

**Justification for the Partial Deletion from
the National Priorities List
Three Residential Properties of the
South Minneapolis Residential Soil Contamination
Superfund Site
Minneapolis, Minnesota
January 2024**

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List of Acronyms

ALS	- ALS Environmental Laboratory
ATSDR	- Agency for Toxic Substances and Disease Registry
CERCLA	- Comprehensive Environmental Response, Compensation and Liability Act
EPA	- U.S. Environmental Protection Agency
ER	- Environmental Restoration, LLC
FR	- Federal Register
FS	- Feasibility Study
FYR	- Five Year Review
HASP	- Health and Safety Plan
HHRA	- Human Health Risk Assessment
IC	- Institutional Control
MDA	- Minnesota Department of Agriculture
MDH	- Minnesota Department of Health
mg/kg	- milligrams per kilogram (parts per million)
mg/m ³	- micrograms per cubic meter
µg/l	- micrograms per liter (parts per billion)
MnDOT	- Minnesota Department of Transportation
MPCA	- Minnesota Pollution Control Agency
NCP	- National Oil and Hazardous Substances Pollution Contingency Plan
NOIPD	- Notice of Intent for Partial Deletion
NPL	- National Priorities List
O&M	- Operation and Maintenance
OLEM	- Office of Land and Emergency Management
PEL	- Permissible Exposure Limit
PM	- Particulate Matter

QAPP - Quality Assurance Project Plan
QA/QC - Quality Assurance/Quality Control
RA - Remedial Action
RAOs - Remedial Action Objectives
RCRA - Resource Conservation Recovery Act
RD - Remedial Design
RI - Remedial Investigation
RI/FS - Remedial Investigation/Feasibility Study
ROD - Record of Decision
RSLs - Regional Screening Levels
SAP - Sampling and Analysis Plan
SLERA - Screening Level Ecological Risk Assessment
SWCA - Special Well Construction Area
TCLP - RCRA Toxicity Characteristic Leaching Procedure
TLV - Threshold Limit Value
UU/UE - Unlimited Use/Unlimited Exposure
XRF - X-Ray Florescence

Justification for the Partial Deletion from the National Priorities List Three Residential Properties of the South Minneapolis Residential Soil Contamination Superfund Site Minneapolis, Minnesota

1.0 Purpose

The U.S. Environmental Protection Agency (EPA) Region 5 is proposing to delete three of the remaining four properties of the South Minneapolis Residential Soil Contamination Superfund Site (South Minn. Site or Site) from the National Priorities List (NPL). EPA is proposing to delete these properties from the NPL because all appropriate response actions have been implemented and no further cleanup actions are necessary at these properties. Because these properties were cleaned up to levels that allow for unlimited use/unrestricted exposure (UU/UE), operation and maintenance (O&M), institutional controls (ICs) to restrict land and groundwater use, and Five-Year Reviews (FYRs) are not required. The properties included in this proposed partial deletion action are listed in Table 1 and are identified as Properties 01, 10 and 11 on Figure 1. The primary contaminant at the Site is arsenic.

EPA deleted the majority of the South Minn. Site (approximately 3,623 of 3,632 properties) from the NPL in the *Federal Register* (FR) on September 30, 2019 (84 FR 37112) after either remediating these properties (approximately 623 properties) or sampling them and clearing them for residential use. In 2020, EPA obtained access to sample five of the nine properties remaining on the NPL (Properties 02 to 06 on Figure 1) and determined that these properties were below the cleanup levels and did not require remediation. EPA deleted these five properties from the NPL on September 14, 2021 (86 FR 51010).

In 2021, EPA remediated the soil at the last four properties at the Site. Three of these properties were cleaned up to levels that allow for UU/UE (Properties 01, 10, and 11). EPA is currently proposing to delete these three properties from the NPL (see Table 1 and Figure 1). The last, remaining property at the Site (Property 09, see Table 2), was remediated but requires ICs to restrict land use because the property owner did not allow EPA access to excavate the soil below existing brickwork and sculptures in the backyard. This last property will remain on the NPL until the ICs are implemented and is not being considered for deletion as part of this action.

This document provides EPA's justification for this proposed partial deletion action. EPA and the state support agency, the Minnesota Department of Agriculture (MDA), will continue to attempt to implement an enforceable IC that runs with the land at the last remaining Site property so that the Site can be proposed for a full NPL deletion.

EPA plans to publish a Notice of Intent for Partial Deletion (NOIPD) of these three properties of the South Minn. Site from the NPL in the *Federal Register* (the proposed rulemaking) and will

open a 30-day public comment period on this proposed action. This document provides information about the Site and explains how these three properties meet EPA's criteria for partial deletion. The documents which provide support for this report and for deleting these properties from the NPL are available for review in the South Minn. Site Partial Deletion Docket. This docket is available online at <https://www.regulations.gov>, Docket ID EPA-HQ-OLEM-2023-0471 and at EPA's webