1 Mobile Village and which had not been obviously moved or recently amended.

START collected five-point composite soil samples from two depth intervals (0 to 1 inch bgs and 1 to 6 inches bgs) at 30 decision units. Each decision unit was approximately 900 square feet (similar to the lot sizes sampled at the A-1 Mobile Village in May 2022). Areas of exposed, bare soil were targeted from each decision unit. Hand-held coring devices were used to collect soil from the 0- to 1-inch bgs and 1- to 6-inch bgs depth intervals at each subsample location. Samples were submitted for analysis of total recoverable metals (TRM). Additional composite samples were also collected from each depth interval and submitted for mercury analysis.

Collected soils for each decision unit were containerized according to separate depth intervals until all subsample aliquots were collected for a given composite. Each composite sample was dried, disaggregated, and sieved at the EPA warehouse in Arvada, Colorado, to obtain a 150-micron fraction which was submitted to the laboratory for metals analysis. No drying, disaggregating, or sieving was performed on the mercury samples.

Three collocated surface water and sediment samples were collected from Fountain Creek including one location 1.09 miles upstream from the northwest edge of the tailings pile, one location adjacent to the tailings pile, and one location 1.15 miles downstream from the northeast edge of the tailings pile at the creek mouth prior to the confluence with Monument Creek. Surface water grab samples were collected from the thalweg of Fountain Creek. Sediment samples were collocated and collected in the approximate area of the surface water samples from the bank of Fountain Creek. Fine sediment was targeted from within the collocated area of the surface water. Five subsample aliquots were collected and the subsample aliquots were composited into one sample. Surface water and sediment samples were submitted to the laboratory for TRM , including mercury.

4.0 MIGRATION AND EXPOSURE PATHWAYS

This section describes the migration and exposure pathways for groundwater, surface water, soil, and air. Each subsection describes the migration and exposure pathway characteristics, provides information on potential targets associated with each pathway, and presents conclusions regarding the significance of each migration or exposure pathway.

4.1 GROUNDWATER MIGRATION PATHWAY

4.1.1 *Geology and Hydrogeology*

The Site is underlain by mill tailings and the Cretaceous Pierre Shale. Locally, the Pierre Shale is a gray shale with occasional interbeds of bentonite typically 1 to 3 inches thick. The shale weathers to brown to olive green clay. Along the north side of the Site, the Pierre Shale is overlain by up to 10 feet of Quaternary alluvium (Colorado Geological Survey [CGS] 2000).

The CGS (2000) geologic map of Colorado Springs depicts mill tailings overlying nearly all of the former Golden Cycle Mill site. The mill tailings pile is depicted south of Fountain Creek and appears to be bounded by South 21st Street to the west and by A-1 Mobile Village to the east. On the north side of the Site, Fountain Creek is underlain by up to 10 feet of alluvium. The A-1 Mobile Village property appears to be underlain by Quaternary-age landside deposits.

The Site is within the Arkansas River basin. The primary source of groundwater in the Arkansas River basin is precipitation infiltration. The shallow groundwater in the vicinity of the former Golden Cycle Mill is presumed to follow topography and flow north-northeast toward Fountain Creek (Dames and Moore 1999a, 1999b). Part of the snowmelt and rain is carried by the streams, part evaporates, and the remainder infiltrates into the ground. The water that is not consumed by vegetation moves downward into the zone of saturation (the zone saturated with water under hydrostatic pressure) in the soil or rocks. Water in the zone of saturation percolates laterally through the more permeable consolidated rock formations and through the unconsolidated rock materials that overlie the bedrock, ultimately discharging at the surface through wells, seeps, and springs or by evapotranspiration.

4.1.2 *Groundwater Targets and Conclusions*

Potential groundwater targets can include people who obtain drinking water from private domestic wells within the 4-mile radius target distance limit (TDL) of the sources; and people supplied drinking water from public water suppliers whose water source is from groundwater wells within the 4-mile TDL (Figure 4).

Colorado Springs is supplied drinking water by Colorado Springs Utilities (Colorado Springs Utilities 2023). The Colorado Springs Utilities water source uses numerous surface water sources such as mountain streams, creeks, and reservoirs (Colorado Springs Utilities 2024). Manitou Springs is another municipality located approximately 2 miles northwest of the former Golden Cycle Mill site and is supplied drinking water by the municipality whose water source is a surface water reservoir on the slope of Pike's Peak located approximately 7 miles northwest of the former Golden Cycle Mill site (Manitou Springs 2024). Because the sources of water for Colorado Springs Utilities and Manitou Springs are surface water sources that are

outside of the influence of the Site sources, people supplied drinking water by these utilities are not considered targets associated with the groundwater migration pathway.

Garden Valley, a public water supplier using groundwater as a source, was identified in EPA's Safe Drinking Water Information System (EPA 2024c). Garden Valley's water source is 10 groundwater wells located between 3 and 4 miles east of the former Golden Cycle Mill (EPA 2024c); well locations are confidential and, therefore, are not depicted on Figure 4. Garden Valley supplies drinking water to approximately 900 people who reside at Garden Valley mobile home park (EPA 2024c; El Paso County 2024b; Google Earth 2022).

According to the state's Division of Water Resources (DWR) database, there is the potential for private domestic wells within the investigation boundary (CO DWR 2024a). However, only a limited area within the 4-mile radius is not supplied with drinking water by a public water supplier; therefore, there would be minimal potential targets associated with private domestic wells.

Groundwater samples were not collected as part of this SI to evaluate whether a release to groundwater attributable to the Site sources has occurred. The groundwater migration pathway is not considered a pathway of concern for the Site at this time based on the minimal number of targets associated with the groundwater migration pathway and the distance to groundwater supply wells.

4.2 SURFACE WATER MIGRATION PATHWAY

4.2.1 *Hydrologic Setting*

The Site is located within the Fountain Creek watershed. The Fountain Creek watershed drains approximately 930 square miles and extends through downtown Colorado Springs (Arkansas-Fountain Coalition 2019). Fountain Creek flows south into the Arkansas River at Pueblo, Colorado, approximately 45 miles south and downstream from the Site. A gauging station located in Fountain Creek just downstream of the former Golden Cycle Mill site indicates that the mean flow rate ranged from 1.72 to 69.6 cubic feet per second over a measurement span from June 2019 to October 2023 (CO DWR 2024b).

The main stem of Fountain Creek forms the north and east border of the former mill, tailings pile, and the A-1 Mobile Village. Surface water runoff from the Site sources flows directly into Fountain Creek.

Fountain Creek segment COARFO01a is directly adjacent to the former Golden Cycle Mill site with Colorado designated uses of agriculture; aquatic life cold 1; recreation E; and water supply (CDPHE 2023a). This segment is listed as an impaired stream under Section 303(d) of the Clean Water Act for arsenic, manganese, and *E. coli*. Iron and uranium are on Colorado's Monitoring and Evaluation list for this segment

(CDPHE 2023b). Fountain Creek encompasses the entire 15-mile downstream TDL as shown on Figure 5.

4.2.2 *Surface Water Targets and Conclusions*

No surface water intakes are located within the 15-mile TDL (EPA 2024c). Colorado Springs Utilities, the main public water supplier in the Site vicinity, has an intake in Fountain Creek; however, the intake is located more than 5 miles upstream of the Golden Cycle Mill tailings pile (EPA 2024c). The other water sources for Colorado Springs Utilities and Manitou Springs are surface water reservoirs outside the 15-mile TDL (Colorado Springs Utilities 2024; Manitou Springs 2024).

Although this segment of Fountain Creek is considered impaired for several heavy metals and *E. coli*, Fountain Creek is known to be fished for recreation within the 15-mile TDL. The following fish species have been caught within the 15-mile TDL: largemouth bass, trout (rainbow, bull, brown, and cutthroat), and northern pike (Fishbrain 2022). The greenback cutthroat trout (*Oncorhynchus clarkii stomias*) and the pallid sturgeon (*Scaphirhynchus albus*) are two federally threatened or endangered fish species noted to potentially occur within the 15-mile TDL (U.S. Fish and Wildlife [USFWS] 2022a). Two mammal (*Zapus hudsonius preblei* and *Perimyotis subflavus)*, three bird (*Laterallus jamaicensis ssp. jamaicensis, Strix occidentalis lucida*, and *Charadrius melodus)*, and one plant species (*Spiranthes diluvialis)* designated federally threatened or endangered may occur (USFWS 2022a) within the 15-mile TDL. Approximately 1,433 feet of wetland frontage are located within the 15-mile TDL along Fountain Creek—approximately 12 miles downstream of the former Golden Cycle Mill site tailings pile (USFWS 2022b).

During the 2023 SI sampling event, three collocated surface water and sediment samples were collected from along Fountain Creek to evaluate whether a release that is attributable to the Site sources has occurred. Surface water samples were collected at three locations that bracket the Site sources. These include location 06 (HWY-SW06) located 0.75 mile upstream of the Site sources, location 08 (HWY-SW08) located immediately adjacent to the Site sources, and location 09 (HWY-SW09) located approximately 0.90 mile downstream of the Site sources at the mouth of Fountain Creek above the confluence with Monument Creek (Figure 3).

As presented in Table 1, the analytical results from surface water samples indicate that most metals were not detected at levels above conservative benchmarks except for the following (the total or dissolved fractions indicated below are based on the Colorado Regulation 32 Water Quality Standard [WQS] required for each heavy metal):

- Aluminum (total) was detected above acute and chronic aquatic life criteria in the samples collected upstream from and adjacent to the Site, however, compared to the upstream sample, the aluminum

concentrations were lower in samples collected adjacent to and downstream from the Site. Aluminum concentrations did not result in an observed release (that is, it was not above three times the upstream or background sample) and values do not appear to be Site-related since the most elevated concentration was detected upstream of the former Golden Cycle Mill site tailings pile.

- Arsenic (total) was detected above the chronic human health-based criterion for Domestic Water Supply and the chronic criterion for Water Plus Fish, for all three surface water samples. The highest concentration (0.96 microgram per liter [µg/L]) was detected adjacent to the Site. Arsenic concentrations were below the threshold for an observed release (that is, the concentrations were not above three times the upstream/background sample) and appeared to decrease slightly in the downstream sample. Arsenic is a primary contaminant of concern in Site sources.

- Iron (dissolved) was detected above the Domestic Water Supply WQS in samples collected upstream and adjacent to the Site. The dissolved iron concentration in the sample collected adjacent to the former Golden Cycle Mill site tailings pile was more than double the concentration in the sample collected upstream of the pile. Iron (total) concentrations were reported above chronic aquatic life WQS in samples collected upstream and adjacent to the pile, however, total iron was more elevated in the upstream sample. Neither total nor dissolved iron concentrations result in an observed release and the downstream-most sample had concentrations that were below both the Domestic Water Supply and Chronic Aquatic Life WQS.

- Manganese (dissolved) was not detected above any WQS in the sample collected upstream of the former Golden Cycle Mill site tailings pile; however, it was detected above the WQS for Domestic Water Supply in the samples collected adjacent to, and downstream from the pile. These concentrations were more than three times the upstream concentration and are considered an observed release. Manganese is found in the tailings pile at the former Golden Cycle Mill site.

As presented in Table 2, the analytical results from sediment samples indicate that none of the metals was detected at levels above screening benchmarks.

In general, the collocated sediment concentrations were not considered elevated and there were no observed releases to sediment when compared to background. As noted above, aluminum, arsenic, iron, and manganese exceeded a WQS in one or more surface water samples. Concentrations are not substantively elevated in the sediments, suggesting that surface water concentrations could be related to groundwater or seep infiltration to the creek rather than runoff from Site sources. The SI sampling event was conducted during periods of intense of rain and various storm drains were observed discharging into Fountain Creek.

Given the weather conditions at the time of sampling, observed water quality conditions may be related to stormwater runoff or Site sources.

Although there are no health-based standards for sediment, the potential for toxicity to benthic invertebrates can be evaluated using consensus-based probable-effect ecotoxicological benchmarks (MacDonald and others 2000). None of the sediment concentrations was above the effect benchmarks that assess the potential for impacts to benthic invertebrate communities in sediment.

The former Golden Cycle Mill and its tailings pile are adjacent to Fountain Creek. Much of the source areas bordering the creek are not covered with hard surfaces, such as asphalt or concrete, and are sparsely vegetated or bare. Surface water runoff containing hazardous substances associated with the Site sources (such as contaminated soil) could flow directly into Fountain Creek.

Although the Fountain Creek segment adjacent to and 15 miles downstream of the Site sources is listed for Domestic Water Supply, no drinking water intakes are located within 15-mile TDL on Fountain Creek. In addition, the Colorado WQS for dissolved iron and manganese are based on the EPA secondary drinking water regulations, which are related to unacceptable taste, color, and odor and are not health-based standards (CDPHE 2024). Results for these metals did not exceed aquatic life WQS. Impacts from iron and manganese are not likely to be a significant health concern related to this Site.

Although an observed release related to arsenic in surface water or sediment was not documented, this segment is Section 303(d)-listed as impaired for arsenic and manganese. The concentrations of arsenic in Fountain Creek adjacent to the tailings pile were above the human-health based WQS for Water and Fish with the most elevated concentration directly adjacent to the tailings pile. Documented fishing occurs within Fountain Creek along the TDL with the likely potential for human consumption of fish caught in the creek. Additionally, Fountain Creek may be potential habitat for several federally threatened or endangered species that may occur within the 15-mile TDL.

4.3 SOIL EXPOSURE AND SUBSURFACE INTRUSION PATHWAY

This section discusses the soil exposure component of the soil exposure and subsurface intrusion pathway, as well as targets associated with this pathway. Based on the elevated concentrations that were detected, arsenic and lead are the primary contaminants of concern for the soil exposure component.

4.3.1 *Soil Analytical Results*

In May 2022, EPA Removal Program instructed START to conduct soil sampling activities at the A-1 Mobile Village as part of the RA. Ninety-three decision units, including 79 individual residential properties

(including an office) and 14 commons areas (such as, unoccupied areas along roadways) were sampled using incremental sampling methodology (ISM) (Tetra Tech 2022, 2023a). In total, 206 ISM composite soil samples were collected as part of the 2022 RA, including 20 quality control samples.

During the May 2022 RA sampling activities, five-point composite soil samples were collected from two depth intervals at each sampled decision unit: 0 to 1 inch bgs and 1 to 6 inches bgs. Each composite sample was homogenized and placed into a resealable plastic bag that was labeled with the sample number. Samples were then dried, disaggregated, and sievedbefore delivery to the laboratory for analysis of Target Analyte List (TAL) metals using EPA Method 6020 (Tetra Tech 2023a).

The 2023 SI sampling event was designed to evaluate potential soil contamination in densely populated residential areas surrounding the former Golden Cycle Mill site, and to identify background levels of metals for the Site. Soil samples were collected from parks and roadways on property owned by the City of Colorado Springs or El Paso County. Samples were collected and composited in the same manner as the samples collected in the May 2022 RA but analyzed using the Contract Laboratory Program Statement of Work for Superfund Analytical Methods, SFAM01.1 (Tetra Tech 2024). In total, 136 composite soil samples were collected as part of the 2023 SI: 68 composite samples were collected for metals analysis (including 8 field duplicate samples), and 68 composite samples were collected for mercury analysis (including 8 field duplicate samples).

To evaluate soil contamination, background concentrations were derived from the soil data that were collected during the SI sampling event. A typical approach to background location selection was to identify an area that is upgradient or upwind of the Site sources, or that has not been impacted by the Site sources. This approach was complicated by the fact that there was no clear indication of a prevailing wind direction at the former Golden Cycle Mill site. The nearest available wind rose data are for the Colorado Springs Municipal Airport, approximately 7 miles east southeast of the former Golden Cycle Mill site. Those data indicate sporadic and directionally variable wind patterns for the area (Nimmo and others 2016). These observations suggest that historical aerial deposition from the smokestack, and possibly windblown tailings, could have been distributed in any direction from the smokestack to the nearby soils.

Because of the uncertainty in identifying areas outside the aerial influence of the Site, background locations for lead and arsenic (the primary contaminants of concern) were identified by plotting the SI sampling data and using a logarithmic fit and regression parameters to estimate the distance from the smokestack at which soils are beyond the influence of Site sources (Appendix A). Based on this analysis, background levels for arsenic and lead were calculated to be 15 and 85 mg/kg, respectively. The set of samples used to select background concentrations for lead and arsenic were also used to select background concentrations for all

other metals (see Appendix A). For comparison, background levels established for arsenic and lead in other studies and investigations in the region are presented in Exhibit 1.

Exhibit 1: Summary of Regional Background Concentrations for Arsenic and Lead

Source	Arsenic (mg/kg)	Lead (mg/kg)	Basis for Background
Tetra Tech, 2024 - Highway 24 Site Inspection Trip Report	15.0	85.0	See Appendix A
EPA, 2023 – Pueblo, Colorado Smelter background study; samples collected from 1 to 6 miles from source area	15.0	62.1	95% upper threshold limit (arsenic) and upper confidence limit (lead)
Folkes and others, 2001 – background for Globe Smelter in Denver	28.0	NR	Upper limit of background arsenic concentrations
	13.3	NR	Geometric mean of anthropogenic arsenic background concentrations in all surface soil samples collected more than 1 mile from smelter
	13.6	NR	Geometric mean of anthropogenic arsenic background concentrations in all surface soil samples collected off site of smelter
Tetra Tech, 2023a – Background samples collected at Sondermann Park for Garner Street PA	9.70	31.7	Average concentrations for arsenic and lead for depth interval 0 to 1 inch bgs were calculated from three background samples
Diawara and others, 2006 – Pueblo urban soil sampling event	12.6	87.7	Geometric mean (5 cm depth)
USGS, 2006 – Colorado statewide	5.00	21.7	Median (0 to 6 inches depth)
EPA, 2005a and 2005b – Western United States soils	7.50	20.0	Median - approximate

Notes:

%	Percent
bgs	Below ground surface
cm	Centimeter
EPA	U.S. Environmental Protection Agency
Hwy	Highway
mg/kg	Milligram per kilogram
NR	Not reported
PA	Preliminary assessment
USGS	U.S. Geological Survey

Tetra Tech used soil data from the May 2022 RA and the 2023 SI, and the approach described in Appendix A (Background Calculations for Lead and Arsenic), to help document observed contamination at the Site (that

is, establishing a significant increase of concentrations above background levels that is attributable to the Site). Tables 3 and 4 show a comparison of the May 2022 RA results to the background levels established for the 2023 SI. This comparison was done because the 2023 SI background levels include a more robust evaluation of background levels for the Site and the A-1 Mobile Village because of the greater number of background samples collected during the SI. For this reason, the 2023 calculated background concentrations are used for this SI instead of the 2022 background concentrations. Using the SI background levels, observed contamination was established for arsenic (at a maximum concentration of 140 mg/kg) in samples collected from 49 of the 79 the residential lots, and for 12 of the 14 sampling locations collected from the common areas within the A-1 Mobile Village during the 2022 RA. Observed contamination was established for lead (at a maximum concentration of 700 mg/kg) in 27 of the 79 residential lots, and for 3 of the 14 sampling locations collected from the common areas within the A-1 Mobile Village during the 2022 RA (Tetra Tech 2023a).

Several metals met observed contamination criteria based on the 2023 SI sampling data. Lead was detected at a concentration above the observed contamination criteria for soil samples collected from locations 13 and 35 during the 2023 SI (Figure 3, Tables 5 and 6). Sample location 13 (280 mg/kg in the 0- to 1-inch bgs depth interval) is located 0.30 mile north of the former Golden Cycle Mill smokestack, on the north side of Fountain Creek. Sample location 35 (640 mg/kg in the 0- to 1-inch bgs depth interval and 390 mg/kg in the 1- to 6-inch bgs depth interval) is located 0.64 mile east of the smokestack, on the north side of Fountain Creek. The sample collected from location 17 also had an arsenic concentration (260 mg/kg) significantly above the background level. The sample was collected in an area where mill tailings were purported to have been dumped. The sample had the visual appearance of fine-grained tailings. Tetra Tech was unable to establish how or when the tailings came to be present in the park. Because the presence of the tailings at sample location 17 is not considered to be caused by aerial deposition nor runoff from the former Golden Cycle Mill site, the elevated concentrations from this sample are not considered to be Site-related. Cadmium was also detected at concentrations significantly above the background level in samples collected from both sampling intervals at sample location 35.

The 2022 RA sampling data identified the presence of metals above RSLs. Soil samples collected from both depth intervals (0 to 1 inch bgs and 1 to 6 inches bgs) from all 93 decision units at the A-1 Mobile Village, including 77 mobile home locations, the office property, the vacant lot, and 14 common areas had arsenic concentrations greater than the EPA residential and industrial soil RSLs. According to 2024 EPA Office of Land and Emergency Management residential soil lead guidance, a screening level of 200 mg/kg should be used for residential soil lead and 100 mg/kg if an additional source of lead (such as lead water service lines, lead-based paint, or other sources) is identified. At the time of this reporting, it was not known whether an

additional source of lead is present at this Site, so both screening levels are presented for informational purposes. For the 0- to 1-inch bgs depth interval, samples from 29 locations had concentrations greater than the lead RSL of 100 mg/kg and 61 had concentrations greater than the lead RSL of 200 mg/kg. For the 1- to 6-inches bgs depth interval, samples from 63 locations had concentrations greater than the lead RSL of 100 mg/kg and samples from 39 locations had concentrations greater than 200 mg/kg. Analysis of soil samples collected at the A-1 Mobile Village also detected cadmium (maximum concentration of 23 mg/kg) in eight samples and manganese (maximum concentration of 4,800 mg/kg) in seven samples above the EPA residential soil RSLs with a carcinogenic target risk of 1E-06 and a total hazard quotient of 1.0 (Tables 3 and 4).

The 2023 SI sampling data also identified the presence of metals above RSLs. 52 samples collected during the SI (both intervals [0 to 1 inch bgs and 1 to 6 inches bgs] at 26 locations) had arsenic concentrations greater than both the EPA residential and industrial soil RSLs. Soil samples collected from locations 20 and 21 had arsenic concentrations above the residential soil RSL but below the industrial soil RSL for both sampling intervals. Eight samples (from locations 13, 23, 34, and 35 in the 0- to 1-inch bgs depth interval and from locations 23, 24, 29, and 25 in the 1- to 6-inches bgs depth interval) had lead concentrations greater than the residential soil RSL for residential properties with multiple sources of lead exposure of 100 mg/kg. Four of these samples (from locations 13 and 34 in the 0- to 1-inch bgs depth interval and location 35 in both depth intervals) had lead concentrations greater than the residential soil RSL of 200 mg/kg. The sample collected from location 35 also had a cadmium concentration in the 1- to 6-inch bgs depth interval greater than the residential RSL. Analytical results for soil samples collected during the 2023 SI are provided in Tables 5 through 7.

Screening-level benchmarks are used during the SI so that that the investigation process does not underestimate the potential for threats at a site. The EPA residential RSLs presented in this section are established using protective assumptions (for example, 30 to 70 years spent working or living on the property in direct contact with soil) that likely overestimate a person's exposure risk depending on the property use. These comparisons do not account for site-specific soil characteristics that can make the contamination less bioavailable and thus potentially less hazardous. The 2024 residential RSL for lead (200 mg/kg) is based on default exposure assumptions including a bioavailability of 60 percent. This default value is considered conservative in that soil lead bioavailability is typically lower. This exposure assumption is also relevant for arsenic, in that the arsenic RSL assumes 100 percent bioavailability. If lead and arsenic in soils are less bioavailable than these default values, screening levels would be higher than those used for comparison in this report. For this reason, RSLs are only used for screening and are not used to calculate potential exposure risks which are often estimated in a formal risk assessment. The results from site-specific in vitro

bioaccessibility for lead and arsenic soils data collected by EPA in 2022 at the A-1 Mobile Village indicate there is lower bioavailability than the standard bioavailability used in the default assumptions (Tetra Tech 2023a). The 2022 relative bioavailability results ranged from 7 to 18 percent for arsenic and 3 to 42 percent for lead in the A-1 Mobile Village. Although bioavailability samples were not collected during the SI, the relative bioavailability would likely also be lower than the default values because the soil conditions in the area surrounding the Site sources are likely to be similar.

The 2023 SI sampling data do not appear to indicate a widespread area of observed contamination associated with the Site sources beyond what has already been documented at the A-1 Mobile Village. Only two of the 31 SI sample locations were found to have observed contamination. Both samples were located across Fountain Creek less than a mile from the Site sources.

4.3.2 *Soil Exposure Component Targets*

In total, 206 ISM soil samples were collected at the A-1 Mobile Village, including 20 duplicate and triplicate samples, from 93 individual residential properties and common areas (Tetra Tech 2023a). One property was vacant (sample location GS-VACANT), although the samples collected from that property did not meet observed contamination criteria. Fifty-seven properties contained concentrations of one or more metal that met the observed contamination threshold. Population data were not obtained for properties sampled; therefore, the population for the properties was based on the El Paso County, Colorado 2022 U.S. Census data of 2.57 persons per household (U.S. Census Bureau 2023). As a result, an estimated 146.49 people (57 lots x 2.57 persons per household) are considered exposed to soil contamination attributable to the Site sources. All 49 of the residential lots in the A-1 Mobile Village with observed contamination for arsenic were above the residential and industrial RSLs. All 27 of the residential lots in the A-1 Mobile Village with observed contamination for lead were above both residential RSLs (of 100 and 200 mg/kg), and below the industrial RSL.

The 2023 SI samples meeting observed contamination criteria were collected from public rights of way (sample locations 13 and 35), and, therefore, no targets are associated with these locations. Other properties in the vicinity of the Site sources could be subject to observed contamination because the limited samples collected during this investigation were located on interspersed public lands. However, as previously discussed, the SI sampling data do not appear to indicate an area of widespread contamination associated with the Site sources.

4.3.3 *Subsurface Intrusion Component*

The subsurface intrusion component is not evaluated for this Site because the contaminants of concern

(metals) are not expected to represent a risk to targets via subsurface intrusion.

4.4 AIR MIGRATION PATHWAY

As previously discussed, the contamination sources at the Site consist of the now-capped tailings pile associated with the Golden Cycle Mill site and the historical emissions from the smokestack for the former mill. The mill is no longer active, so the contamination associated with the smokestack and any historical windblown contamination from the tailings pile are evaluated in the soil exposure component, as discussed above.

4.4.1 *Air Migration Pathway Targets*

The population that resides within a 4-mile radius of the Site sources is described in Exhibit 2 below (U.S. Census Bureau 2020):

Exhibit 2: Populations Within a 4-mile Radius of the Sources

Radial Distance from Site (miles)	Population (number of persons)
0 to 0.25	534
>0.25 to 0.50	2,192
>0.50 to 1.0	6,466
>1.0 to 2.0	29,680
>2.0 to 3.0	35,165
>3.0 to 4.0	45,507

Notes:
> Greater than

Several federally threatened or endangered species such as Preble's meadow jumping mouse (*Zapus hudsonius preblei*), Mexican spotted owl (*Strix occidentalis lucida*), and eastern black rail (*Laterallus jamaicensis*) are known to or potentially may occur within a 4-mile radius of the Site (USFWS 2024). The wetland acreage within a 4-mile radius of the Site sources is provided in Exhibit 3 below (USFWS 2022b):

Exhibit 3: Wetlands Within a 4-mile Radius of the Sources

Radial Distance from Site (miles)	Wetland Area (acres)
0 to 0.25	0
>0.25 to 0.50	0
>0.50 to 1.0	9.7
>1.0 to 2.0	3.1
>2.0 to 3.0	23.3
>3.0 to 4.0	32.2

Notes:
> Greater than

Air samples have not been collected at the Site; however, dust samples collected from the interiors of 12 mobile homes in the A-1 Mobile Village in 1995 showed maximum concentrations of arsenic of 65.9 mg/kg, and lead of 432 mg/kg. Ongoing aerial deposition from the contamination sources at the Site has largely been reduced now that the tailings pile has been covered with topsoil or capped with hardscape.

5.0 SUMMARY AND CONCLUSIONS

The objectives of this SI were to evaluate whether historical contamination from the tailings pile and smokestack associated with the former Golden Cycle Mill site extends beyond the A-1 Mobile Village to nearby surrounding neighborhood soils and surface water bodies (via air dispersion such as windblown soil or dust, or other runoff). To obtain a more complete understanding of the spatial distribution of contamination associated with the Site sources, soil samples were collected at distances up to 3.1 miles from the documented source areas. Three collocated surface water and sediment samples were also collected from along Fountain Creek to assess whether the stream is impacted by contamination associated with the Site sources. In addition to reviewing existing information and evaluating current conditions, this SI report also considers analytical results from soil samples collected as part of the 1994 EPA SI for Gold Hill Tailings (Morrison Knudsen 1994) and the recent EPA RA sampling event conducted by START in May 2022 (Tetra Tech 2022, 2023a).

The Site is located adjacent to the former Golden Cycle Mill and tailings pile. Soil samples collected from the A-1 Mobile Village in the May 2022 RA identified areas of lead and arsenic concentrations exceeding RSLs (Tetra Tech 2022, 2023a). Six to eight inches of soil were placed on the tailings pile in 1950 and a cap was installed in the early 2000s as part of a VCUP agreement with the State of Colorado. Before the soil coverage in 1950, contaminated soil and tailings from the pile likely migrated via wind and surface water runoff onto the property that later became A-1 Mobile Village.

The SI sampling focused on openly accessed public parks and city properties that are interspersed with private residential properties within a 3-mile radius from the Site sources. Sample locations were intended to approximate residential soil conditions and to help refine the investigation boundary for more detailed residential sampling, if warranted. In June 2023, START personnel, accompanied by EPA Site Assessment personnel, collected the following samples:

- 34 surface soil samples (collected from 0 to 1 inch bgs),
- 34 subsurface soil samples (collected from 1 to 6 inches bgs), and
- 3 collocated surface water and sediment samples.

Groundwater samples to evaluate whether a release to groundwater attributable to the Site sources has occurred were not collected as part of this SI. The groundwater migration pathway is not considered a significant pathway of concern at the Site based on the minimal number of targets associated with the groundwater migration pathway and the distance of the groundwater supply wells—between 3 and 4 miles—from the Site sources.

Surface water is a potential exposure pathway of concern based on the proximity of the Site sources to Fountain Creek and the potential for contaminated runoff to enter the creek. Results from this investigation showed concentrations of aluminum, arsenic, iron, and manganese exceeded one or more WQS. Of the metals that exceeded a WQS, only manganese met the observed release criterion (that is, three times background) and may be partially attributed to the Site sources. Aluminum and iron were found to be most elevated in the location that is upstream of the Site. Although arsenic, iron, and manganese exceed WQS for Domestic Water Supply, no drinking water intakes are within the 15-mile TDL, thus, there is a low likelihood of exposure. Both arsenic and aluminum exceed WQS for aquatic life; however, the sampling did not establish a significant increase above background levels for these metals, and, therefore, no observed release of arsenic or aluminum has been established for the surface water migration pathway. This segment of Fountain Creek is listed as an impaired stream under Section 303(d) of the Clean Water Act for arsenic and manganese. The concentrations of arsenic at the Site were above the human-health based WQS for Water and Fish with the most elevated concentration directly adjacent to the tailings pile. Documented fishing occurs within Fountain Creek along the TDL, with the likely potential for human consumption of fish caught in the creek. Additionally, Fountain Creek may be potential habitat for several federally threatened or endangered species that may occur within the 15-mile TDL.

Soil is the primary exposure pathway of concern at the Site. Soil at the A-1 Mobile Village was not sampled during the 2023 SI but was evaluated during the 2022 PA and RA (Tetra Tech 2022, 2023a). The 2022 PA and RA documented observed contamination for at least one metal analyte from samples collected at all of the 77 occupied lots. Sample data from the 2022 RA were compared to the background levels calculated during this SI. Based on this comparison, observed contamination was established in samples from 57 residential lots in the A-1 Mobile Village based on arsenic concentrations. Samples from 28 of those lots also have observed contamination established based on lead concentrations. All samples collected, including from common areas, were above the residential and industrial soil RSLs for arsenic. Samples from 75 sample locations in the A-1 Mobile Village, including common areas, had lead concentrations greater than the lead RSL of 100 mg/kg, and 47 had concentrations greater than 200 mg/kg.

The soil results from 2023 documented observed contamination from samples collected at two locations in addition to what has been documented at the A-1 Mobile Village (Tetra Tech 2022, 2023a). Both samples were located on the north side of Fountain Creek, less than a mile from the former Golden Cycle Mill smokestack. Based on these results, there does not appear to be a widespread area of observed contamination caused by aerial deposition from the sources at the Site. However, follow-up soil sampling should be considered on the adjacent residential properties around the two observed releases to verify heavy metals concentrations. All samples collected in 2023 had arsenic concentrations greater than both the EPA

residential and industrial soil RSLs. Samples collected from seven locations had lead concentrations greater than the residential soil RSL of 100 mg/kg for residential properties with multiple sources of lead exposure, and samples from three of these locations had concentrations greater than the residential soil RSL of 200 mg/kg.

Air samples have not been collected at the site; however, dust samples collected from the interiors of several A-1 Mobile Village homes in 1995 showed maximum concentrations of arsenic of 65.9 mg/kg, and lead of 432 mg/kg. Ongoing aerial deposition from the contamination sources at the Site has largely been reduced now that the tailings pile has been covered with topsoil or capped with hardscape, and the mill is no longer active. For these reasons, legacy airborne contamination is likely to have been addressed by the results found during soil sampling.

6.0 REFERENCES

Arkansas-Fountain Coalition. 2019. Urban Rivers Evaluation, Fountain Creek Watershed: EPA Nine-Element Watershed Plan for the Management of *Escherichia coli*. Prepared for the Colorado Department of Public Health and Environment, Water Quality Control Division. Accessed March 17, 2024, from https://www.fountain-crk.org/files/102c84f46/E_Colo_WatershedPlan_FINAL.pdf.

Casey Resources, Inc. 2006. Letter Presenting Proposed Modifications to the Engineered Cap. April 17.

Colorado Department of Public Health and Environment (CDPHE). 2023a. "Water Quality Control Commission. Code of Colorado Regulations, 5 CCR 1002-32. Regulation No. 32-Classifications and Numeric Standards for Arkansas River Basin." December.

CDPHE. 2023b. Water Quality Control Commission. Code of Colorado Regulations, 5 CCR 1002-93. Regulation No. 93-Colorado's Section 303(d) List of Impaired Waters and Monitoring and Evaluation List. September.

CDPHE. 2024. "Water Quality Control Commission. Code of Colorado Regulations, 5 CCR 1002-11. Regulation No. 11-Colorado Primary Drinking Water Regulations." Effective January 14.

Colorado Division of Water Resources (CO DWR). 2024a. Map Viewer. Accessed May 27, 2024 from: https://maps.dnrgis.state.co.us/dwr/Index.html?viewer=mapviewer.

CO DWR. 2024b. FOU8THCO – Fountain Creek at 8th Street. Accessed May 27, 2024 from: https://dwr.state.co.us/Tools/Stations/FOU8THCO?params=DISCHRG

Colorado Geological Survey (CGS). 2000. "Geologic Map of the Colorado Springs Quadrangle, El Paso County, Colorado." Open-File Report 00-3.

Colorado Springs Utilities. 2023. 2023 Drinking Water Quality Report. Public Water System ID No. CO0121150. Available at: https://www.csu.org/Documents/2023WaterQualityReport.pdf.

Colorado Springs Utilities. 2024. Water Service Boundary – January 2024 Map. Accessed March 11, 2024, from https://www.csu.org/Documents/WaterServiceBoundaryMap.pdf?csf=1&e=A0Cpyf.

Dames and Moore. 1999a. "Draft Limited Phase II Subsurface Investigation 212-Acre Parcel, South of U.S. 24 and East of 21st Street, Colorado Springs, Colorado." February 18.

Dames and Moore. 1999b. "Preliminary Geotechnical Investigation, Gold Hill Mesa Property, Colorado Springs." May 17.

Diawara, M.M., J.S. Litt, D. Unis, N. Alfonso, L. Martinez, J.G. Crock, D.B. Smith, and J. Carsella. 2006 "Arsenic, cadmium, lead, and mercury in surface soils, Pueblo, Colorado: Implications for population health risk." *Environmental Geochemistry and Health*, 28, 297–315.

Ecology and Environment, Inc. 1995. "Sampling Activities and Analytical Results Report, Gold Hill Tailings, Colorado Springs, Colorado." U.S. Environmental Protection Agency Technical Direction Document No. T08-9501-012. April 14.

El Paso County, Colorado. 2024a. Property Tax Map. Accessed March 11, 2024, from https://prev-property.spatialest.com/co/elpaso/#/property/7413200013.

El Paso County, Colorado. 2024b. Sanitation and Water District. Garden Valley SWD Map. Accessed March 11, 2024, from https://epc-assets.elpasoco.com/wp-content/uploads/sites/4/Tax-Maps/SWD/GARDENVALLEYSWD-Tax-Map.pdf.

ENSR Consulting and Engineering (ENSR). 1988. "Results of the Environmental Liability Assessment of Gold Hill Mesa (Formerly Golden Cycle Mill) Colorado Springs, Colorado." November.

Environmental Data Resources (EDR), Inc. 2022. EDR Aerial Photo Decade Package. Inquiry #6806089.11. January 4.

Fishbrain. 2022. Fountain Creek, El Paso County, Colorado. Accessed September15, 2022, from https://fishbrain.com/explore?fib-ex-lat=38.77730007760462&fib-ex-lng=-104.72651421455191&fib-ex-z=11.652160055460254&fib-ex-s=.

Folkes, D.J., T.E. Kuehster, and R.A. Litle. 2001. "Contributions of Pesticide Use to Urban Background Concentrations of Arsenic in Denver, Colorado, U.S.A." *Environmental Forensics*, 2(2), 127-139.

Google. 2022. Google Earth. From https://earth.google.com/web/

MacDonald, D.D., C.G. Ingersoll, and T.A. Berger. 2000. "Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems." *Archives of Environmental Contamination and Toxicology*, 39, 20-31.

Manitou Springs. 2024. Water and Sewer Division. Accessed March 21, 2024 from https://www.manitouspringsgov.com/192/Water-Division.

Morrison Knudsen Corporation (Morrison Knudsen). 1993. "Preliminary Assessment, Gold Hill Tailings Site, EPA ID# COD983801275." EPA Contract No. 68-W9-0025. December 21.

Morrison Knudsen. 1994. "Analytical Results Report, Site Inspection, Gold Hill Tailings Site, EPA ID# COD983801275." EPA Contract No. 68-W9-0025. October 14.

Nimmo, D.R., S.J. Herrmann, J.S. Carsella, C.M. McGarvy, H.P. Foutz, L.M. Herrmann-Hoesing, J.M. Gregorich, J.A. Turner, and B.D. Vanden Heuvel. 2016. "Mercury and Selenium in Fish of Fountain Creek, Colorado (USA): Possible sources and implications." *SpringerPlus*, 5(437).

Spectrum Services (Spectrum). 2000a. "Voluntary Cleanup Application for Gold Hill Mesa Property, Colorado Springs, Colorado." Prepared for ERSH, LLC, Submitted to CDPHE. June 6.

Spectrum. 2000b. "Voluntary Cleanup Application for Gold Hill Mesa Property - Central and Southern Portions, Colorado Springs, Colorado." Prepared for ERSH, LLC, Submitted to CDPHE. August 30.

Spectrum. 2002. "Voluntary Cleanup Application, Gold Hill Mesa Property, Colorado Springs, Colorado." Prepared for ERSH, LLC, Submitted to CDPHE. June 12.

Tetra Tech, Inc. (Tetra Tech). 2022. "Final Preliminary Assessment Report. Highway 24 Mill Site, Colorado Springs, El Paso County, Colorado. U.S. EPA ID No. CON000821192." November 28.

Tetra Tech. 2023a. "Garner Street Soils Letter Report – Final (Revision 2), Colorado Springs, El Paso County, Colorado. EPA Contract No. 68HE0820D001, Technical Direction No. 2071-2112-05, DTN 0611c." March 26.

Tetra Tech. 2023b. Superfund Technical Assessment and Response Team V Contract, EPA Region 8 Site

Assessment Quality Assurance Project Plan (QAPP). Revision 3. March.

Tetra Tech. 2023c. "EPA Region 8 Site Assessment Sampling and Analysis Plan, Highway 24 Mill Site Inspection, U.S. EPA ID No. CON000821192, Colorado Springs, Colorado." Approved by EPA on June 7.

Tetra Tech. 2024. "Highway 24 Mill Site Inspection Trip Report, Colorado Springs, El Paso County, Colorado." EPA Contract No. 68HE0820D001, Technical Direction No. 2361-2312-04, DTN 1246a. March 29.

URS Operating Services. Inc (URS). 1996. "Draft Field Sampling Plan for Expanded Site Investigation, Gold Hill Tailings, Colorado Springs, Colorado, TDD No. 9609-0012." November 11.

U.S. Census Bureau. 2020. Topologically Integrated Geographic Encoding and Referencing System (TIGER). Accessed September 14, 2023, from https://www.epa.gov/ground-water-and-drinking-water/safe-drinking-water-information-system-sdwis-federal-reporting.

U.S. Census Bureau. 2023. El Paso County, Colorado. QuickFacts. Accessed March 16, 2022, from https://www.census.gov/quickfacts/elpasocountycolorado.

U.S. Department of Agriculture National Resources Conservation Service. 2022. Soil Survey Map of El Paso County, Colorado, Garner Street Site. Web Soil Survey. Accessed September 12, 2022, from https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.

U.S. Environmental Protection Agency (EPA). 1991. Guidance for Performing Preliminary Assessments Under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). Office of Emergency and Remedial Response. EPA/540/G-91/013. September.

EPA. 1992. Guidance for Performing Site Inspections Under CERCLA, Interim Final. Office of Emergency and Remedial Response. EPA/540-R-92-021. September.

EPA. 2005a. Ecological Soil Screening Levels for Arsenic, Interim Final. OSWER Directive 9285.7-62. March.

EPA. 2005b. Ecological Soil Screening Levels for Lead, Interim Final. OSWER Directive 9285.7-70. March.

EPA. 2017. Hazard Ranking System, Final Rule, 40 Code of Federal Regulations Part 300. Federal Register Volume 55, No. 241. December 14. https://www.govinfo.gov/content/pkg/FR-2017-01-09/pdf/2016-30640.pdf

EPA. 2022. Regional Screening Levels (RSLs) – Generic Tables. May. https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables

EPA. 2024a. Superfund Site Information - Online Search, Highway 24 Mill Site (EPA ID: CON000821192). Accessed March 27. https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0821192

EPA. 2024b. Updated Residential Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. January. Office of Land and Emergency Management. https://www.epa.gov/system/files/documents/2024-01/olem-residential-lead-soil-guidance-2024_signed_508.pdf

EPA. 2024c. Safe Drinking Water Information System (SDWIS) - Online Search. Accessed March 19, 2024, from https://enviro.epa.gov/envirofacts/sdwis/search/form?state_abbr=CO

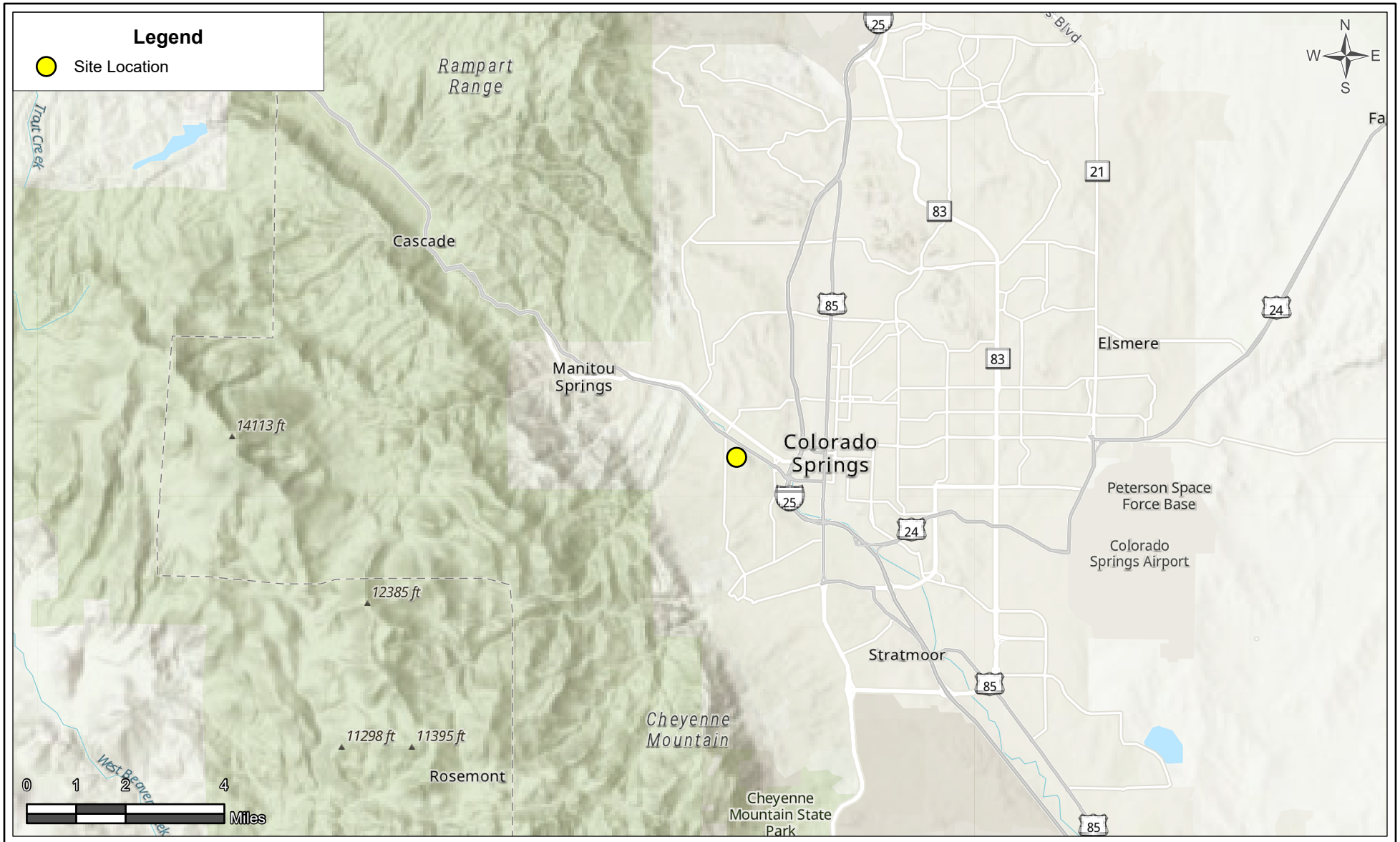
U.S. Fish and Wildlife Service (USFWS). 2022a. Information for Planning and Consultation (IPaC) Resource List, El Paso County, Colorado_15-Mile Downstream. Accessed September 14, 2022, from https://ipac.ecosphere.fws.gov/location/index

USFWS. 2022b. National Wetlands Inventory. Accessed September 2022, from https://www.fws.gov/program/national-wetlands-inventory/download-state-wetlands-data

USFWS. 2024. IPaC Resource List, El Paso County, Colorado_4-Mile Radius. Accessed May 27, 2024, from https://ipac.ecosphere.fws.gov/location/index

United States Geological Survey (USGS). 2006. Geochemical Data for Colorado Soils: Results from the 2006 State-Scale Geochemical Survey.

FIGURES



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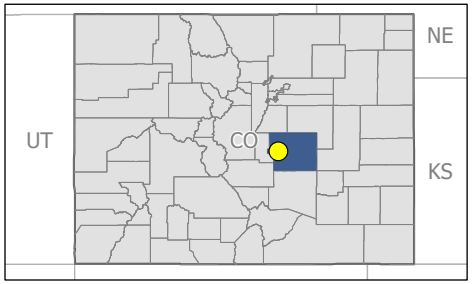

United States Environmental Protection Agency

Region 8 START V
TD: 2361-2312-04

TETRA TECH

Analyst: S. DeNeice
Date: 3/26/2024

Highway 24 Mill Site Inspection

Colorado Springs, El Paso County, Colorado

Figure 1
Site Location

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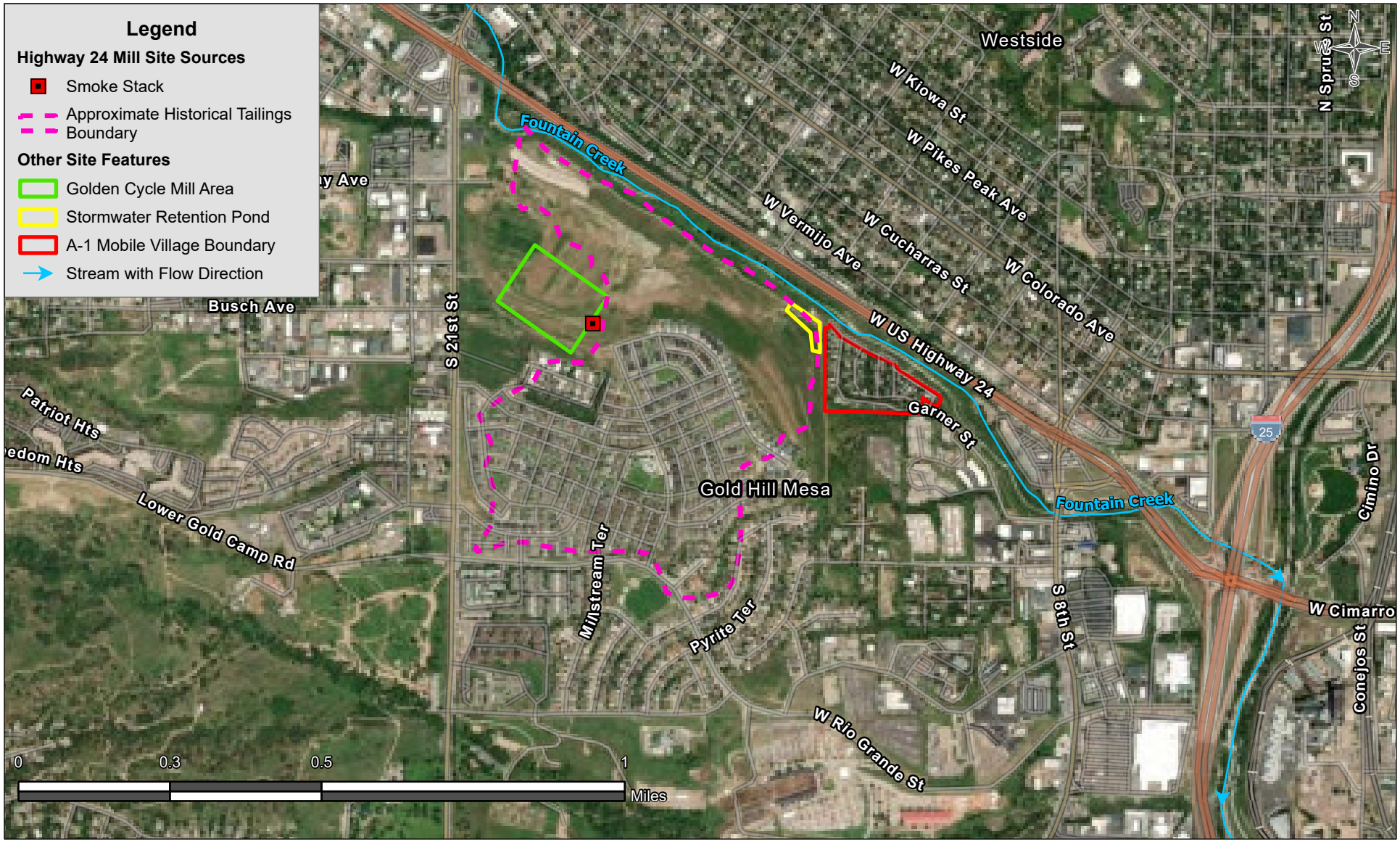

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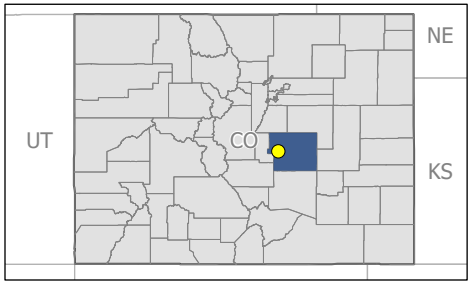
Spatial Reference: WGS 1984 Web Mercator Auxiliary Sphere Coordinate System



United States Environmental Protection Agency

Region 8 START V
TD: 2361-2312-04

TETRA TECH

Analyst: M. Caldwell
Date: 6/6/2024

Highway 24 Mill Site Inspection

Colorado Springs, El Paso County, Colorado

Figure 2
Site Features

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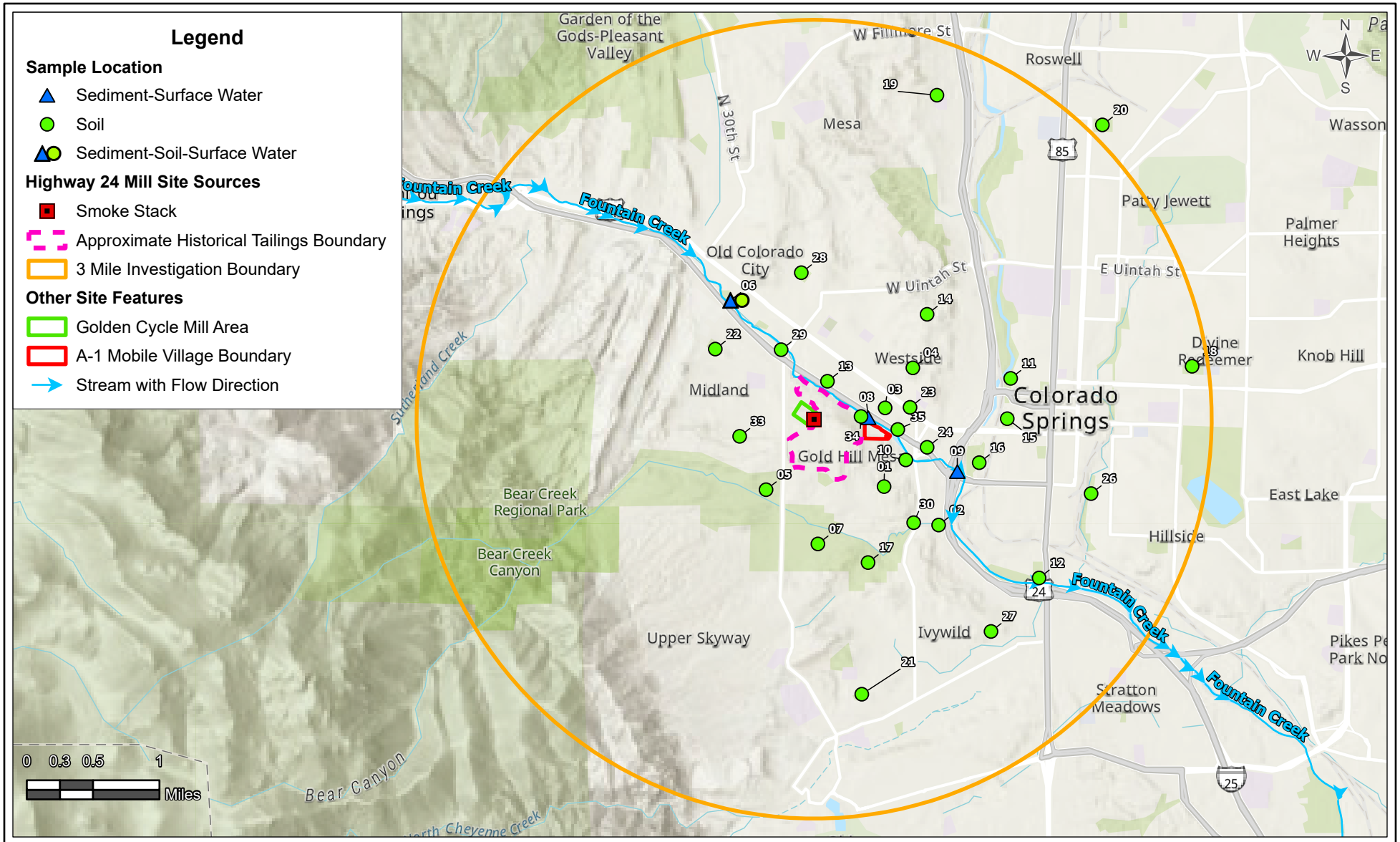

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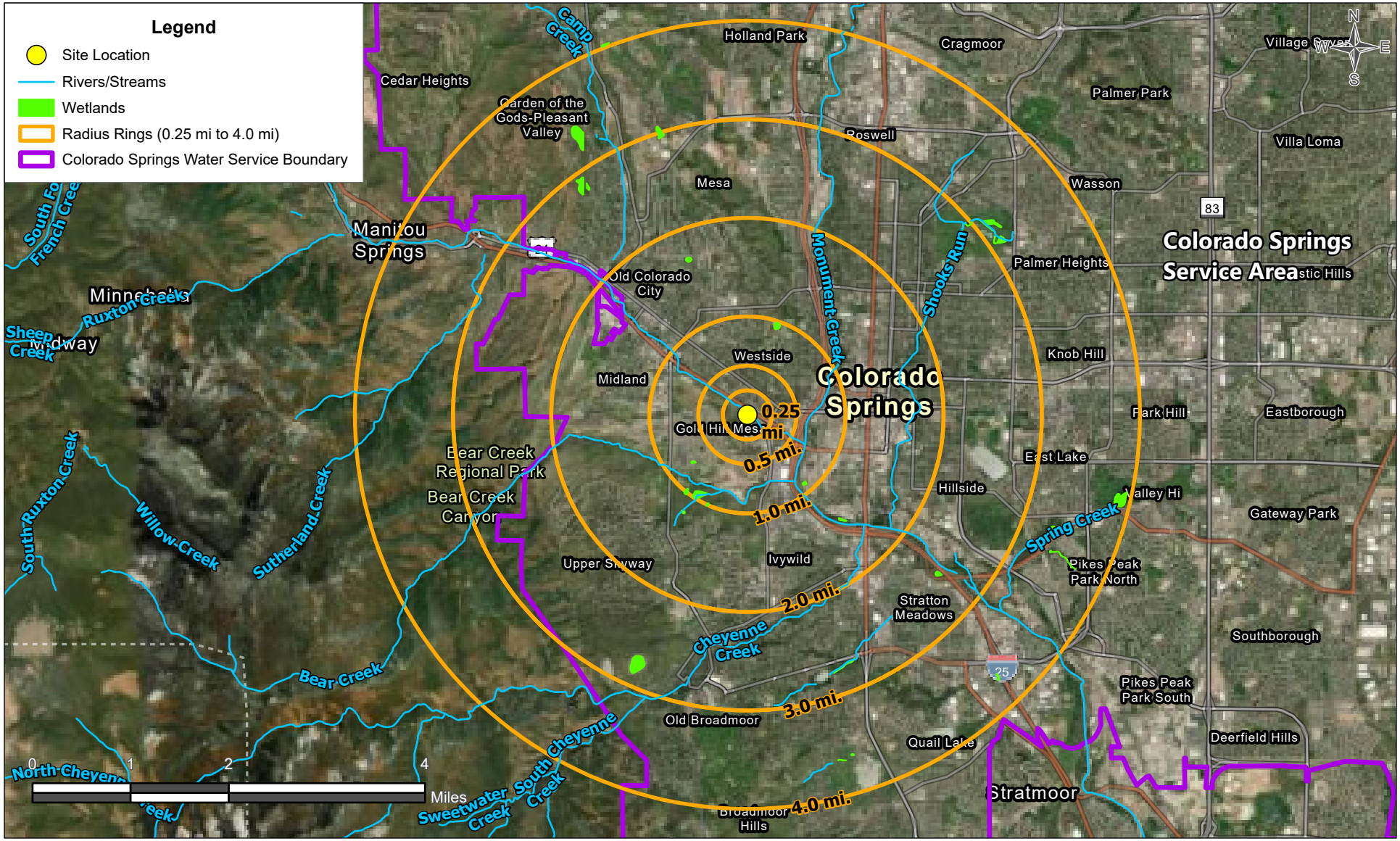

Notes:

Source:
Background: ESRI World Imagery
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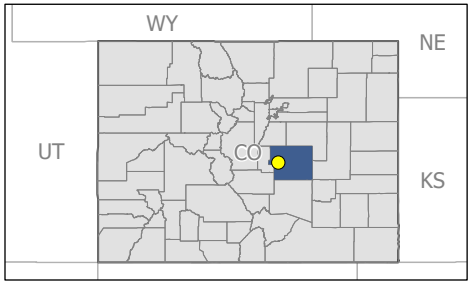
Wetlands: US Fish and Wildlife National Wetlands Inventory (NWI)
Spatial Reference: WGS 1984 Web Mercator Auxiliary Sphere Coordinate System



United States Environmental Protection Agency

Region 8 START V
TD: 2361-2312-04

TETRA TECH

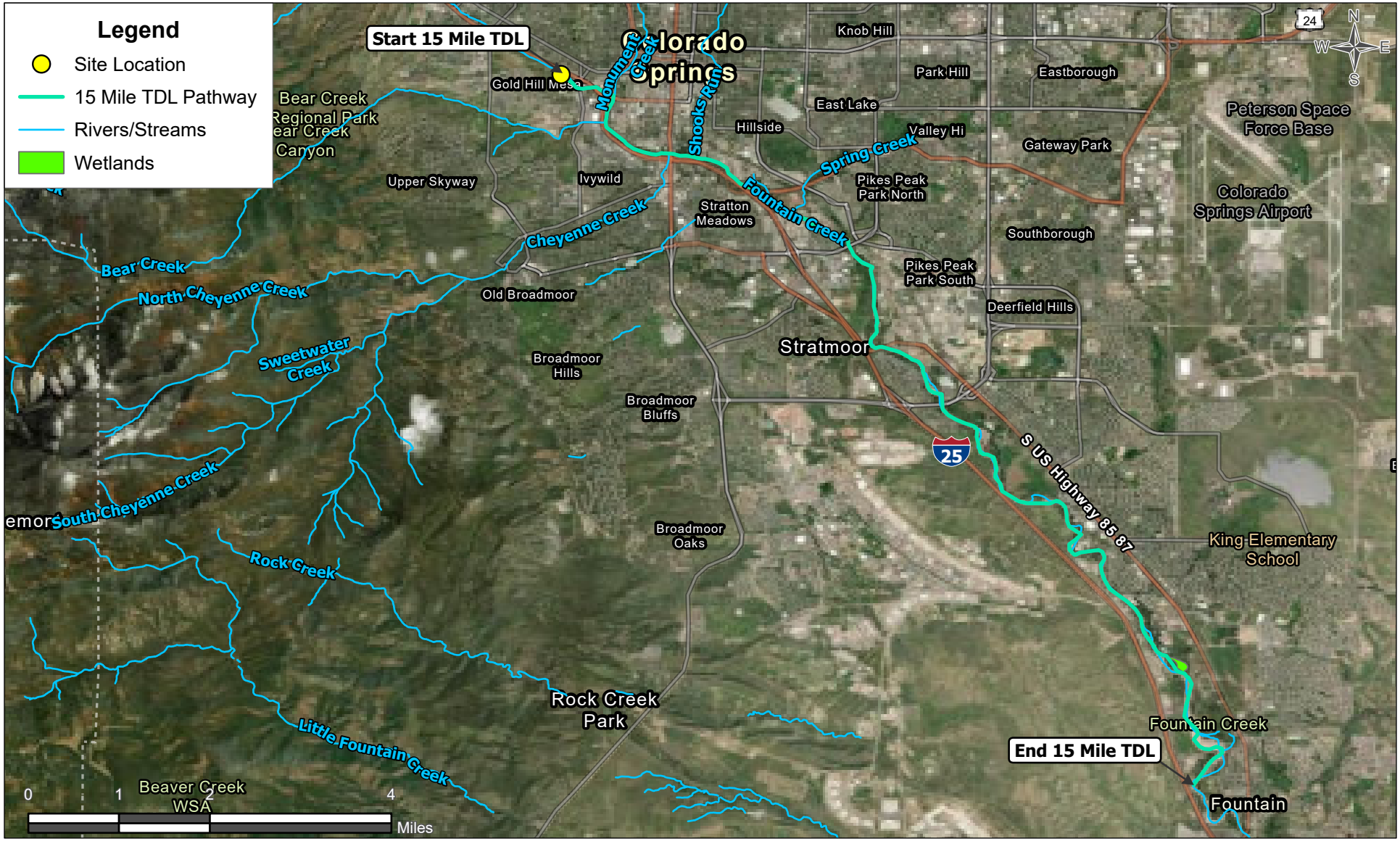
Analyst: S. DeNeice
Date: 3/26/2024

Highway 24 Mill Site Inspection

Colorado Springs, El Paso County Colorado

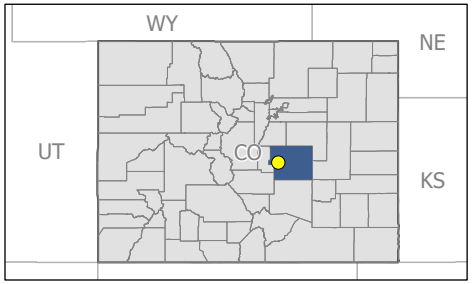
Figure 4
4-Mile Radius Target Distance Limit

Path: V:\R08_STARTV\Hwy24MillSite\ArcGIS_Pro\Hwy24MillSite.aprx/4 Mile Radius Layout



Notes:
TDL - Target Distance Limit

Source:
Background: ESRI World Imagery
Rivers/Streams: USGS National Hydrography Data Set (NHD)
Wetlands: US Fish and Wildlife National Wetlands Inventory (NWI)
Spatial Reference: GCS WGS 1984
Coordinate System



United States Environmental Protection Agency

Region 8 START V
TD: 2361-2312-04

TETRA TECH

Analyst: S. DeNeice
Date: 3/26/2024

Highway 24 Mill Site Inspection

Colorado Springs, El Paso County Colorado

Figure 5
15 Mile Downstream Target Distance Limit

Path: V:\R08_STARTV\Hwy24MillSite\GarnerStreetSoil_Old\GarnerStreetSoilsSiteRS\ArcPro\GarnerStQuickscore\GarnerStreetQuickscore\GarnerStreetQuickscore.aprx

TABLES

Table 1
Analytical Results - Metals in Surface Water Samples

Sample Location ID	Field Sample ID	CLP Sample ID	Matrix	Sample Date	Analyte	Hardness[b]	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium[d]	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Vanadium	Zinc
					Units	(mg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Agriculture[a](1)						--	--	--	100	--	100	10	--	100	200	200	--	100	--	200	--	200	--	20	--	--	--	--	2,000
Domestic Water Supply[a](1)						--	--	6	0.02	490	4	5	--	50	--	1,000	300[1]	50	--	50[1]	2.0	100	--	50	100	--	0.5	--	5,000
Aquatic Life - Acute[a](1)					TRM	--	CALC	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
					DM	--	--		340	--	--	CALC	--	16	--	CALC	--	CALC	--	CALC	--	CALC	--	18.4	CALC	--	--	--	CALC
Aquatic Life - Chronic[a](1)					TRM	--	CALC	--	--	--	--	--	--	--	--	--	1,000[2]	--	--	--	0.01[2]	--	--	--	--	--	--	--	--
					DM		--	--	150	--	--	CALC	--	11	--	CALC	--	CALC	--	CALC	--	CALC	--	4.6	CALC	--	15	--	CALC
06[c]	HWY-SW-06[c]	MH0F91	SW	6/13/2023	TRM	49	**1,600**	2.0 U	**0.84 J**	66	1.0 U	1.0 U	25,000	1.7 J	0.45 J	2.2	**2,100**	2.6	5,100	110	0.20 U	1.3	2,800	5.0 U	1.0 U	16,000	1.0 U	2.7 J	33
06[c]		MH0F96			DM	--	38 J+	2.0 U	0.19 J	28	1.0 U	1.0 U	15,000	4.2	0.23 J	2.0 U	**360**	1.0 U	2,900	12	0.20 U	1.7	1,700	5.0 U	1.0 U	11,000	1.0 U	0.44 J	17
08	HWY-SW-08	MH0F93	SW	6/13/2023	TRM	110	**970 J**	2.0 U	**0.96 J**	58	1.0 U	1.0 U	29,000	1.3 J	0.68 J	1.7 J	**1,400 J**	2.2 J+	7,200	120	0.20 U	1.2	3,000	5.0 U	1.0 U	20,000	1.0 U	1.6 J	54
08		MH0F97			DM	--	46 J+	2.0 U	0.42 J	48	1.0 U	1.0 U	31,000	1.9 J	0.55 J	0.97 J	**900 J**	1.0 U	7,300	60	0.20 U	0.87 J	2,900	5.0 U	1.0 U	21,000	1.0 U	0.36 J	43
08	HWY-SW-08-DUP	MH0F92	SW	6/13/2023	TRM	110	320 J	2.0 U	**0.81 J**	55	1.0 U	1.0 U	30,000	0.41 J	0.58 J	1.4 J	650 J	1.6 J+	7,200	120	0.20 U	0.62 J	2,700	5.0 U	1.0 U	20,000	1.0 U	0.81 J	46
08		MH0F98			DM	--	51 J+	2.0 U	0.52 J	48	1.0 U	1.0 U	31,000	2.4	0.71 J	1.1 J	190 J	1.0 U	7,200	59	0.20 U	1.4	2,800	5.0 U	1.0 U	21,000	1.0 U	0.50 J	46
09	HWY-SW-09	MH0F94	SW	6/13/2023	TRM	110	310	2.0 U	**0.77 J**	56	1.0 U	1.0 U	32,000	0.51 J	0.57 J	1.2 J	650	1.7 J+	8,100	120	0.20 U	0.71 J	2,800	5.0 U	1.0 U	21,000	1.0 U	0.75 J	49
09		MH0F99			DM	--	44 J+	2.0 U	0.39 J	46	1.0 U	1.0 U	32,000	0.48 J	0.58 J	2.0 U	110 J	1.0 U	7,900	53	0.20 U	0.64 J	2,700	5.0 U	1.0 U	21,000	1.0 U	0.34 J	33
--	HWY-SS-EB-1	MH0F89	EB	6/13/2023	TRM	--	24	2.0 U	1.0 U	0.81 J	1.0 U	1.0 U	500 U	2.7	0.08 J	2.0 U	200 U	1.0 U	500 U	2.9	0.20 U	3.4	500 U	5.0 U	1.0 U	500 U	1.0 U	5.0 U	17 U
--	HWY-SS-EB-2	MH0F90	EB	6/13/2023	TRM	--	9.7 J	2.0 U	1.0 U	10 U	1.0 U	1.0 U	500 U	2.0 U	1.0 U	2.0 U	200 U	1.0 U	500 U	0.92 J	0.20 U	1.0	500 U	5.0 U	1.0 U	500 U	1.0 U	5.0 U	14
--	HWY-SW-FB-1	MH0FA0	FB	6/13/2023	TRM	3.3	20 U	2.0 U	1.0 U	10 U	1.0 U	1.0 U	500 U	2.0 U	1.0 U	2.0 U	200 U	1.0 U	500 U	1.0 U	0.20 U	1.0 U	500 U	5.0 U	1.0 U	500 U	1.0 U	5.0 U	5.0 U

Notes:

--	Not established or not applicable
(1)	Screening levels apply to DM unless otherwise stated
(2)	Screening level applies to TRM only
(a)	Reglation No. 32 - Classifications and Numeric Standards for Arkansas River Basin, Colorado Department of Public Health and Environment (CDPHE)
(b)	Laboratory calculated sample-specific harness value used to determine analyte-specific screening levels
(c)	Upstream sample location used as background concentrations for the purpose of documenting a significant increase under Hazard Ranking System rules
(d)	Per CDPHE Regulation No. 31, the screening value for Chromium VI was used. Unless the stable forms of chromium in a water body have been characterized and shown not to be predominantly chromium VI, data reported as the measurement of all valence states of chromium combined should be treated as chromium VI. In addition, in no case can the sum of the concentrations of chromium III and chromium VI or data reported as the measurement of all valence states of chromium combined exceed the water supply standards of 50 µg/L chromium in those waters classified for domestic water use
µg/L	Micrograms per liter
CALC	Calculated Sample-Specific Water Quality Standard (CO Regulation No. 31), see Table 8 in Appendix B
CLP	US EPA Superfund Contract Laboratory Program
DM	Dissolved Metals
DUP	Field duplicate
EB	Equipment blank
FB	Field blank
J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high
mg/L	Milligrams per liter
SW	Surface Water
TRM	Total Recoverable Metals
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit)
	Indicates concentration that exceeds three times background concentration, documenting a significant increase
BOLD	Exceeds one or more Water Quality Standard or benchmark

Table 2
Analytical Results - Metals in Sediment Samples

Sample Location ID	Field Sample ID	CLP Sample ID	Matrix	Sample Date	Analyte	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
					Units	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Consensus-Based PEC[a]						--	33	--	--	4.98	111	--	149	128	--	1.06	48.6	--	--	--	--	459
06[b]	HWY-SD-06[b]	MH0F05	SD	6/13/2023	TRM	0.72 U	2.9	65	0.58	0.094 J	7.2	1.8	4.5	9.5	240	-- R	3.1	2.4 U	0.042 J	0.36 U	6.9	39
08	HWY-SD-08	MH0F01	SD	6/13/2023	TRM	0.78 U	3.5	70	0.59 J+	0.13 J	7.2	1.8	4.7	11	220	-- R	3.2	2.5 U	0.06 J	0.39 U	7.3	53
08	HWY-SD-08-DUP	MH0F80	SD	6/13/2023	TRM	0.68 U	3.3	70	0.62	0.14 J	6.1	1.7	7.4	12	230	-- R	3.5	2.0 U	0.056 J	0.33 U	7.1	55
09	HWY-SD-09	MH0F06	SD	6/13/2023	TRM	1.1 U	1.1	18	0.24	0.53 U	0.8 J	0.53	1.3 J+	2.1	150	-- R	0.68	2.6 U	0.53 U	0.53 U	1.7 J	24

Notes:

-- Not established or not applicable

[a] "Prediction of Sediment Toxicity Using Consensus-based Freshwater Sediment Quality Guidelines," United States Geological Survey (USGS) EPA 905/R-00/007 June 2000.

[b] Upstream sample location used as background concentrations for the purpose of documenting a significant increase under Hazard Ranking System rules

CLP U.S. EPA Contract Laboratory Program

DUP Field Duplicate

J The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample

J+ The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high

mg/kg Milligrams per kilogram

PEC Probable Effect Concentration

R The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.

SD Sediment

TRM Total Recoverable Metals

U The analyte was analyzed for, but was not detected at or above the associated value (reporting limit)

Table 3
2022 Garner Street Soils Analytical Results - Metals in Soils (0-1 in. bgs)

Analyte			Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Vanadium	Zinc
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
CAS No.			7429-90-5	7440-36-0	7440-38-2	7440-39-3	7440-41-7	7440-43-9	7440-70-2	7440-47-3	7440-48-4	7440-50-8	7439-89-6	7439-92-1	7439-95-4	7439-96-5	7440-02-0	7440-09-7	7782-49-2	7440-22-4	7440-23-5	7440-28-0	7440-62-2	7440-66-6
Residential Screening Level (mg/kg)			77,000[a]	31[a]	0.68[a]	15,000[a]	160[a]	7.1[a]	--	--	23[a]	3,100[a]	55,000[a]	100/200[c]	--	1,800[a]	1,400[a]	--	390[a]	390[a]	--	0.78[a]	390[a]	23,000[a]
Industrial Screening Level (mg/kg)			1,100,000[b]	470[b]	3[b]	220,000[b]	2,300[b]	100[b]	--	--	350[b]	47,000[b]	820,000[b]	800[d]	--	26,000[b]	18,000[b]	--	5,800[b]	5,800[b]	--	12[b]	5,800[b]	350,000[b]
3x background			--	2.79	45	690	4.8	3.6	--	57	36	81	--	255	--	3,300	87	--	6.3	3.3	--	1.38	117	480
Field Sample ID	**Sample Date**	**Sample Depth Interval (in. bgs)**																						
GS-01A-00-01	5/17/2022	0-1	7,100	0.69	**29**	160	1	1.2	11,000	28	5.8	36	19,000	**110**	4,000	580	18	3,200	2.3	0.78	150 J+	0.28	27	320
GS-01B-00-01	5/18/2022	0-1	8,000	1	**46**	210	0.7	1.7	15,000	14	6.7	47	25,000	**230**	3,000	560	23	2,800	2.5	1.5	410	0.3	34	390
GS-01E-00-01	5/19/2022	0-1	6,500	1.2	**54**	180	0.88	1.9	15,000	16	6.3	63	26,000	**180**	4,400	850	14	2,900	2.7	1.3	170 J+	0.31	35	460
GS-02A-00-01	5/17/2022	0-1	7,300	0.56	**24**	170	0.83	1.2	11,000	13	5.7	28	18,000	91	3,300	630	13	3,000	2.1	0.59	120 J+	0.25	25	310
GS-02B-00-01	5/18/2022	0-1	8,000	0.76	**43**	150	0.76	1.5	22,000	13	12	41	31,000	**130**	4,400	840	29	2,300	3.6	0.87	190 J+	0.39	34	270
GS-02E-00-01	5/19/2022	0-1	7,700	1.2	**47**	200	0.94	2.1	12,000	14	8	46	26,000	**170**	3,300	790	19	3,200	2.7	1.1	130 J+	0.34	36	470
GS-03A-00-01	5/17/2022	0-1	7,800	0.9	**35**	180	0.86	1.4	11,000	15	7.5	34	21,000	**120**	3,500	690	25	3,100	2.2	0.83	140 J+	0.31	30	420
GS-03B-00-01	5/18/2022	0-1	7,600	0.91	**44**	220	0.75	2.2	12,000	14	8.7	60	29,000	**160**	2,700	830	21	2,200	3.1	3.5	130 J+	0.32	34	360
GS-03E-00-01	5/19/2022	0-1	8,000	1.2	**44**	200	1	2.1	10,000	21	7.2	41	25,000	**160**	3,300	720	16	3,500	2.6	1.3	150 J+	0.32	35	450
GS-03E-00-01-DUP	5/19/2022	0-1	7,700	1.1	**39**	210	0.99	2.2	10,000	22	6.9	40	24,000	**170**	3,100	670	17	3,800	2.6	1.5	140 J+	0.32	33	420
GS-03E-00-01-TRI	5/19/2022	0-1	7,500	1.3	**42**	200	1	2.3	12,000	21	7	39	24,000	**180**	3,400	660	15	3,900	2.7	1.5	140 J+	0.33	34	470
GS-04A-00-01	5/17/2022	0-1	7,800	0.57	**29**	210	0.77	1.3	9,500	13	7.9	41	20,000	100	3,700	620	17	3,000	1.9	0.68	98 U	0.27	27	320
GS-04A-00-01-DUP	5/17/2022	0-1	7,500	0.74	**28**	180	0.77	3.1	10,000	12	8	35	20,000	94	3,600	620	18	2,900	1.9	0.66	100 U	0.27	26	340
GS-04A-00-01-TRI	5/17/2022	0-1	7,700	0.69	**30**	200	0.77	1.4	10,000	13	7.8	36	21,000	100	3,700	660	21	3,200	1.9	0.7	100 J+	0.27	28	340
GS-04B-00-01	5/18/2022	0-1	8,100	1.4	**75**	180	0.95	**9.6**	13,000	12	9.8	58	30,000	**250**	6,000	**2,200**	19	3,700	2.7	1.6	500	0.41	41	2,400
GS-04E-00-01	5/19/2022	0-1	8,100	0.96	**46**	250	0.99	2.2	10,000	18	7.5	44	27,000	**180**	3,600	740	16	3,200	2.6	1.3	200 J+	0.34	36	510
GS-05A-00-01	5/17/2022	0-1	7,100	0.67	**31**	200	0.73	1.4	11,000	11	6.8	31	21,000	**120**	4,000	570	15	3,200	1.9	0.79	130 J+	0.24	28	360
GS-05B-00-01	5/18/2022	0-1	10,000	0.96	**53**	110	1.2	**16**	22,000	14	12	86	30,000	**190**	4,200	**4,800**	42	2,600	3.3	1.3	310	0.38	39	2,900
GS-06A-00-01	5/17/2022	0-1	7,300	0.47	**19**	190	0.64	0.91	7,500	9.1	6.3	25	17,000	61	2,500	480	15	2,600	1.8	0.41	100 U	0.22	23	230
GS-06B-00-01	5/18/2022	0-1	7,500	1 J	**50**	130	0.79	**23**	12,000	12	8.2	41	25,000	**180**	6,100	**2,200**	33	2,700	2.3	1.4	1,000	0.3	34	5,500
GS-06E-00-01	5/19/2022	0-1	7,800	0.71	**37**	230	1	2.1	9,500	13	6.6	36	25,000	**140**	2,800	660	16	3,200	2.5	0.96	200 J+	0.31	30	370
GS-07A-00-01	5/17/2022	0-1	7,400	0.47	**22**	200	0.73	1	9,900	11	8.1	32	20,000	80	3,400	610	19	2,500	2	0.46	120 J+	0.24	27	290
GS-07A1-00-01	5/17/2022	0-1	7,500	0.35	**22**	200	0.59	1	7,200	12	6.4	30	19,000	88	2,300	420	15	2,800	1.7	0.47	170 J+	0.23	26	240
GS-07B-00-01	5/18/2022	0-1	7,100	0.97	**56**	180	0.75	6.6	7,800	11	7.8	43	26,000	**210**	3,600	1,600	20	3,000	2.4	2	230	0.33	36	1,900
GS-07E-00-01	5/19/2022	0-1	7,400	1.1	**54**	200	1	2.6	8,800	13	7	47	28,000	**240**	3,000	850	16	3,200	2.6	1.7	170 J+	0.35	34	500
GS-08A-00-01	5/17/2022	0-1	7,000	0.44	**25**	190	0.61	1.1	7,200	12	5.9	25	18,000	100	2,500	490	12	2,400	1.6	0.72	99 U	0.23	27	210
GS-08B-00-01	5/18/2022	0-1	7,900	1.1	**79**	140	0.79	3.7	14,000	12	6.8	120	42,000	**440**	2,700	770	21	3,000	2.8	3	490	0.49	39	820
GS-08E-00-01	5/19/2022	0-1	7,100	1.1	**48**	220	1.1	2.7	14,000	16	6.1	47	26,000	**190**	4,400	870	15	4,200	2.6	1.3	340	0.33	34	580
GS-09B-00-01	5/18/2022	0-1	8,300	1.1	**79**	250	0.94	5.9	9,500	13	7.5	73	34,000	**360**	3,200	1,000	20	3,200	2.8	2.5	370	0.45	43	1,200
GS-09E-00-01	5/19/2022	0-1	7,400	0.9	**53**	220	1.2	3.7	17,000	13	6.2	42	27,000	**260**	7,000	1,000	15	3,000	2.7	1.6	110 J+	0.36	32	700
GS-10B-00-01	5/17/2022	0-1	7,200	1.4	**99**	280	0.83	4.8	8,500	14	7.7	64	36,000	**430**	2,900	1,300	16	3,400	2.4	3.2	200 J+	0.5	46	1,000
GS-11B-00-01	5/17/2022	0-1	6,400	1.6	**95**	270	0.79	4.3	8,300	11	6.2	73	35,000	**490**	2,600	960	15	3,100	2.4	3.4	220	0.51	40	910
GS-11B-00-01-DUP	5/17/2022	0-1	6,300	1.8	**96**	260	0.79	4.2	8,200	11	6.2	72	35,000	**490**	2,600	940	14	3,100	2.3	3.4	220	0.51	40	930
GS-11B-00-01-TRI	5/17/2022	0-1	6,400	2	**96**	260	0.79	4.3	8,200	12	6.4	74	36,000	**490**	2,700	940	14	3,100	2.4	3.4	220	0.51	40	940
GS-11D-00-01	5/18/2022	0-1	6,000	0.9	**25**	160	0.85	1.1	12,000	9.3	4.7	33	16,000	92	4,200	510	16	1,800	2.1	0.64	100 U	0.24	22	470
GS-12B-00-01	5/17/2022	0-1	6,500	1.3	**63**	240	0.84	2.5	8,300	12	5.7	49	28,000	**340**	2,500	710	13	3,300	2.4	2.4	170 J+	0.41	34	600
GS-12D-00-01	5/18/2022	0-1	9,800	0.87	**37**	250	1.2	4.3	14,000	15	5.2	39	31,000	**180**	3,800	820	29	3,400	4.6	1.2	210 J+	0.44	33	420
GS-13B-00-01	5/18/2022	0-1	6,400	1.5	**60**	200	0.67	2.3	11,000	12	7	46	28,000	**290**	3,100	730	17	3,300	2.1	1.9	160 J+	0.35	38	630
GS-13D-00-01	5/18/2022	0-1	7,500	1.3 J	**61**	250	0.96	2.3	20,000	16	6.8	55	29,000	**290**	4,200	690	19	3,000	2.6	2	250	0.38	35	520
GS-14B-00-01	5/18/2022	0-1	6,000	1.4	**68**	180	0.7	2.3	9,400	11	6.5	56	29,000	**330**	3,300	750	18	3,200	2.2	2.4	180 J+	0.38	35	530
GS-14B-00-01-DUP	5/18/2022	0-1	6,600	1.4	**72**	200	0.71	2.4	8,700	12	7	64	34,000	**450**	3,100	780	29	3,000	2.5	3	200 J+	0.45	36	520
GS-14B-00-01-TRI	5/18/2022	0-1	6,700	1.4	**72**	200	0.72	2.5	8,800	12	7.2	60	35,000	**460**	3,200	800	25	3,000	2.6	3	200 J+	0.45	36	520
GS-14D-00-01	5/18/2022	0-1	5,500	0.95 J	**42**	170	0.81	1.6	31,000	12	5.4	49	21,000	**190**	6,500	630	19	2,100	1.8	1.3 J	260	0.28	27	450
GS-15B-00-01	5/18/2022	0-1	5,700	1.1	**44**	150	0.57	1.8	7,500	10	5.6	40	22,000	**200**	2,300	570	14	2,500	1.8	1.4	160 J+	0.27	30	450
GS-16B-00-01	5/18/2022	0-1	6,600	1.1	**46**	170	0.75	1.6	9,300	11	8	42	25,000	**180**	3,100	680	20	2,600	2.5	1.3	170 J+	0.31	31	390
GS-16B1-00-01	5/18/2022	0-1	7,200	0.67	**35**	200	0.69	1.1	10,000	13	6.5	43	19,000	92	2,900	520	17	2,700	2.1	0.68	240	0.23	27	290
GS-16D-00-01	5/18/2022	0-1	7,800	0.82	**35**	180	0.71	1.8	12,000	13	5.9	37	22,000	**150**	3,600	560	18	3,300	2	1.1	620	0.28	32	340
GS-17B-00-01	5/18/2022	0-1	6,900	1	**47**	190	0.69	1.6	15,000	13	8.1	41	24,000	**160**	3,400	700	20	2,900	2.3	1.1	190 J+	0.29	33	350
GS-17D-00-01	5/18/2022	0-1	7,500	1.2	**44**	210	0.87	2.3	15,000	13	8.1	44	26,000	**160**	4,500	810	19	3,300	2.8	1.4	210 J+	0.34	33	420
GS-18B-00-01	5/18/2022	0-1	7,100	1.2	**32**	180	0.73	1.1	11,000	13	6.7	32	21,000	**110**	2,900	530	18	2,300	2.3	0.87	120 J+	0.26	28	260
GS-18D-00-01	5/18/2022	0-1	7,000	1.1	**43**	190	0.72	1.9	12,000	11	6.6	34	23,000	**170**	4,000	690	15	2,600	2.3	1.3	120 J+	0.29	31	380
GS-19B-00-01	5/18/2022	0-1	7,100	1.4	**49**	180	0.77	1.9	10,000	14	7.9	48	27,000	**190**	3,000	680	22	2,600	2.6	1.2	170 J+	0.31	34	430
GS-20B-00-01	5/18/2022	0-1	6,900	0.54	**24**	170	0.63	1.2	6,900	8.7	6	24	17,000	85	2,200	480	14	2,100	1.7	0.83	100 U	0.23	25	200
GS-20D-00-01	5/18/2022	0-1	7,800	1.1	**48**	210	0.76	2.5	13,000	24	8.2	46	29,000	**200**	3,500	940	46	2,300	2.6	1.4	170 J+	0.33	34	470
GS-21D-00-01	5/18/2022	0-1	7,700	1.4	**65**	220	0.77	2.9	8,900	13	8.4	47	32,000	**640**	2,900	930	23	2,900	2.6	1.8	180 J+	0.36	36	540
GS-22D-00-01	5/18/2022	0-1	7,300	1.2	**49**	190	0.7	1.8	13,000	14	8.6	53	27,000	**160**	4,000	800	18	3,300	2.4	1.3	570	0.31	35	460
GS-23D-00-01	5/18/2022	0-1	7,700	1.5	**58**	190	0.75	1.4	14,000	13	11	42	31,000	**260**	4,400	840	23	2,200	2.7	1.6	240	0.36	39	280
GS-24D-00-01	5/18/2022	0-1	7,000	1.1	**48**	190	0.74	2	13,000	13	7.9	46	25,000	**140**	3,400	790	18	2,600	2.5	1.2	130 J+	0.32	34	510
GS-25D-00-01	5/18/2022	0-1	6,800	1.2	**50**	200	0.82	2.2	14,000	12	7.7	45	26,000	**200**	4,200	840	19	3,700	2.3	1.3	300	0.32	34	410
GS-26D-00-01	5/18/2022	0-1	7,300	1	**47**	190	0.85	2	13,000	14	7	66	24,000	**190**	3,900	760	16	3,200	2.2	1.2	440	0.31	32	500
GS-27D-00-01	5/18/2022	0-1	7,300	0.69	**30**	200	0.72	1.4	9,500	11	6.8	27	20,000	**110**	2,700	520	13	2,900	2.1	0.77	340	0.25	27	270
GS-28D-00-01	5/18/2022	0-1	6,800	1.2	**49**	170	1.1	2.2	9,300	13	6	39	23,000	**180**	2,800	760	15	2,800	2.4	1.3	240	0.34	33	430
GS-29A4-00-01	5/16/2022	0-1	5,400	2	**94**	190	0.86	1.6	14,000	28	6.5	61	38,000	**550**	4,700	590	20	2,700	2.1	3.6	260	0.52	37	370
GS-29A5-00-01	5/16/2022	0-1	4,900	2.2	**95**	160	0.65	2.5	7,200	11	6.5	61	37,000	**500**	2,100	650	12	2,600	2.1	3.3	210 J+	0.47	38	460
GS-29D-00-01	5/18/2022	0-1	7,200	1.6	**75**	190	1.4	4.4	9,800	13	6.9	50	30,000	**370**	3,700	1,100	16	3,300	2.5	2.4	210	0.42	38	760

Table 3
2022 Garner Street Soils Analytical Results - Metals in Soils (0-1 in. bgs)

Analyte			Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Vanadium	Zinc
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
CAS No.			7429-90-5	7440-36-0	7440-38-2	7440-39-3	7440-41-7	7440-43-9	7440-70-2	7440-47-3	7440-48-4	7440-50-8	7439-89-6	7439-92-1	7439-95-4	7439-96-5	7440-02-0	7440-09-7	7782-49-2	7440-22-4	7440-23-5	7440-28-0	7440-62-2	7440-66-6
Residential Screening Level (mg/kg)			77,000[a]	31[a]	0.68[a]	15,000[a]	160[a]	7.1[a]	--	--	23[a]	3,100[a]	55,000[a]	100/200[c]	--	1,800[a]	1,400[a]	--	390[a]	390[a]	--	0.78[a]	390[a]	23,000[a]
Industrial Screening Level (mg/kg)			1,100,000[b]	470[b]	3[b]	220,000[b]	2,300[b]	100[b]	--	--	350[b]	47,000[b]	820,000[b]	800[d]	--	26,000[b]	18,000[b]	--	5,800[b]	5,800[b]	--	12[b]	5,800[b]	350,000[b]
3x background			--	2.79	45	690	4.8	3.6	--	57	36	81	--	255	--	3,300	87	--	6.3	3.3	--	1.38	117	480
Field Sample ID	**Sample Date**	**Sample Depth Interval (in. bgs)**																						
GS-29D-00-01-DUP	5/18/2022	0-1	7,200	1.6	**75**	190	1.4	4.4	10,000	13	7	50	31,000	**370**	3,800	1,100	15	3,300	2.5	2.5	220	0.43	38	780
GS-29D-00-01-TRI	5/18/2022	0-1	7,300	1.7	**78**	180	1.3	4.3	10,000	13	7.2	52	31,000	**370**	3,800	1,100	16	3,300	2.4	2.5	220	0.42	39	770
GS-30A-00-01	5/16/2022	0-1	5,600	2.2	**92**	160	0.66	2.3	7,100	17	7.3	59	38,000	**480**	2,300	760	17	3,100	2.2	3.2	270	0.48	41	450
GS-31A-00-01	5/18/2022	0-1	5,400	2.1	**100**	200	0.75	3	5,900	20	6	69	38,000	**500**	2,000	740	12	3,300	2.1	3.7	190 J+	0.51	41	550
GS-32A-00-01	5/18/2022	0-1	5,900	1.7	**88**	200	0.7	2	6,900	20	7.2	65	38,000	**440**	2,200	660	17	2,900	2.4	3.3	280	0.47	37	450
GS-33A-00-01	5/16/2022	0-1	7,200	1.1	**83**	260	0.75	2.5	9,600	24	8.9	55	37,000	**390**	2,900	850	23	2,900	2.6	2.7	260	0.47	39	480
GS-34A-00-01	5/16/2022	0-1	6,200	1.7	**89**	190	0.71	2.6	6,300	21	7.3	64	40,000	**450**	2,100	710	18	3,000	2.5	3.1	230	0.49	37	540
GS-35A-00-01	5/16/2022	0-1	6,800	1.4	**74**	230	0.77	2.3	7,300	27	7.7	52	34,000	**320**	2,300	750	22	3,500	2.6	2.6	220	0.45	37	440
GS-36A-00-01	5/16/2022	0-1	6,800	1.7	**96**	220	0.82	3	8,100	20	7.7	57	36,000	**350**	2,500	900	18	3,300	2.6	2.7	180 J+	0.5	44	550
GS-37A-00-01	5/16/2022	0-1	7,700	1.1	**61**	210	0.83	3.4	8,200	22	8.4	48	29,000	**240**	2,600	1,100	21	3,000	2.7	1.9	190 J+	0.41	36	550
GS-38A-00-01	5/16/2022	0-1	8,400	0.71	**50**	170	0.94	6	13,000	28	8.4	55	30,000	**160**	3,800	1,000	24	3,000	3.6	1.2	370	0.36	33	1,200
GS-39A-00-01	5/16/2022	0-1	9,400	1.3	**84**	220	0.96	**7.6**	13,000	22	10	72	33,000	**250**	4,000	1,200	25	3,400	3	2	370	0.44	41	1,600
GS-40A-00-01	5/16/2022	0-1	8,700	1.2	**64**	180	0.81	4.8	17,000	21	12	54	36,000	**190**	3,800	1,100	28	2,900	3.2	1.4	270	0.43	38	690
GS-40A1-00-01	5/16/2022	0-1	7,500	0.59	**36**	180	0.69	1.3	11,000	16	9.3	36	25,000	95	3,400	640	20	2,400	2.9	0.76	330	0.3	28	230
GS-40A1-00-01-DUP	5/16/2022	0-1	7,600	0.63	**38**	180	0.72	1.6	10,000	18	9.5	37	25,000	100	3,500	670	22	2,500	3	1.1	380	0.31	28	260
GS-40A1-00-01-TRI	5/16/2022	0-1	7,400	0.58	**34**	190	0.69	1.3	9,700	18	8.6	33	24,000	92	3,200	600	20	2,400	2.8	0.84	300	0.29	28	230
GS-40A2-00-01	5/16/2022	0-1	7,800	0.59	**34**	180	0.8	1.4	12,000	28	10	39	28,000	71	4,200	670	28	2,600	3.3	0.6	440	0.34	30	240
GS-41A-00-01	5/17/2022	0-1	8,900	0.51	**35**	190	0.78	1.5	13,000	41	12	40	31,000	77	4,500	660	36	2,500	3.6	0.7	300	0.36	33	210
GS-42A-00-01	5/17/2022	0-1	8,500	0.52	**29**	170	0.8	1.1	15,000	38	13	39	30,000	60	4,500	740	35	2,400	3.6	0.46	200 J+	0.33	30	180
GS-43A-00-01	5/17/2022	0-1	8,500	0.42 J	**29**	170	0.75	1.2	13,000	15	14	40	29,000	53	4,300	730	29	2,200	3.9	0.39	220	0.33	29	170
GS-44A-00-01	5/17/2022	0-1	6,800	0.44	**21**	190	0.66	0.83	11,000	22	7	26	19,000	50	3,200	480	20	1,900	2.1	0.45	170 J+	0.22	25	160
GS-45A-00-01	5/17/2022	0-1	7,100	0.65	**32**	190	0.72	1.3	7,800	13	9.7	45	24,000	86	3,200	580	21	2,900	3	0.67	550	0.31	27	260
GS-46A-00-01	5/17/2022	0-1	7,900	0.61	**31**	200	0.79	1.4	12,000	19	12	43	27,000	84	4,400	780	26	2,400	3.1	0.62	390	0.34	29	250
GS-47A-00-01	5/17/2022	0-1	7,000	0.67	**27**	180	0.75	1.2	16,000	32	7.1	30	19,000	94	5,700	570	23	2,100	2.2	0.63	160 J+	0.27	27	230
GS-BG01-00-01	5/17/2022	0-1	6,700	0.24	**11**	96	0.7	0.39	6,400	36	7	17	17,000	36	3,200	450	27	2,400	2.7	0.09 J	100 U	0.17	18	75
GS-BG02-00-01	5/17/2022	0-1	8,300	0.25	**11**	98	0.65	0.35	6,000	23	7.1	18	17,000	29	3,300	390	22	2,200	2	0.085 J	100 U	0.18	20	72
GS-BG03-00-01	5/17/2022	0-1	5,500	0.21	**7.1**	91	0.57	0.38	5,300	15	4.6	12	12,000	30	1,900	300	11	2,100	1.8	0.063 J	100 U	0.14	17	63
GS-CA01-00-01	5/16/2022	0-1	6,100	1.5	**64**	150	0.81	1.8	9,200	13	9.1	52	32,000	**290**	2,900	740	17	2,800	2.9	2	160 J+	0.4	35	370
GS-CA02-00-01	5/16/2022	0-1	7,900	1.1	**51**	170	0.76	1.7	15,000	14	12	44	34,000	**160**	3,600	850	25	4,000	3.8	1.1	170 J+	0.4	37	290
GS-CA03-00-01	5/16/2022	0-1	6,900	1.3	**62**	170	0.83	2.1	20,000	16	10	240	31,000	**230**	5,200	870	23	2,400	2.9	1.6	180 J+	0.39	38	500
GS-CA04-00-01	5/16/2022	0-1	6,100	1.5	**73**	170	0.72	2.5	13,000	19	8.1	46	29,000	**250**	3,600	880	20	2,800	2.5	2.1	150 J+	0.4	42	510
GS-CA04-00-01-DUP	5/16/2022	0-1	5,900	1.7	**84**	160	0.73	2.7	12,000	19	7.4	48	31,000	**310**	3,600	880	18	3,000	2.5	2.3	160 J+	0.41	43	560
GS-CA04-00-01-TRI	5/16/2022	0-1	5,800	1.7	**84**	170	0.74	2.5	12,000	16	7.1	48	28,000	**270**	3,700	900	16	3,000	2.4	2	160 J+	0.41	43	520
GS-CA05-00-01	5/16/2022	0-1	6,600	1.3	**69**	170	0.73	2.2	15,000	19	8.7	47	30,000	**230**	4,800	820	22	2,700	2.8	1.8	200 J+	0.39	41	390
GS-CA06-00-01	5/16/2022	0-1	7,500	1.3	**69**	190	0.74	2.1	11,000	15	9.8	44	32,000	**190**	3,800	870	21	3,300	3.2	1.6	160 J+	0.39	41	390
GS-CA07-00-01	5/17/2022	0-1	6,700	0.52	**23**	180	0.66	0.79	15,000	17	6.1	23	18,000	74	5,200	500	15	2,600	2.1	0.49	100 U	0.22	26	190
GS-CA08-00-01	5/19/2022	0-1	7,400	0.91	**44**	180	0.77	1.7	22,000	12	8.3	37	26,000	**160**	5,100	760	20	2,900	2.6	1.2	150 J+	0.34	33	280
GS-CA09-00-01	5/19/2022	0-1	7,000	0.93	**51**	200	0.8	1.8	16,000	12	8.8	41	27,000	**180**	5,100	810	20	3,000	2.5	1.3	120 J+	0.36	33	340
GS-CA10-00-01	5/19/2022	0-1	8,000	0.87	**48**	210	0.75	1.8	13,000	12	12	41	31,000	**160**	4,200	870	25	2,700	2.8	1.3	140 J+	0.39	33	300
GS-CA11-00-01	5/19/2022	0-1	7,300	1.1 J	**54**	190	0.72	1.7	13,000	12	11	44	31,000	**200**	4,000	870	22	2,900	3.1	1.5	150 J+	0.38	35	310
GS-CA12-00-01	5/19/2022	0-1	7,600	1.2	**69**	160	0.78	2.4	12,000	13	11	49	31,000	**210**	4,600	980	22	3,000	2.9	1.6	160 J+	0.39	39	400
GS-CA12-00-01-DUP	5/19/2022	0-1	7,400	1.2	**59**	170	0.78	1.8	16,000	13	11	43	30,000	**180**	5,200	860	24	2,700	2.9	1.3	170 J+	0.37	38	330
GS-CA12-00-01-TRI	5/19/2022	0-1	7,300	1.3	**68**	160	0.77	2.3	13,000	13	10	48	30,000	**190**	4,700	950	21	3,000	2.8	1.5	150 J+	0.37	39	390
GS-CA13-00-01	5/19/2022	0-1	8,200	0.77	**43**	200	0.88	1.5	16,000	14	9.6	41	27,000	**130**	5,200	800	21	2,900	2.8	0.93	140 J+	0.33	34	300
GS-CA13-00-01-DUP	5/19/2022	0-1	7,100	0.75	**42**	150	0.76	1.4	17,000	18	8.4	41	25,000	**130**	4,800	700	20	2,400	2.5	0.98	160 J+	0.31	33	330
GS-CA13-00-01-TRI	5/19/2022	0-1	7,400	1.2	**70**	160	0.78	2.3	14,000	14	8.7	45	28,000	**190**	4,300	870	20	2,500	2.7	1.5	160 J+	0.36	38	470
GS-CA14-00-01	5/19/2022	0-1	6,500	0.45	**52**	150	0.66	0.76	8,000	22	5.2	22	14,000	68	2,600	370	11	2,300	2.1	0.35	100 U	0.2	21	120
GS-CA14-00-01-DUP	5/19/2022	0-1	7,500	0.53	**27**	180	0.81	0.83	12,000	14	6.7	25	19,000	68	4,300	520	15	2,700	2.4	0.42	100 U	0.25	25	160
GS-CA14-00-01-TRI	5/19/2022	0-1	6,800	0.57	**59**	160	0.66	0.83	8,500	23	5.5	23	15,000	75	2,800	400	11	2,300	2	0.39	100 U	0.2	23	140
GS-HOUSE-00-01	5/17/2022	0-1	8,100	1.1	**49**	210	0.84	2.2	9,100	21	7.7	40	26,000	**210**	2,800	850	18	4,600	2.7	1.3	170 J+	0.34	37	410
GS-VACANT-00-01	5/17/2022	0-1	8,600	1.1	**60**	210	0.98	2.3	10,000	33	8.6	40	30,000	**210**	3,700	870	29	3,000	3.2	1.6	120 J+	0.45	35	390

Notes

--	Not established or not applicable
[a]	EPA Regional Screening Level (RSL) for Residential Soil (TR=1E-06, THQ=1.0)
[b]	EPA RSL for Industrial Soil (TR=1E-06, THQ=1.0)
[c]	EPA Office of Land and Emergency Management Updated Residential Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, 2024: EPA Regions should use a screening level of 200 mg/kg for residential soil lead and 100 mg/kg if an additional source of lead (such as lead water service lines, lead-based paint, etc.) is identified. It is unknown at this time whether an additional source of lead is present at this site and both screening levels are presented as a conservative measure
[d]	Background concentration is maximum concentration for the analyte from both depth intervals (0-1-in. bgs and 1-6-in. bgs) for the samples > 1.45 mi from the smokestack. See Appendix A.
	Indicates concentration that exceeds three times background concentration established by the 2023 SI
BOLD	Indicates concentration that exceeds EPA Screening Level for Residential Soil
BOLD	Indicates concentration that exceeds one or more RSL and three times background concentration established by the 2023 SI
BOLD	Indicates concentration that exceeds EPA Screening Level for Residential Soil and Industrial Soil
CA	Common Area
CAS No.	Chemical Abstracts Service Number
DUP	Field Duplicate
GS	Garner Street
J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
mg/kg	milligram per kilogram
RSL	Regional Screening Level
TR	Target Cancer Risk
TRI	Triplicate
THQ	Target Hazard Quotient

Table 4
2022 Garner Street Soils Analytical Results - Metals in Soils (1-6 in. bgs)

Analyte			Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Nickel	Potassium	Selenium	Silver	Sodium		Thallium	Vanadium	Zinc
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg
CAS No.			7429-90-5	7440-36-0	7440-38-2	7440-39-3	7440-41-7	7440-43-9	7440-70-2	7440-47-3	7440-48-4	7440-50-8	7439-89-6	7439-92-1	7439-95-4	7439-96-5	7440-02-0	7440-09-7	7782-49-2	7440-22-4	7440-23-5		7440-28-0	7440-62-2	7440-66-6
Residential Screening Level (mg/kg)			77,000[a]	31[a]	0.68[a]	15,000[a]	160[a]	7.1[a]	--	--	23[a]	3,100[a]	55,000[a]	100/200[c]	--	1,800[a]	1,400[a]	--	390[a]	390[a]	--		0.78[a]	390[a]	23,000[a]
Industrial Screening Level (mg/kg)			1,100,000[b]	470[b]	3[b]	220,000[b]	2,300[b]	100[b]	--	--	350[b]	47,000[b]	820,000[b]	800[d]	--	26,000[b]	18,000[b]	--	5,800[b]	5,800[b]	--		12[b]	5,800[b]	350,000[b]
3x background			--	2.79	45	690	4.8	3.6	--	57	36	81	--	255	--	3,300	87	--	6.3	3.3	--		1.38	117	480
Field Sample ID	Sample Date	Sample Depth Interval (in. bgs)																							
GS-01A-01-06	5/17/2022	1-6	6,800	0.62	**24**	150	1	1.1	11,000	23	5.6	33	18,000	97	3,900	540	18	2,700	2.2	0.65	130	J+	0.26	25	230
GS-01B-01-06	5/18/2022	1-6	9,100	0.51	**25**	230	0.84	1.1	11,000	11	7.5	33	25,000	**110**	3,100	610	46	2,500	3.1	0.65	280		0.26	31	230
GS-01E-01-06	5/19/2022	1-6	7,100	0.99	**45**	180	1	2	18,000	13	6.7	40	25,000	**180**	6,000	900	23	2,400	2.9	1.2	140	J+	0.33	30	390
GS-02A-01-06	5/17/2022	1-6	7,900	0.55	**26**	180	1.1	1.4	11,000	16	6.6	30	20,000	**110**	3,900	690	15	3,000	2.4	0.58	120	J+	0.28	26	320
GS-02B-01-06	5/18/2022	1-6	7,400	0.67	**37**	110	0.83	1.2	23,000	11	12	37	29,000	**110**	4,000	740	28	2,100	3.8	0.75	200	J+	0.32	31	220
GS-02E-01-06	5/19/2022	1-6	7,500	1.8	**79**	160	0.97	2.7	16,000	13	8.6	46	33,000	**280**	2,900	1,100	22	2,700	2.9	1.9	130	J+	0.41	41	480
GS-03A-01-06	5/17/2022	1-6	8,900	0.95	**41**	240	0.98	1.3	11,000	23	9.2	40	26,000	**120**	4,200	790	140	2,500	2.7	1	150	J+	0.33	34	260
GS-03B-01-06	5/18/2022	1-6	8,400	1.1	**56**	210	0.84	3.1	13,000	13	10	55	34,000	**240**	3,000	1,100	24	2,400	3.5	2.6	150	J+	0.41	37	600
GS-03E-01-06	5/19/2022	1-6	8,400	1.3	**44**	220	1.2	2.7	12,000	28	6.9	47	25,000	**210**	4,000	770	26	2,900	2.9	2.9	130	J+	0.34	36	490
GS-03E-01-06-DUP	5/19/2022	1-6	8,900	0.92	**43**	240	1.2	2.5	10,000	23	7.4	45	27,000	**190**	3,700	760	31	3,100	2.8	1.9	160	J+	0.32	40	490
GS-03E-01-06-TRI	5/19/2022	1-6	8,800	1	**48**	330	1.2	2.9	13,000	24	8.7	53	28,000	**270**	4,800	870	27	3,200	3.1	2.3	170	J+	0.36	36	570
GS-04A-01-06	5/17/2022	1-6	8,100	0.54	**26**	240	0.8	2	9,600	12	9.9	33	25,000	79	3,900	710	35	2,300	2.3	0.47	140	J+	0.28	27	200
GS-04A-01-06-DUP	5/17/2022	1-6	8,800	0.54	**27**	250	0.88	1.3	11,000	12	11	36	26,000	70	4,500	770	52	2,300	2.6	0.43	150	J+	0.32	28	200
GS-04A-01-06-TRI	5/17/2022	1-6	8,600	0.44	**27**	250	0.88	1.2	11,000	13	11	38	24,000	76	4,600	760	50	2,400	2.5	0.53	140	J+	0.3	28	220
GS-04B-01-06	5/18/2022	1-6	8,200	1	**55**	160	1.1	**9.4**	32,000	12	12	62	28,000	**220**	5,800	**3,100**	36	2,800	3.2	1.5	350		0.37	36	1,700
GS-04E-01-06	5/19/2022	1-6	8,300	1.1	**44**	240	1.2	2.4	8,800	16	8.8	42	29,000	**190**	3,400	900	27	2,900	3.3	1.3	160	J+	0.36	34	480
GS-05A-01-06	5/17/2022	1-6	8,100	0.49	**24**	210	0.81	1.1	10,000	11	8.1	32	21,000	100	4,200	550	49	2,300	2.1	0.57	120	J+	0.26	25	200
GS-05B-01-06	5/18/2022	1-6	9,900	1.2	**55**	150	1	**11**	13,000	15	11	76	29,000	**190**	4,600	**2,800**	25	2,900	2.9	1.3	510		0.34	40	2,600
GS-06A-01-06	5/17/2022	1-6	8,700	0.39	**17**	210	0.86	0.77	7,300	11	7.5	27	20,000	60	3,000	480	63	2,300	2.3	0.3	110	J+	0.26	25	180
GS-06B-01-06	5/18/2022	1-6	8,700	0.65 J	**56**	130	0.96	**21**	22,000	14	10	52	29,000	**220**	5,700	**4,000**	40	2,400	2.8	1.4	440		0.31	35	5,100
GS-06E-01-06	5/19/2022	1-6	8,200	1.2	**70**	310	1.2	2.7	7,500	14	9.6	44	35,000	**260**	2,900	1,000	25	2,700	3.5	1.9	150	J+	0.4	39	400
GS-07A-01-06	5/17/2022	1-6	7,900	0.34	**19**	200	0.75	0.9	11,000	11	7.9	30	21,000	77	3,400	590	46	2,100	2.1	0.43	120	J+	0.24	27	210
GS-07A1-01-06	5/17/2022	1-6	7,900	0.29	**18**	180	0.59	0.71	6,000	11	6.4	26	18,000	63	2,200	400	30	2,200	1.7	0.37	240		0.22	25	160
GS-07B-01-06	5/18/2022	1-6	8,400	0.94	**60**	140	0.98	**16**	21,000	12	12	56	30,000	**250**	4,400	**3,600**	35	2,500	2.6	1.8	240		0.38	38	3,700
GS-07E-01-06	5/19/2022	1-6	7,500	1.9	**110**	290	0.96	2.8	7,500	14	8.6	55	41,000	**430**	2,900	1,200	21	2,700	3.3	3.2	130	J+	0.43	45	530
GS-08A-01-06	5/17/2022	1-6	7,700	0.25	**15**	200	0.55	0.64	5,800	9.9	5.5	18	17,000	54	2,300	370	31	1,800	1.6	0.37	100	U	0.2	25	120
GS-08B-01-06	5/18/2022	1-6	11,000	1.7	**97**	130	1	**7**	22,000	14	7.9	**88**	41,000	**460**	2,700	1,800	35	3,000	3	3.2	400		0.5	49	1,500
GS-08E-01-06	5/19/2022	1-6	8,200	1.3	**68**	280	1.3	2.6	8,900	15	7.7	41	32,000	**240**	3,600	980	25	3,400	3.2	1.8	210	J+	0.4	40	470
GS-09B-01-06	5/18/2022	1-6	8,200	1.1	**99**	270	0.93	**5.1**	7,500	13	10	**83**	38,000	**460**	2,900	1,400	36	2,900	2.7	3.3	270		0.52	45	950
GS-09E-01-06	5/19/2022	1-6	7,500	1.3	**79**	260	1.4	**4.6**	21,000	15	6.5	53	34,000	**380**	8,900	1,300	18	2,800	2.9	2.6	120	J+	0.39	35	760
GS-10B-01-06	5/17/2022	1-6	7,400	1.6	**110**	270	1	**6.5**	8,600	12	7.2	**86**	45,000	**580**	2,800	1,500	35	3,300	2.9	**4.3**	260		0.59	43	1,300
GS-11B-01-06	5/17/2022	1-6	7,500	2.1	**120**	290	0.97	**5.2**	8,700	12	6.8	**87**	44,000	**610**	3,200	1,100	45	3,200	3	**4.5**	290		0.62	43	1,100
GS-11B-01-06-DUP	5/17/2022	1-6	7,300	1.5	**110**	310	0.93	**5**	8,500	12	6.7	**90**	43,000	**590**	3,100	1,000	47	3,100	2.7	**4.3**	280		0.59	43	1,000
GS-11B-01-06-TRI	5/17/2022	1-6	7,100	2.1	**110**	290	0.92	**5.1**	8,500	11	6.6	**84**	43,000	**600**	3,100	1,000	48	3,100	2.9	**4.3**	280		0.58	42	1,100
GS-11D-01-06	5/18/2022	1-6	6,400	1.1	**33**	180	1	1.5	19,000	11	5.2	37	20,000	**150**	6,800	620	29	1,900	2.4	2.1	130	J+	0.28	27	400
GS-12B-01-06	5/17/2022	1-6	6,900	1.4	**92**	290	0.84	3.2	7,900	12	6.2	64	39,000	**570**	2,700	860	30	3,100	2.6	**4.1**	240		0.55	40	680
GS-12D-01-06	5/18/2022	1-6	8,300	1	**43**	240	1.1	2.7	14,000	14	6.5	45	27,000	**240**	4,700	720	35	3,000	2.9	2.4	220		0.38	35	370
GS-13B-01-06	5/18/2022	1-6	7,200	1	**72**	290	0.74	2.8	8,800	12	7.8	60	37,000	**490**	3,400	890	72	3,200	2.4	3.1	180	J+	0.47	40	590
GS-13D-01-06	5/18/2022	1-6	7,300	1 J	**52**	200	1.2	2	13,000	14	7.1	45	29,000	**230**	3,800	800	23	2,600	2.9	1.5	170	J+	0.38	31	400
GS-14B-01-06	5/18/2022	1-6	6,800	1.4	**72**	210	0.74	2.5	9,000	12	7.2	57	35,000	**460**	3,300	790	28	3,000	2.6	2.9	200	J+	0.44	37	510
GS-14B-01-06-DUP	5/18/2022	1-6	6,800	1.4	**73**	200	0.74	2.4	8,900	12	7.2	59	35,000	**460**	3,200	780	29	3,000	2.6	3	200	J+	0.46	36	510
GS-14B-01-06-TRI	5/18/2022	1-6	6,600	1.4	**71**	210	0.73	2.5	8,800	12	7.1	57	35,000	**460**	3,200	790	28	3,000	2.5	3.1	200	J+	0.45	36	510
GS-14D-01-06	5/18/2022	1-6	6,300	0.88 J	**42**	170	0.97	1.7	22,000	12	5.9	40	24,000	**200**	6,000	640	26	2,200	2.2	1.4	160	J+	0.31	26	340
GS-15B-01-06	5/18/2022	1-6	7,700	1.2	**56**	200	0.76	**4.3**	11,000	12	8.7	46	28,000	**220**	3,900	1,400	27	2,400	2.6	1.6	170	J+	0.35	37	880
GS-16B-01-06	5/18/2022	1-6	7,800	1.2	**65**	210	0.85	2	11,000	14	9.7	49	34,000	**250**	3,700	930	42	2,700	3.2	1.8	170	J+	0.37	38	400
GS-16B1-01-06	5/18/2022	1-6	7,900	0.5	**24**	210	0.75	1.2	7,900	9.3	7.4	31	20,000	79	2,800	510	25	2,000	2.3	0.53	160	J+	0.23	25	260
GS-16D-01-06	5/18/2022	1-6	8,600	0.85	**37**	210	0.8	1.8	14,000	11	6.6	42	25,000	**180**	4,000	630	35	2,800	2.4	1.1	570		0.31	35	320
GS-17B-01-06	5/18/2022	1-6	8,400	0.8	**42**	240	0.81	1.5	14,000	15	10	44	29,000	**150**	4,200	750	35	2,300	3.1	1	180	J+	0.32	36	290
GS-17D-01-06	5/18/2022	1-6	9,600	1.4	**55**	270	1.1	2.6	20,000	17	9.9	56	34,000	**210**	5,700	1,000	37	3,100	3.5	1.6	200	J+	0.42	42	470
GS-18B-01-06	5/18/2022	1-6	8,100	0.84	**36**	230	0.83	1.5	11,000	15	9.7	37	27,000	**120**	3,900	740	40	2,100	2.9	0.89	160	J+	0.32	32	270
GS-18D-01-06	5/18/2022	1-6	7,800	0.78	**28**	200	0.97	2	12,000	11	5.9	31	22,000	**130**	4,400	640	37	1,800	2.7	0.88	160	J+	0.28	26	320
GS-19B-01-06	5/18/2022	1-6	7,500	0.67	**30**	190	0.85	1.3	10,000	11	8.6	41	25,000	**110**	4,200	600	44	1,900	2.9	0.73	140	J+	0.28	27	230
GS-20B-01-06	5/18/2022	1-6	7,700	0.69	**33**	200	0.79	1.8	8,200	9.8	7.4	33	23,000	**130**	3,300	700	34	1,900	2.3	0.9	110	J+	0.28	28	260
GS-20D-01-06	5/18/2022	1-6	6,900	0.78	**34**	190	0.73	1.6	11,000	14	6.6	31	22,000	**120**	3,800	720	24	1,700	2.3	0.89	140	J+	0.26	27	280
GS-21D-01-06	5/18/2022	1-6	6,900	2.6	**140**	260	0.66	2.5	7,100	12	8.1	57	46,000	**500**	2,700	1,100	26	2,700	3	**3.9**	180	J+	0.48	48	520
GS-22D-01-06	5/18/2022	1-6	8,000	1.2	**47**	210	0.78	2.1	11,000	12	9.4	45	29,000	**180**	3,500	850	23	2,600	2.8	1.2	180	J+	0.33	36	410
GS-23D-01-06	5/18/2022	1-6	8,400	1	**48**	170	0.83	2.7	17,000	13	11	45	31,000	**190**	5,100	1,000	27	2,100	3.1	1.3	160	J+	0.35	36	380
GS-24D-01-06	5/18/2022	1-6	7,900	1.2	**46**	200	0.9	2.3	11,000	13	8.2	42	28,000	**180**	3,900	840	28	2,600	3	1.2	120	J+	0.35	33	440
GS-25D-01-06	5/18/2022	1-6	7,700	1.2	**58**	200	0.95	2.5	16,000	12	8.5	44	31,000	**240**	5,800	980	25	3,100	2.8	1.6	240		0.37	36	410
GS-26D-01-06	5/18/2022	1-6	7,000	1	**46**	180	0.87	2.3	14,000	11	6.6	47	25,000	**200**	4,700	850	21	2,300	2.3	1.4	250		0.31	31	590
GS-27D-01-06	5/18/2022	1-6	7,600	0.65	**33**	190	0.79	1.5	11,000	10	6.1	26	22,000	**130**	2,500	640	16	2,100	2.1	0.95	280		0.24	26	260
GS-28D-01-06	5/18/2022	1-6	7,700	1.3	**58**	180	1.5	2.5	9,200	14	6.6	39	26,000	**200**	3,200	880	19	2,600	2.6	1.3	240		0.37	37	430
GS-29A4-01-06	5/16/2022	1-6	4,400	2.4	**100**	160	0.78	1.8	16,000	27	5.8	66	40,000	**610**	4,800	560	19	2,400	2	**4.1**	250		0.51	37	390
GS-29A5-01-06	5/16/2022	1-6	4,100	2.6	**110**	170	0.55	2	7,600	19	5.6	70	42,000	**700**	2,000	560	16	2,600	2	**4.4**	240		0.54	38	420
GS-29D-01-06	5/18/2022	1-6	8,600	1.8	**79**	220	1.7	**3.8**	8,100	14	7.3	43	30,000	**280**	3,300	1,100	26	3,000	2.9	2	160	J+	0.45	45	590
GS-29D-01-06-DUP	5/18/2022	1-6	8,700	1.8	**78**	220	1.8	**3.8**	8,100	14	7.3	48	30,000	**280**	3,400	1,100	25	3,000	2.9	2	170	J+	0.44	45	600
GS-29D-01-06-TRI	5/18/2022	1-6	9,100	1.7	**79**	250	1.8	**3.9**	8,200	15	7.6	46	31,000	**290**	3,400	1,200	23	3,100	3	2.2	170	J+	0.45	47	620
GS-30A-01-06	5/16/2022	1-6	4,500	1.8	**110**	190	0.5	1.9	7,500	16	6	77	46,000	**650**	1,700	580	15	2,900	2.1	**4.2**	280		0.53	39	460

Table 4
2022 Garner Street Soils Analytical Results - Metals in Soils (1-6 in. bgs)

		Analyte	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Vanadium	Zinc
		Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		CAS No.	7429-90-5	7440-36-0	7440-38-2	7440-39-3	7440-41-7	7440-43-9	7440-70-2	7440-47-3	7440-48-4	7440-50-8	7439-89-6	7439-92-1	7439-95-4	7439-96-5	7440-02-0	7440-09-7	7782-49-2	7440-22-4	7440-23-5	7440-28-0	7440-62-2	7440-66-6
		Residential Screening Level (mg/kg)	77,000[a]	31[a]	0.68[a]	15,000[a]	160[a]	7.1[a]	--	--	23[a]	3,100[a]	55,000[a]	100/200[c]	--	1,800[a]	1,400[a]	--	390[a]	390[a]	--	0.78[a]	390[a]	23,000[a]
		Industrial Screening Level (mg/kg)	1,100,000[b]	470[b]	3[b]	220,000[b]	2,300[b]	100[b]	--	--	350[b]	47,000[b]	820,000[b]	800[d]	--	26,000[b]	18,000[b]	--	5,800[b]	5,800[b]	--	12[b]	5,800[b]	350,000[b]
		3x background	--	2.79	45	690	4.8	3.6	--	57	36	81	--	255	--	3,300	87	--	6.3	3.3	--	1.38	117	480
Field Sample ID	**Sample Date**	**Sample Depth Interval (in. bgs)**																						
GS-31A-01-06	5/18/2022	1-6	5,200	2	**100**	220	0.67	2.2	4,500	9.9	4.8	75	43,000	**650**	1,500	520	20	3,100	2.4	4.5	220	0.57	38	470
GS-32A-01-06	5/16/2022	1-6	5,300	1.9	**96**	210	0.6	1.9	6,000	19	5.4	71	42,000	**570**	1,700	450	14	2,700	2.4	4.1	260	0.52	36	420
GS-33A-01-06	5/16/2022	1-6	6,900	1.6	**96**	220	0.75	2.9	7,800	18	9	60	41,000	**450**	2,400	880	20	2,900	2.7	3.3	260	0.54	40	500
GS-34A-01-06	5/16/2022	1-6	6,800	1.4	**77**	180	0.73	3.4	6,700	20	8.7	57	39,000	**410**	2,300	770	20	2,700	2.8	2.8	240	0.47	35	520
GS-35A-01-06	5/16/2022	1-6	6,800	1.3	**75**	210	0.8	2.9	7,000	22	8.2	56	36,000	**370**	2,200	890	19	3,400	2.7	2.7	220	0.48	36	490
GS-36A-01-06	5/16/2022	1-6	7,200	1.3	**80**	240	0.85	2.6	8,000	20	7.9	52	35,000	**320**	2,500	780	19	2,800	2.8	2.3	170 J+	0.48	39	490
GS-37A-01-06	5/16/2022	1-6	7,900	0.99	**65**	260	0.87	3.8	8,400	24	8.9	50	30,000	**270**	2,500	1,300	22	3,000	2.8	2.1	200 J+	0.44	39	570
GS-38A-01-06	5/16/2022	1-6	8,500	0.86	**63**	180	1	5.6	10,000	19	8.1	63	34,000	**240**	3,400	940	19	2,800	3.8	2.1	330	0.42	35	1,200
GS-39A-01-06	5/16/2022	1-6	9,700	1.2	**84**	250	0.96	6.8	14,000	25	10	71	35,000	**270**	4,200	1,200	25	3,600	3.1	2	390	0.45	42	1,500
GS-40A-01-06	5/16/2022	1-6	9,000	0.91	**58**	180	0.82	5.3	19,000	15	13	52	38,000	**200**	3,700	1,200	27	2,600	3.6	1.5	260	0.43	39	730
GS-40A1-01-06	5/16/2022	1-6	7,700	0.58	**37**	180	0.71	1.3	12,000	24	10	36	27,000	98	3,800	670	26	2,400	3.1	0.82	320	0.32	29	240
GS-40A1-01-06-DUP	5/16/2022	1-6	8,300	0.59	**43**	190	0.76	1.6	12,000	25	11	43	30,000	**110**	4,300	760	27	2,600	3.3	0.96	390	0.34	31	280
GS-40A1-01-06-TRI	5/16/2022	1-6	8,300	0.52	**37**	200	0.73	1.4	12,000	24	9.9	36	27,000	100	3,900	670	25	2,400	3	0.81	310	0.31	30	240
GS-40A2-01-06	5/16/2022	1-6	8,600	0.52	**29**	180	0.78	1.5	13,000	34	12	41	30,000	61	4,400	650	33	2,500	3.9	0.49	380	0.38	30	200
GS-41A-01-06	5/17/2022	1-6	8,800	0.48	**32**	190	0.75	1.4	12,000	30	11	43	31,000	68	4,400	610	32	2,600	3.8	0.53	290	0.37	31	200
GS-42A-01-06	5/17/2022	1-6	8,700	0.54	**29**	190	0.8	1.1	16,000	48	13	38	31,000	54	4,700	720	39	2,400	3.6	0.45	220	0.34	31	180
GS-43A-01-06	5/17/2022	1-6	8,900	0.39 J	**28**	170	0.78	1.2	14,000	20	15	41	32,000	50	4,500	750	33	2,300	4.1	0.35	250	0.36	30 J	180
GS-44A-01-06	5/17/2022	1-6	6,600	0.45	**20**	170	0.65	0.79	10,000	34	6.7	24	18,000	48	2,900	470	25	1,800	2	0.37	170 J+	0.22	24	140
GS-45A-01-06	5/17/2022	1-6	8,000	0.41	**23**	200	0.79	1.1	12,000	12	11	38	25,000	61	3,900	670	39	2,000	3.3	0.45	410	0.32	26	180
GS-46A-01-06	5/17/2022	1-6	8,300	0.56	**29**	220	0.83	1.4	11,000	28	12	41	29,000	71	4,600	790	31	2,400	3.4	0.78	450	0.35	29	230
GS-47A-01-06	5/17/2022	1-6	7,100	0.61	**26**	180	0.78	1.2	16,000	27	7.5	29	20,000	86	5,400	600	22	2,000	2.4	0.61	170 J+	0.27	27	210
GS-BG01-01-06	5/17/2022	1-6	6,600	0.25	**10**	93	0.68	0.39	5,800	35	6.9	18	17,000	37	3,000	430	26	2,400	2.6	0.08 J	100 U	0.17	18	77
GS-BG02-01-06	5/17/2022	1-6	8,800	0.24	**11**	100	0.69	0.35	6,600	46	7.6	20	18,000	29	3,500	400	34	2,200	2.1	0.098 J	100 U	0.19	21	74
GS-BG03-01-06	5/17/2022	1-6	5,500	0.2	**7.4**	84	0.58	0.29	4,100	31	4.8	12	13,000	22	1,800	310	20	1,900	1.9	0.11 U	100 U	0.14	17	54
GS-CA01-01-06	5/16/2022	1-6	6,700	1.3	**60**	170	0.78	1.7	11,000	22	10	57	36,000	**290**	3,000	710	25	2,500	3.3	1.9	180 J+	0.42	36	340
GS-CA02-01-06	5/16/2022	1-6	8,300	0.76	**39**	160	0.76	1.5	19,000	15	14	45	36,000	**120**	3,700	770	28	2,800	4.5	0.83	200 J+	0.38	34	240
GS-CA03-01-06	5/16/2022	1-6	8,000	1	**52**	180	0.83	2	20,000	19	12	51	34,000	**180**	4,300	850	28	2,200	3.6	1.3	190 J+	0.44	38	320
GS-CA04-01-06	5/16/2022	1-6	6,200	1.3	**63**	170	0.79	2.3	14,000	24	7.7	44	28,000	**260**	4,000	800	22	2,800	2.7	1.8	140 J+	0.39	38	440
GS-CA04-01-06-DUP	5/16/2022	1-6	6,300	1.2	**63**	180	0.78	2.2	13,000	26	8.1	44	29,000	**260**	3,900	770	24	2,800	2.6	1.8	140 J+	0.4	39	420
GS-CA04-01-06-TRI	5/16/2022	1-6	5,900	1.3	**62**	150	0.71	2	15,000	23	7.7	44	28,000	**250**	3,800	730	21	2,600	2.4	1.8	130 J+	0.38	37	380
GS-CA05-01-06	5/16/2022	1-6	7,000	1.2	**67**	200	0.74	2.3	14,000	21	9.4	46	31,000	**220**	4,200	840	23	2,700	2.7	1.7	190 J+	0.39	40	410
GS-CA06-01-06	5/16/2022	1-6	7,700	1.1	**60**	190	0.77	1.8	12,000	17	10	45	33,000	**180**	4,000	830	22	3,600	3.5	1.4	170 J+	0.37	39	350
GS-CA07-01-06	5/17/2022	1-6	6,900	0.47	**21**	170	0.7	0.81	15,000	24	6.9	25	19,000	64	4,900	520	20	2,600	2.1	0.47	100 J+	0.23	25	180
GS-CA08-01-06	5/19/2022	1-6	7,700	0.81	**42**	180	0.89	1.8	24,000	12	8.7	41	27,000	**190**	6,700	830	25	2,400	2.7	1.3	170 J+	0.35	32	290
GS-CA09-01-06	5/19/2022	1-6	7,500	0.83	**47**	180	0.81	2.1	17,000	11	12	38	29,000	**170**	4,600	1,000	28	2,400	2.8	1.3	120 J+	0.35	31	320
GS-CA10-01-06	5/19/2022	1-6	7,800	0.8	**49**	170	0.83	1.8	18,000	12	11	44	33,000	**210**	5,000	970	27	2,200	3.1	1.3	160 J+	0.43	32	310
GS-CA11-01-06	5/19/2022	1-6	7,200	1.3 J	**68**	160	0.76	2.3	15,000	11	12	50	36,000	**300**	4,000	1,100	28	2,300	3.1	2.1 J	170 J+	0.48	35	360
GS-CA12-01-06	5/19/2022	1-6	7,700	0.9	**53**	130	0.83	1.8	19,000	12	10	43	29,000	**170**	6,100	840	26	2,200	2.9	1.9	270	0.35	34	300
GS-CA12-01-06-DUP	5/19/2022	1-6	7,700	0.85	**44**	130	0.84	1.5	25,000	12	11	43	30,000	**140**	6,500	830	31	2,100	3.2	0.93	280	0.35	32	240
GS-CA12-01-06-TRI	5/19/2022	1-6	8,200	0.93	**57**	130	0.85	2.2	18,000	13	11	48	32,000	**190**	5,600	940	31	2,300	3	1.2	250	0.38	35	340
GS-CA13-01-06	5/19/2022	1-6	8,100	0.85	**46**	200	0.96	1.1	16,000	15	8.7	31	24,000	**110**	4,700	640	35	2,400	2.8	0.76	130 J+	0.33	38	210
GS-CA13-01-06-DUP	5/19/2022	1-6	7,100	0.73	**33**	160	0.84	1.2	24,000	13	8.4	36	24,000	**120**	7,000	680	25	2,100	2.5	0.68	180 J+	0.29	29	300
GS-CA13-01-06-TRI	5/19/2022	1-6	7,300	0.77	**42**	180	0.81	1.5	19,000	13	8.9	41	25,000	**130**	5,600	730	28	2,200	2.6	0.93	200 J+	0.33	32	410
GS-CA14-01-06	5/19/2022	1-6	6,600	0.33	**18**	140	0.59	0.64	10,000	9.7	6.8	21	17,000	58	3,400	440	14	2,100	1.9	0.25	110 J+	0.21	22	120
GS-CA14-01-06-DUP	5/19/2022	1-6	7,900	0.53	**25**	190	0.91	0.94	16,000	13	8	31	22,000	83	5,600	630	22	2,100	2.6	0.47	110 J+	0.28	27	170
GS-CA14-01-06-TRI	5/19/2022	1-6	7,900	0.5	**27**	190	0.93	0.91	15,000	14	7.6	26	20,000	72	5,500	600	18	2,100	2.6	0.42	100 J+	0.27	26	160
GS-HOUSE-01-06	5/17/2022	1-6	8,600	1.2	**52**	210	0.87	2.2	8,200	26	8	40	28,000	**210**	2,800	890	21	4,400	2.7	1.2	180 J+	0.34	39	420
GS-VACANT-01-06	5/17/2022	1-6	8,400	1	**58**	210	0.97	2.3	9,900	35	8.6	40	29,000	**210**	3,600	870	30	2,900	3.2	1.5	120 J+	0.44	35	380

Notes

-- Not established or not applicable

[a] EPA Regional Screening Level (RSL) for Residential Soil (TR=1E-06, THQ=1.0)

[b] EPA RSL for Industrial Soil (TR=1E-06, THQ=1.0)

[c] EPA Office of Land and Emergency Management Updated Residential Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, 2024: EPA Regions should use a screening level of 200 mg/kg for residential soil lead and 100 mg/kg if an additional source of lead (such as lead water service lines, lead-based paint, etc.) is identified. It is unknown at this time whether an additional source of lead is present at this site and both screening levels are presented as a conservative measure

[d] Background concentration is maximum concentration for the analyte from both depth intervals (0-1-in. bgs and 1-6-in. bgs) for the samples > 1.45 mi from the smokestack. See Appendix A.

Indicates concentration that exceeds three times background concentration established by the 2023 SI

BOLD Indicates concentration that exceeds EPA Screening Level for Residential Soil

BOLD Indicates concentration that exceeds one or more RSL and three times background concentration established by the 2023 SI

BOLD Indicates concentration that exceeds EPA Screening Level for Residential Soil and Industrial Soil

CA Common Area
CAS No. Chemical Abstracts Service Number
DUP Field Duplicate
GS Garner Street
J The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+ The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.

mg/kg milligram per kilogram
RSL Regional Screening Level
TR Target Cancer Risk
TRI Triplicate
THQ Target Hazard Quotient

Table 5
2023 SI - Surface Soil Analytical Results - Metals in Soil Samples (0-1 in. bgs)

						Analyte	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
						Units	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
						CAS No.	7440-36-0	7440-38-2	7440-39-3	7440-41-7	7440-43-9	7440-47-3	7440-48-4	7440-50-8	7439-92-1	7439-96-5	7440-02-0	7782-49-2	7440-22-4	7440-28-0	7440-62-2	7440-66-6
						Residential Screening Level (mg/kg)	31[a]	0.68[a]	15,000[a]	160[a]	7.1[a]	--	23[a]	3,100[a]	100/200[c]	1,800[a]	1,500[a]	390[a]	390[a]	0.78[a]	390[a]	23,000[a]
						Industrial Screening Level (mg/kg)	470[b]	3[b]	220,000[b]	2,300[b]	100[b]	--	350[b]	47,000[b]	800[d]	26,000[b]	18,000[b]	5,800[b]	5,800[b]	12[b]	5,800[b]	350,000[b]
						3x Background[d]	2.79	45	690	4.8	3.6	57	36	81	255	3,300	87	6.3	3.3	1.38	117	480
Distance from Smokestack (mi)	Sample Location ID	Field Sample ID	CLP Sample ID	Sample Date	Sample Depth Interval (in. bgs)																	
0 - 0.5 mi from Smokestack																						
0.303	13	HWY-SS13-0-1	MH0F27	6/12/2023	0-1	1.1	**22**	300	1.5	1.6	16	6.0	45	**280**	580	13	0.79 J	0.54	0.49 U	30	470
		HWY-SS13-0-1-DUP	MH0F83		0-1	1.2	**24**	310	1.6	1.7	19	6.7	55	**280**	640	15	0.67 J	0.52	0.42 U	34	520
0.387	34	HWY-SS34-0-1	MH0F70	6/13/2023	0-1	0.80 U	**28**	190	1.5	1.3	10	6.3	24	100	810	12	0.67 J	0.71	0.40 U	26	260
0.5 - 1.0 mi from Smokestack																						
0.731	01	HWY-SS01-0-1	MH0F02	6/13/2023	0-1	0.82 U	**11** J-	160	0.75	0.63	9.1	6.8	31	35	410	13	0.71 J	0.15 J	0.41 U	24	130
		HWY-SS01-0-1-DUP	MH0F81		0-1	0.89 U	**12**	180 J+	0.79	0.76 J	10	7.4	36	39	430	15	0.70 J	0.19 J	0.44 U	26	140
0.543	03	HWY-SS03-0-1	MH0F09	6/13/2023	0-1	0.76 U	**26**	170	0.80	1.1	8.4	5.2	18	75	490	10	0.42 J	0.46	0.38 U	24	140
0.840	04	HWY-SS04-0-1	MH0F11	6/13/2023	0-1	0.78 U	**4.6**	130	0.76	0.37 J	6.0	3.6	9.1	22	330	5.8	0.43 J	0.093 J	0.39 U	14	57
0.641	05	HWY-SS05-0-1	MH0F13	6/13/2023	0-1	0.92 U	**5.1**	140	0.98	0.62	8.1	5.5	13	28	440	16 J+	0.69 J	0.11 J	0.46 U	19	96
0.937	07	HWY-SS07-0-1	MH0F17	6/13/2023	0-1	0.89 U	**7.6**	260	2.2	0.63	6.6	5.9	13	34	1,500	10	1.3 J	0.13 J	0.45 U	18	150
0.756	10	HWY-SS10-0-1	MH0F21	6/13/2023	0-1	0.89 U	**18**	180	0.80	0.89	11	9.8	42	42	680	21	0.83 J	0.25 J	0.45 U	31	160
0.913	22	HWY-SS22-0-1	MH0F46	6/12/2023	0-1	0.91 U	**7.7**	83	0.46 U	0.84	10 J+	5.3	15	15	200	14	0.39 J	0.14 J	0.46 U	23	94 J+
		HWY-SS22-0-1-DUP	MH0F85		0-1	0.89 U	**6.6**	83	0.45 U	0.71	8.3 J+	4.3	12	14	170	12 J+	0.46 J	0.14 J	0.45 U	20	83
0.730	23	HWY-SS23-0-1	MH0F48	6/13/2023	0-1	0.86 U	**17**	210	0.84	1.3	13	6.3	31	**160**	520	13 J+	0.43 J	0.44	0.43 U	26	260
0.879	24	HWY-SS24-0-1	MH0F50	6/13/2023	0-1	0.86 U	**28**	190	0.89	1.0	11 J+	5.7	41	94	570	14 J+	0.65 J	0.45	0.43 U	25	230
0.579	29	HWY-SS29-0-1	MH0F60	6/12/2023	0-1	0.91 U	**10**	130	1.4	0.71	7.8	4.8	17	46	400	8.2	0.76 J	0.80	0.46 U	20	140
		HWY-SS29-0-1-DUP	MH0F87		0-1	0.67 U	**7.9**	110	1.2	0.60	6.5	4.0	14	40	350	6.9	0.54 J	0.70	0.34 U	17	110
0.576	33	HWY-SS33-0-1	MH0F68	6/12/2023	0-1	0.75 U	**6.7**	120	0.73	0.42	9.9 J+	5.7	15	21	350	15	0.76 J	0.12 J	0.37 U	25	96
0.636	35	HWY-SS35-0-1	MH0F72	6/13/2023	0-1	1.4	**35**	190	0.91	3.8	13	5.5	62	**640**	730	12	0.60 J	3.7	0.36 U	26	660
1.0 - 1.5 mi from Smokestack																						
1.231	02	HWY-SS02-0-1	MH0F07	6/13/2023	0-1	0.85 U	**17**	170	0.89	0.67	14	8.7	24	28	900	19	0.90 J	0.20 J	0.42 U	30	160
1.094	06	HWY-SS06-0-1	MH0F15	6/12/2023	0-1	0.68 U	**6.4**	130	0.43	0.27 J	7.9 J+	4.6	11	18	230	9.3 J+	1.7 U	0.095 J	0.34 U	19	57 J+
1.162	14	HWY-SS14-0-1	MH0F29	6/12/2023	0-1	0.83 U	**6.5**	130	0.87	0.34 J	8.1	5.3	12	33	290	12	0.36 J	0.23 J	0.42 U	24	66
1.458	15	HWY-SS15-0-1	MH0F31	6/13/2023	0-1	0.80 U	**4.2**	88	0.59	0.52	5.5 J+	2.7	16	52	180	4.2 J+	0.32 J	0.22 J	0.4 U	11	89
1.288	16*	HWY-SS-16-0-1	MH0F33	6/13/2023	0-1	0.85 U	**4.9**	110	0.90	0.34 J	6.6 J+	4.8	14	27	330	8.1 J+	0.46 J	0.089 J	0.42 U	13	93
1.151	17^	HWY-SS-17-0-1	MF0F35	6/13/2023	0-1	14	**260**	620	1.3	3.6	15	8.8	48	**240**	**2,400**	13	1.7 U	4.1	**1.1**	130	720
1.106	28	HWY-SS28-0-1	MH0F58	6/12/2023	0-1	0.86 U	**9.8**	110	0.65	0.81	12 J+	5.4	17	29	270	13	0.65 J	0.20 J	0.43 U	25	120 J+
1.081	30	HWY-SS30-0-1	MH0F62	6/13/2023	0-1	0.67 U	**14**	150	0.97	0.41	12	7.9	18	25	690	18	0.62 J	0.17 J	0.34 U	28	110
1.5 - 2.0 mi from Smokestack																						
1.515	11	HWY-SS11-0-1	MH0F23	6/13/2023	0-1	0.88 U	**6.8**	130	1.1	0.61	6.2 J+	4.5	12	40	240	9.0	0.57 J	0.23 J	0.44 U	17	100 J+
2.0 - 2.5 mi from Smoketack																						
2.075	12	HWY-SS12-0-1	MH0F25	6/12/2023	0-1	0.89 U	**5.5**	140	0.65	1.2	12	3.8	18	85	330	7.2 J+	0.44 J	1.1	0.44 U	20	160
2.097	21	HWY-SS21-0-1	MH0F75	6/12/2023	0-1	0.68 U	**2.9**	130	0.52	0.18 J	5.7 J+	3.2	8.1	12	230	5.1 J+	0.35 J	0.047 J	0.34 U	18	54 J+
2.164	26	HWY-SS26-0-1	MH0F54	6/12/2023	0-1	0.74 U	**4.9**	190	0.56	0.51	9.1 J+	5.1	15	30	270	9.2 J+	0.29 J	0.096 J	0.37 U	23	110 J+
2.079	27	HWY-SS27-0-1	MH0F56	6/12/2023	0-1	0.79 U	**15**	160	0.68	0.40	19	12	27	22	930	29	1.1 J	0.12 J	0.4 U	39	110
2.5 - 3.0+ mi from Smokestack																						
2.880	18	HWY-SS18-0-1	MH0F37	6/12/2023	0-1	0.81 U	**3.7**	96	0.46	0.63	9.4	3.3	12	28	170	6.9	0.35 J	0.19 J	0.4 U	13	71
2.605	19	HWY-SS19-0-1	MH0F39	6/12/2023	0-1	0.83 U	**6.4**	80	0.46	0.82	9.0	4.7	15	13	270	11	0.84 J	0.10 J	0.42 U	18	110
3.102	20	HWY-SS20-0-1	MH0F74	6/12/2023	0-1	0.89 U	**3.0**	230	0.84	0.44 J	7.3 J+	4.9	14	18	270	5.8 J+	0.44 J	0.098 J	0.45 U	23	91 J+

Notes:

--	Not established or not applicable
*	Sample material was non-native soils
^	Sample material appeared to be tailings
[a]	EPA Regional Screening Level (RSL) for Residential Soil (TR=1E-06, THQ=1.0)
[b]	EPA RSL for Industrial Soil (TR=1E-06, THQ=1.0)
[c]	EPA Office of Land and Emergency Management Updated Residential Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, 2024: EPA Regions should use a screening level of 200 mg/kg for residential soil lead and 100 mg/kg if an additional source of lead (such as lead water service lines, lead-based paint, etc.) is identified. It is unknown at this time whether an additional source of lead is present at this site and both screening levels are presented as a conservative measure
[d]	Background concentration is maximum concentration for the analyte from both depth intervals (0-1-in. bgs and 1-6-in. bgs) for the samples > 1.45 mi from the smokestack. See **Appendix X.**
BOLD	Indicates concentration that exceeds EPA Screening Level for Residential Soil
BOLD	Indicates concentration that exceeds EPA Screening Level for Residential and Industrial Soil
	Indicates concentration that exceeds three times background concentration, documenting an observed release.
CAS No.	Chemical Abstracts Service Number
CLP	U.S. EPA Contract Laboratory Program
[d]	EPA Regional Removal Management Level (RML) for Composite Worker Soil (TR=1E-06, THQ=3.0)
DUP	Field Duplicate
EPA	U.S. Environmental Protection Agency
in. bgs	inches below ground surface
J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high
mg/kg	milligram per kilogram
mi	miles
SS	Surface Soil
THQ	Target Hazard Quotient
TR	Target Cancer Risk
TRM	Total Recoverable Metals
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit)

Table 6
2023 SI - Subsurface Soil Analytical Results - Metals in Soil Samples (1-6 in. bgs)

Analyte						Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Units						(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
CAS No.						7440-36-0	7440-38-2	7440-39-3	7440-41-7	7440-43-9	7440-47-3	7440-48-4	7440-50-8	7439-92-1	7439-96-5	7440-02-0	7782-49-2	7440-22-4	7440-28-0	7440-62-2	7440-66-6
Residential Screening Level (mg/kg)						31[a]	0.68[a]	15,000[a]	160[a]	7.1[a]	--	23[a]	3,100[a]	100/200[c]	1,800[a]	1,500[a]	390[a]	390[a]	0.78[a]	390[a]	23,000[a]
Industrial Screening Level (mg/kg)						470[b]	3[b]	220,000[b]	2,300[b]	100[b]	--	350[b]	47,000[b]	800[d]	26,000[b]	18,000[b]	5,800[b]	5,800[b]	12[b]	5,800[b]	350,000[b]
3x Background[d]						2.79	45	690	4.8	3.6	57	36	81	255	3,300	87	6.3	3.3	1.38	117	480
Distance from Smokestack (mi)	Sample Location ID	Field Sample ID	CLP Sample ID	Sample Date	Sample Depth Interval (in. bgs)																
0 - 0.5 mi from Smokestack																					
0.303	13	HWY-SS13-1-6	MH0F28	6/12/2023	1-6	0.85 U	**20**	210	1.0	0.80	12	6.6	30	87	490	16	0.67 J	0.3 J	0.42 U	32	150
		HWY-SS13-1-6-DUP	MH0F84		1-6	0.91 U	**20**	220	1.0	0.77	13	6.8	31	84	490	16	0.46 J	0.26 J	0.46 U	33	150
0.387	34	HWY-SS34-1-6	MH0F71	6/13/2023	1-6	0.74 J+	**27**	180	1.4	1.4	11	7.1	31	89	880	14	0.75 J	0.62	0.34 U	27	230
0.5 - 1.0 mi from Smokestack																					
0.731	01	HWY-SS01-1-6	MH0F03	6/13/2023	1-6	0.79 U	**12**	220	0.82	0.56	12	9	26	37	420	19	0.73 J	0.18 J	0.40 U	28	110
		HWY-SS01-1-6-DUP	MH0F82		1-6	0.88 U	**13**	200	0.79	0.53	13	9.7	28	34	430	20	0.89 J	0.15 J	0.44 U	31	120
0.543	03	HWY-SS03-1-6	MH0F10	6/13/2023	1-6	0.85 U	**25**	120	0.61	0.85	6.9	4.1	17	70	360	8.7 J+	0.34 J	0.31 J	0.42 U	18	110
0.840	04	HWY-SS04-1-6	MH0F12	6/13/2023	1-6	0.89 U	**5.1**	74	0.49	0.24 J	7.3	2.9	6.1	20	200	5.3	2.2 U	0.084 J	0.44 U	12	30 J+
0.641	05	HWY-SS05-1-6	MH0F14	6/13/2023	1-6	0.76 U	**4.5**	140	1.0	0.45	10	5.7	11	22	490	12	0.55 J	0.084 J	0.38 U	19	80
0.937	07	HWY-SS07-1-6	MH0F18	6/13/2023	1-6	0.78 U	**7.6**	240	2.0	0.65	5.9	5.1	11	31	1,300	9.1	1.2 J	0.13 J	0.39 U	16	130
0.756	10	HWY-SS10-1-6	MH0F22	6/13/2023	1-6	0.81 U	**18**	120	0.65	0.69	7.9	10	35	37	850	22	0.82 J	0.27 J	0.41 U	25	120
0.913	22	HWY-SS22-1-6	MH0F47	6/12/2023	1-6	0.78 U	**8.3**	100	0.43	0.73	8.5 J+	5.5	13	15	200	14	0.39 J	0.15 J	0.39 U	22	66 J+
		HWY-SS22-1-6-DUP	MH0F86		1-6	0.67 U	**9.6**	120	0.51	0.91	12	6.5	15	18	240	17	0.44 J	0.19 J	0.34 U	27	83
0.730	23	HWY-SS23-1-6	MH0F49	6/13/2023	1-6	0.92 U	**16**	180	0.78	1.2	8.9 J+	6.6	25	**130**	470	13 J+	0.46 J	0.34 J	0.46 U	26	180
0.879	24	HWY-SS24-1-6	MH0F51	6/13/2023	1-6	0.93 U	**24**	200	1.1	1.3	21 J+	6.5	40	**110**	650	17 J+	0.84 J	0.53	0.46 U	30	240
0.579	29	HWY-SS29-1-6	MH0F61	6/12/2023	1-6	1.5	**27**	200	1.4	0.84	13	5.3	29	**110**	520	11	0.6 J	0.88	0.34 U	27	160
		HWY-SS29-1-6-DUP	MH0F88		1-6	0.92 J	**20**	130	0.93	0.61	9.9	4.4	20	65	480	13	2.1 U	0.72	0.41 U	22	120
0.576	33	HWY-SS33-1-6	MH0F69	6/12/2023	1-6	0.67 U	**8.8**	150	0.92	0.53	14	7.4	17	25	380	20	0.89	0.11	0.50 U	32	90
0.636	35	HWY-SS35-1-6	MH0F73	6/13/2023	1-6	1.5	**43**	200	1.0	**7.2**	11	5.2	65	**390**	750	12	0.47 J	2.3	0.44 U	32	1,000
1.0 - 1.5 mi from Smokestack																					
1.231	02	HWY-SS02-1-6	MH0F08	6/13/2023	1-6	0.89 U	**13**	120	0.71	0.77	9.6	5.5	16	19	590	13	0.78 U	0.19 J	0.45 U	20	170
1.094	06	HWY-SS06-1-6	MH0F16	6/12/2023	1-6	0.83 U	**8.8**	140	0.45	0.33 J	8.1 J+	5.3	11	21	250	11 J+	0.36 J	0.12 J	0.41 U	21	56 J+
1.162	14	HWY-SS14-1-6	MH0F30	6/12/2023	1-6	0.78 U	**5.3**	140	1.1	0.18 J	10	5.5	10	14	260	13	0.41 J	0.07 J	0.39 U	25	44 J+
1.458	15	HWY-SS15-1-6	MH0F32	6/13/2023	1-6	0.82 U	**3.5**	58	0.48	0.38 J	4.6 J+	2.4	11	31	180	3.3 J+	2.1 U	0.14 J	0.41 U	9.3	55 J+
1.288	16*	HWY-SS16-1-6	MH0F34	6/13/2023	1-6	0.84 U	**4.1**	110	0.59	0.22 J	15	4.8	13	58	860	7.6 J+	2.1 U	0.097 J	0.42 U	11	56 J+
1.151	17^	HWY-SS17-1-6	MH0F36	6/13/2023	1-6	14	**250**	250	1.3	3.6	10	7.5	53	**200**	**2,100**	12	0.29 J	3.8	**0.89**	110	610
1.106	28	HWY-SS28-1-6	MH0F59	6/12/2023	1-6	0.81 U	**11**	120	0.76	0.97	13	6.7	16	33	380	15	0.62 J	0.31 J	0.40 U	26	100
1.081	30	HWY-SS30-1-6	MH0F63	6/13/2023	1-6	0.92 U	**19**	130	0.81	0.47	20	9.1	20	23	920	21	1.1 J	0.16 J	0.46 U	32	120
1.5 - 2.0 mi from Smokestack																					
1.515	11	HWY-SS11-1-6	MH0F24	6/13/2023	1-6	0.93 U	**6.5**	140	1.6	0.50	8.8 J+	6.0	17	40	290	11	0.57 J	0.29 J	0.46 U	20	100 J+
2.0 - 2.5 mi from Smoketack																					
2.075	12	HWY-SS12-1-6	MH0F26	6/12/2023	1-6	0.86 U	**4.6**	93	0.46	0.95	9.8 J+	3.1	13	68	330	6.6	0.33 J	0.81	0.43 U	15	120 J+
2.097	21	HWY-SS21-1-6	MH0F45	6/12/2023	1-6	0.76 U	**2.9**	76	0.49	0.13 J	7.9 J+	2.7	7.9	9.5	180	6.1 J+	0.29 J	0.038 J	0.38 U	13	32 J+
2.164	26	HWY-SS26-1-6	MH0F55	6/12/2023	1-6	0.77 U	**3.8**	120	0.40	0.19 J	5.9 J+	3.6	8.5	14	190	7.2 J+	1.9 U	0.046 J	0.39 U	15	46 J+
2.079	27	HWY-SS27-1-6	MH0F57	6/12/2023	1-6	0.88 U	**14**	190	0.82	0.48	16 J+	12	24	26	1,100	28	1.6 J	0.11 J	0.44 U	37	89
2.5 - 3.0+ mi from Smokestack																					
2.880	18	HWY-SS18-1-6	MH0F38	6/12/2023	1-6	0.78 U	**4.0**	94	0.45	0.52	7.5	3.1	9.4	24	160	5.7	1.9 U	0.14 J	0.39 U	12	49 J+
2.605	19	HWY-SS19-1-6	MH0F40	6/12/2023	1-6	0.90 U	**10**	76	0.65 J	0.55	8.8	6.5	16	20	160	17	0.83 J	0.14 J	0.45 U	22	73
3.102	20	HWY-SS20-1-6	MH0F76	6/12/2023	1-6	0.79 U	**2.9**	170	0.84	0.34 J	6.5 J+	5.6	13	14	340	5.9 J+	0.34 J	0.083 J	0.39 U	24	63 J+

Notes:

--	Not established or not applicable
*	Sample material was non-native soils
^	Sample material appeared to be tailings
[a]	EPA Regional Screening Level (RSL) for Residential Soil (TR=1E-06, THQ=1.0)
[b]	EPA RSL for Industrial Soil (TR=1E-06, THQ=1.0)
[c]	EPA Office of Land and Emergency Management Updated Residential Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, 2024: EPA Regions should use a screening level of 200 mg/kg for residential soil lead and 100 mg/kg if an additional source of lead (such as lead water service lines, lead-based paint, etc.) is identified. It is unknown at this time whether an additional source of lead is present at this site and both screening levels are presented as a conservative measure
[d]	Background concentration is maximum concentration for the analyte from both depth intervals (0-1-in. bgs and 1-6-in. bgs) for the samples > 1.45 mi from the smokestack. See **Appendix A**.
BOLD	Exceeds EPA Screening Level for Residential Soil
BOLD	Exceeds EPA Screening Level for Residential and Industrial Soil
	Indicates concentration that exceeds three times background concentration, documenting an observed release
CAS No.	Chemical Abstracts Service Number
CLP	U.S. EPA Contract Laboratory Program
[d]	EPA Regional Removal Management Level (RML) for Composite Worker Soil (TR=1E-06, THQ=3.0)
DUP	Field Duplicate
EPA	U.S. Environmental Protection Agency
in. bgs	inches below ground surface
J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high
mg/kg	milligram per kilogram
mi	miles
SS	Surface Soil
THQ	Target Hazard Quotient
TR	Target Cancer Risk
TRM	Total Recoverable Metals
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit)

					Analyte	Mercury	
					Units	(mg/kg)	
					CAS No.	7439-97-6	
					EPA Residential RSL[a] (mg/kg)	11	
					EPA Industrial RSL[b] (mg/kg)	46	
					3x Background[c]	0.36	
Distance from Smokestack (mi)	**Sample Location ID**	**Sample Date**	**Field Sample ID**	**CLP Sample ID**	**Sample Depth Interval (in. bgs)**		
0 - 0.5 mi from Smokestack							
0.303	13	6/12/2023	HWY-SS13-0-1HG	MH0FE7	0-1	0.22	J-
			HWY-SS13-0-1-DUPHG	MH0FE6	0-1	0.11	J-
			HWY-SS13-1-6HG	MH0FE9	1-6	0.058	J-
			HWY-SS13-1-6-DUPHG	MH0FE8	1-6	0.17	J-
0.387	34	6/13/2023	HWY-SS34-0-1HG	MH0FJ8	0-1	0.053	J-
			HWY-SS34-1-6HG	MH0FJ9	1-6	0.15	J-
0.5 - 1.0 mi from Smokestack							
0.731	01	6/13/2023	HWY-SS01-0-1HG	MH0FC4	0-1	0.035	J-
			HWY-SS01-0-1-DUPHG	MH0FC6	0-1	0.036	J-
			HWY-SS01-1-6HG	MH0FC7	1-6	0.047	J-
			HWY-SS01-1-6-DUPHG	MH0FC5	1-6	0.088	J-
0.543	03	6/13/2023	HWY-SS03-0-1HG	MH0FD0	0-1	0.42	J-
			HWY-SS03-1-6HG	MH0FD1	1-6	0.079	J-
0.840	04	6/13/2023	HWY-SS04-0-1HG	MH0FD2	0-1	--	R
			HWY-SS04-1-6HG	MH0FD3	1-6	--	R
0.641	05	6/13/2023	HWY-SS05-0-1HG	MH0FD4	0-1	0.069	J-
			HWY-SS05-1-6HG	MH0FD5	1-6	0.064	J-
0.937	07	6/13/2023	HWY-SS07-0-1HG	MH0FD8	0-1	0.098	J-
			HWY-SS07-1-6HG	MH0FD9	1-6	0.11	J-
0.756	10	6/13/2023	HWY-SS10-0-1HG	MH0FE0	0-1	0.082	J-
			HWY-SS10-1-6HG	MH0FE1	1-6	0.062	J-
0.913	22	6/12/2023	HWY-SS22-0-1HG	MH0FG7	0-1	0.067	J-
			HWY-SS22-0-1-DUPHG	MH0FG6	0-1	0.092	J-
			HWY-SS22-1-6HG	MH0FG9	1-6	0.068	J-
			HWY-SS22-1-6-DUPHG	MH0FG8	1-6	0.068	J-
0.730	23	6/13/2023	HWY-SS23-0-1HG	MH0FH0	0-1	0.17	J-
			HWY-SS23-1-6HG	MH0FH1	1-6	0.36	J-
0.879	24	6/13/2023	HWY-SS24-0-1HG	MH0FH2	0-1	0.10	J-
			HWY-SS24-1-6HG	MH0FH3	1-6	0.056	J-
0.579	29	6/12/2023	HWY-SS29-0-1HG	MH0FJ1	0-1	0.05	J-
			HWY-SS29-0-1-DUPHG	MH0FJ0	0-1	0.21	J-
			HWY-SS29-1-6HG	MH0FJ3	1-6	0.12	J-
			HWY-SS29-1-6-DUPHG	MH0FJ2	1-6	1.7	J-
0.576	33	6/12/2023	HWY-SS33-0-1HG	MH0FJ6	0-1	0.053	J-
			HWY-SS33-1-6HG	MH0FJ7	1-6	11	J-
0.636	35	6/13/2023	HWY-SS35-0-1HG	MH0FK0	0-1	0.20	J-
			HWY-SS35-1-6HG	MH0FK1	1-6	0.24	J-
1.0 - 1.5 mi from Smokestack							
1.231	02	6/13/2023	HWY-SS02-0-1HG	MH0FC8	0-1	0.035	J-
			HWY-SS02-1-6HG	MH0FC9	1-6	0.046	J-
1.094	06	6/12/2023	HWY-SS06-0-1HG	MH0FD6	0-1	0.069	J-
			HWY-SS06-1-6HG	MH0FD7	1-6	0.081	J-
1.162	14	6/12/2023	HWY-SS14-0-1HG	MH0FF0	0-1	0.03	J-
			HWY-SS14-1-6HG	MH0FF1	1-6	0.02	J-
1.458	15	6/13/2023	HWY-SS15-0-1HG	MH0FF2	0-1	0.11	J-
			HWY-SS15-1-6HG	MH0FF3	1-6	0.053	J-
1.288	16*	6/13/2023	HWY-SS16-0-1HG	MH0FF4	0-1	0.062	J-
			HWY-SS16-1-6HG	MH0FF5	1-6	1.1	J-
1.151	17^	6/13/2023	HWY-SS17-0-1HG	MH0FF6	0-1	--	R
			HWY-SS17-1-6HG	MH0FF7	1-6	0.031	J-

					Analyte	Mercury	
					Units	(mg/kg)	
					CAS No.	7439-97-6	
					EPA Residential RSL[a] (mg/kg)	11	
					EPA Industrial RSL[b] (mg/kg)	46	
					3x Background[c]	0.36	
Distance from Smokestack (mi)	**Sample Location ID**	**Sample Date**	**Field Sample ID**	**CLP Sample ID**	**Sample Depth Interval (in. bgs)**		
1.106	28	6/12/2023	HWY-SS28-0-1HG	MH0FH8	0-1	0.082	J-
			HWY-SS28-1-6HG	MH0FH9	1-6	0.091	J-
1.081	30	6/13/2023	HWY-SS30-0-1HG	MH0FJ4	0-1	0.074	J-
			HWY-SS30-1-6HG	MH0FJ5	1-6	0.028	J-
1.5 - 2.0 mi from Smokestack							
1.515	11	6/13/2023	HWY-SS11-0-1HG	MH0FE2	0-1	0.11	J-
			HWY-SS11-1-6HG	MH0FE3	1-6	0.12	J-
2.0 - 2.5 mi from Smokestack							
2.075	12	6/12/2023	HWY-SS12-0-1HG	MH0FE4	0-1	0.11	J-
			HWY-SS12-1-6HG	MH0FE5	1-6	0.11	J-
2.097	21	6/12/2023	HWY-SS21-0-1HG	MH0FG4	0-1	--	R
			HWY-SS21-1-6HG	MH0FG5	1-6	0.041	J-
2.164	26	6/12/2023	HWY-SS26-0-1HG	MH0FH4	0-1	0.043	J-
			HWY-SS26-1-6HG	MH0FH5	1-6	0.039	J-
2.079	27	6/12/2023	HWY-SS27-0-1HG	MH0FH6	0-1	0.046	J-
			HWY-SS27-1-6HG	MH0FH7	1-6	0.063	J-
2.5 - 3.0+ mi from Smokestack							
2.880	18	6/12/2023	HWY-SS18-0-1HG	MH0FF8	0-1	0.079	J-
			HWY-SS18-1-6HG	MH0FF9	1-6	0.065	J-
2.605	19	6/12/2023	HWY-SS19-0-1HG	MH0FG0	0-1	0.055	J-
			HWY-SS19-1-6HG	MH0FG1	1-6	0.057	J-
3.102	20	6/12/2023	HWY-SS20-0-1HG	MH0FG2	0-1	0.044	J-
			HWY-SS20-1-6HG	MH0FG3	1-6	0.031	J-

Notes:

--	No value available
*	Sample material was non-native soils
^	Sample material appeared to be tailings
[a]	EPA Regional Screening Level (RSL) for Residential Soil (Target Cancer Risk [TR]=1E-06, Target Hazard Quotient [THQ]=1
[b]	EPA RSL for Industrial Soil (TR=1E-06, THQ=1.0)
[c]	Background concentration is maximum concentration for the analyte from both depth intervals (0-1-in. bgs and 1-6-in. bgs) for the samples > 1.45 mi from the smokestack. See Appendix A.
	Indicates concentration that exceeds three times background concentration, documenting an observed release
CAS No.	Chemical Abstracts Service Number
CLP	U.S. EPA Contract Laboratory Program
DUP	Field Duplicate
EPA	U.S. Environmental Protection Agency
in. bgs	Inches below ground surface
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low
mg/kg	milligram per kilogram
mi	miles
R	The sample result is rejected as unusable based on serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
SS	Surface Soil

APPENDIX A

Background Calculations for Lead and Arsenic

The data set of 28 soil sample results was evaluated to determine a background value (Table 1). The samples collected from location 16 and location 17 were determined to be non-native soils and were excluded from the analysis. Because the data appeared to be decreasing consistently with distance from the former stack, background was estimated using a calculational approach.

The data were plotted and a logarithmic fit was made to the data using Microsoft Excel. The regression parameters for the fit are shown in Figures 1 through 4. These parameters were used to estimate the distance from the former stack at which the predicted concentration reaches a background level determined using statewide data sets.

For arsenic, a value of 11 mg/kg was used, based on Colorado Department of Public Health and Environment Guidance (CDPHE) data (CDPHE 2014). This value represents a 95 percent upper confidence limit (UCL) for statewide data.

For lead, a value of 46.8 mg/kg was used, based on United States Geological Survey (USGS) data (USGS 2024). This value representes a 95th percentile for statewide data after removal of outliers.

Table 2 summarizes the calculations of distance for each of four data sets. The arsenic and lead results for 0 to 1 inch and 1 to 6 inches were each treated separately for the analysis.

The maximum distance at which one of the data sets reached the background level was 1.45 miles, which was used to split the data set. Locations further than 1.45 were considered representative of background (Table 3), locations closer were not.

Statistical comparisons of the two subsets of data were conducted for each of the four data sets. These comparisons were done using ProUCL 5.2, version 0. The two-tailed version of the Wilcoxon-Mann-Whitney test was used to assess whether there were statistical differences between the two data sets. In each test, the conclusion is that the data sets are different.

Background levels for arsenic and lead were determined by selecting the maximum value of each metal in the set of samples collected at a distance of greater than 1.45 miles from the former stack. Selecting the maximum value is intended to be conservative, i.e. more-legally defensible, per the Hazard Ranking System Guidance Manual. Both data sets (i.e., the 0 to 1 inch and 1 to 6 inches sets) were used, and the highest concentration overall from both data sets was selected as the background level for each metal. For arsenic, the maximum value is 15 mg/kg. For lead, the maximum value is 85 mg/kg.

References:

1. Colorado Department of Public Health and Environment (CDPHE). 2014. Arsenic Concentrations in Soil, Risk management guidance for evaluating. July.
2. United States Geological Survey (USGS). 2024. USGS Background Soil-Lead Survey: State Data. Accessed online March 18 at https://www.epa.gov/superfund/usgs-background-soil-lead-survey-state-data#CO

Table 1. Full Data set by Distance from Stack

Distance from Stack (miles)	Location ID	Arsenic Concentration (mg/kg)		Lead Concentration (mg/kg)	
		0 to 1 inch bgs	1 to 6 inches bgs	0 to 1 inch bgs	1 to 6 inches bgs
0.303	13	22	20	280	87
0.387	34	28	27	100	89
0.543	03	26	25	75	70
0.576	33	6.7	8.8	21	25
0.579	29	10	27	46	110
0.636	35	35	43	640	390
0.641	05	5.1	4.5	28	22
0.730	23	17	16	160	130
0.731	01	11	12	35	37
0.756	10	18	18	42	37
0.840	04	4.6	5.1	22	20
0.879	24	28	24	94	110
0.913	22	7.7	8.3	15	15
0.937	07	7.6	7.6	34	31
1.081	30	14	19	25	23
1.094	06	6.4	8.8	18	21
1.106	28	9.8	11	29	33
1.162	14	6.5	5.3	33	14
1.231	02	17	13	28	19
1.458	15	4.2	3.5	52	31
1.515	11	6.8	6.5	40	40
2.075	12	5.5	4.6	85	68
2.079	27	15	14	22	26
2.097	21	2.9	2.9	12	9.5
2.164	26	4.9	3.8	30	14
2.605	19	6.4	10	13	20
2.880	18	3.7	4	28	24
3.102	20	3	2.9	18	14

Notes:

Distances shown are rounded to 3 decimal places for presentation, but all places provided by GIS were used in the regression analysis.

bgs Below ground surface
ID Identification
mg/kg Milligram per kilogram

Figure 1. Arsenic Data and Logarithmic Fit for 0 to 1 Inch bgs

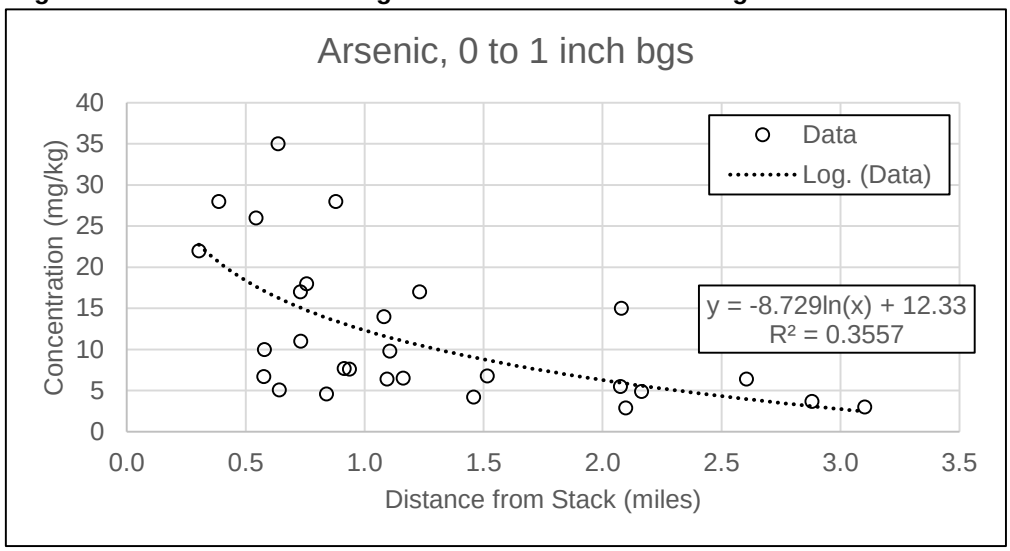


Figure 2. Arsenic Data and Logarithmic Fit for 1 to 6 Inches bgs

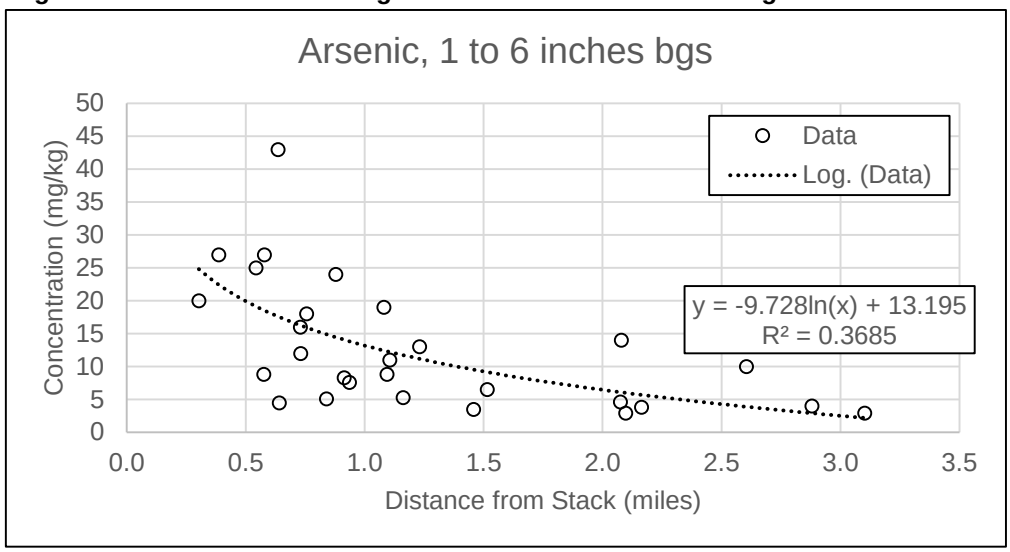


Figure 3. Lead Data and Logarithmic Fit for 0 to 1 Inch bgs

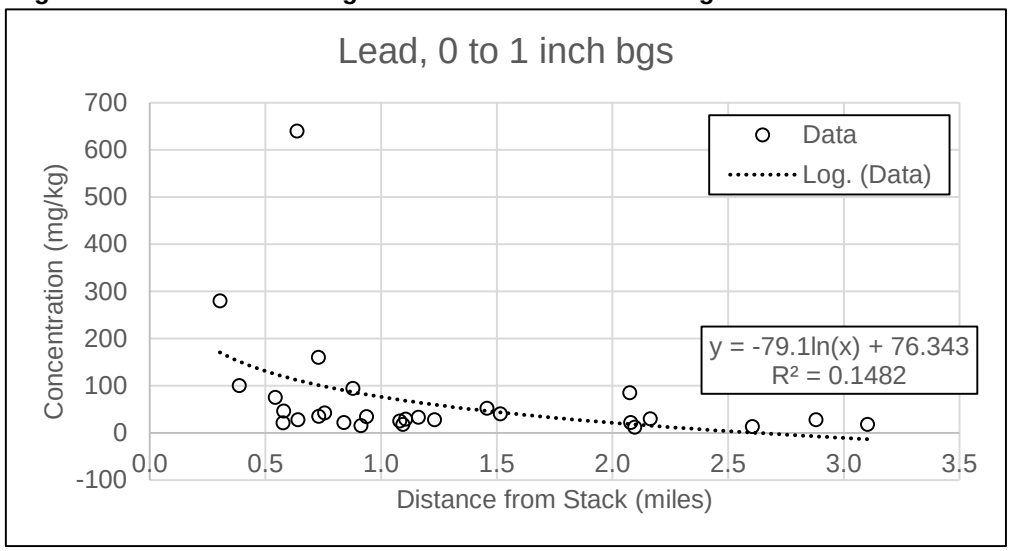


Figure 4. Lead Data and Logarithmic Fit for 1 to 6 Inches bgs

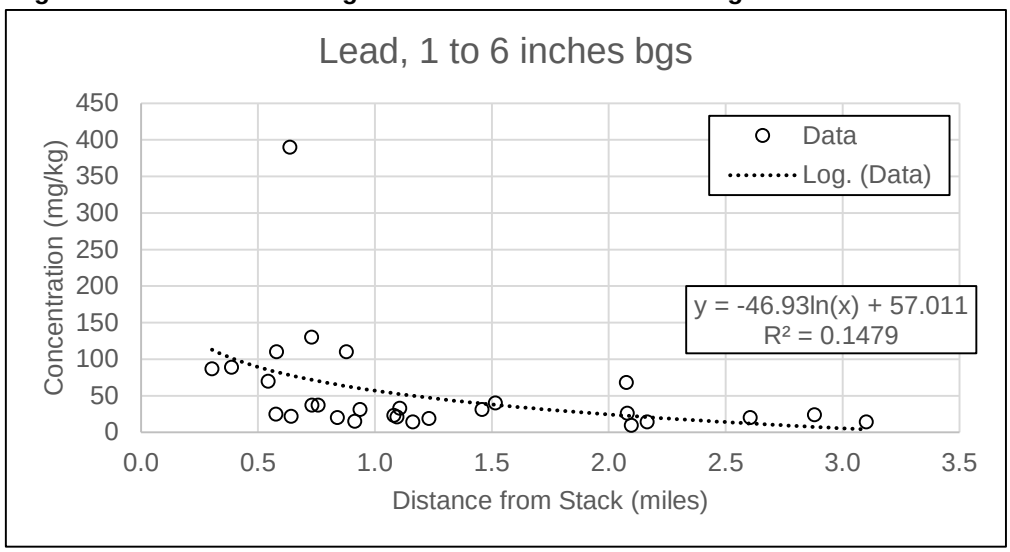


Table 2. Calculation of Predicted Distance to Reach State Background Concentrations

Analyte	Depth (inches bgs)	Slope	Intercept	Background Value (mg/kg)	Predicted Distance at Background
Arsenic	0 to 1	-8.729	12.33	11	1.16
	1 to 6	-9.728	13.195	11	1.25
Lead	0 to 1	-79.1	76.343	46.8	1.45
	1 to 6	-46.93	57.011	46.8	1.24
Maximum					**1.45**

Notes:

bgs Below ground surface
mg/kg Milligram per kilogram

Table 3. Data Set outside of 1.45 Miles from Stack

Distance from Stack (miles)	**Location ID**	**Arsenic Concentration**		**Lead Concentration (mg/kg)**	
		0 to 1 inch bgs	**1 to 6 inches bgs**	**0 to 1 inch bgs**	**1 to 6 inches bgs**
1.458	15	4.2	3.5	52	31
1.515	11	6.8	6.5	40	40
2.075	12	5.5	4.6	85	68
2.079	27	15	14	22	26
2.097	21	2.9	2.9	12	9.5
2.164	26	4.9	3.8	30	14
2.605	19	6.4	10	13	20
2.880	18	3.7	4	28	24
3.102	20	3	2.9	18	14
Maximum		15	14	85	68

Exhibit 1. ProUCL Wilcoxon-Mann-Whitney Test Results, Arsenic 0 to 1 Inch bgs

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	ProUCL 5.2 3/13/2024 1:43:14 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median = Sample 2 Mean/Median (Two Sided Alternative)
Alternative Hypothesis	Sample 1 Mean/Median <> Sample 2 Mean/Median

Sample 1 Data: Arsenic (0-1 inch)(<1.45)

Sample 2 Data: Arsenic (0-1 inch)(>1.45)

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	19	9
Number of Distinct Observations	17	9
Minimum	4.6	2.9
Maximum	35	15
Mean	14.76	5.822
Median	11	4.9
SD	9.196	3.71
SE of Mean	2.11	1.237

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 = Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	339.5
WMW U-Stat	149.5
Mean (U)	85.5
SD(U) - Adj ties	20.32
Lower U-Stat Critical Value (0.025)	46
Upper U-Stat Critical Value (0.975)	125
Standardized WMW U-Stat	3.15
Approximate P-Value	0.00164

Conclusion with Alpha = 0.05

Reject H0, Conclude Sample 1 <> Sample 2

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	ProUCL 5.2 3/13/2024 1:43:14 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median = Sample 2 Mean/Median (Two Sided Alternative)
Alternative Hypothesis	Sample 1 Mean/Median <> Sample 2 Mean/Median

Sample 1 Data: Arsenic (0-1 inch)(<1.45)

Sample 2 Data: Arsenic (0-1 inch)(>1.45)

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	19	9
Number of Distinct Observations	17	9
Minimum	4.6	2.9
Maximum	35	15
Mean	14.76	5.822
Median	11	4.9
SD	9.196	3.71
SE of Mean	2.11	1.237

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 = Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	339.5
WMW U-Stat	149.5
Mean (U)	85.5
SD(U) - Adj ties	20.32
Lower U-Stat Critical Value (0.025)	46
Upper U-Stat Critical Value (0.975)	125
Standardized WMW U-Stat	3.15
Approximate P-Value	0.00164

Conclusion with Alpha = 0.05

Reject H0, Conclude Sample 1 <> Sample 2

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	ProUCL 5.2 3/13/2024 1:45:05 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median = Sample 2 Mean/Median (Two Sided Alternative)
Alternative Hypothesis	Sample 1 Mean/Median <> Sample 2 Mean/Median

Sample 1 Data: :Lead (0-1 inch)(<1.45)

Sample 2 Data: :Lead (0-1 inch)(>1.45)

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	19	9
Number of Distinct Observations	18	9
Minimum	15	12
Maximum	640	85
Mean	90.79	33.33
Median	34	28
SD	147.8	23.28
SE of Mean	33.91	7.759

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 = Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	304
WMW U-Stat	114
Mean (U)	85.5
SD(U) - Adj ties	20.31
Lower U-Stat Critical Value (0.025)	46
Upper U-Stat Critical Value (0.975)	125
Standardized WMW U-Stat	1.403
Approximate P-Value	0.161

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 = Sample 2

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs

User Selected Options	
Date/Time of Computation	ProUCL 5.2 3/13/2024 1:45:32 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median = Sample 2 Mean/Median (Two Sided Alternative)
Alternative Hypothesis	Sample 1 Mean/Median <> Sample 2 Mean/Median

Sample 1 Data: Lead (1-6 inches)(<1.45)

Sample 2 Data: Lead (1-6 inches)(>1.45)

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	19	9
Number of Distinct Observations	17	8
Minimum	14	9.5
Maximum	390	68
Mean	67.53	27.39
Median	33	24
SD	86.6	17.92
SE of Mean	19.87	5.972

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 = Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	309
WMW U-Stat	119
Mean (U)	85.5
SD(U) - Adj ties	20.32
Lower U-Stat Critical Value (0.025)	46
Upper U-Stat Critical Value (0.975)	125
Standardized WMW U-Stat	1.65
Approximate P-Value	0.099

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 = Sample 2

APPENDIX B

Highway 24 Site Inspection Trip Report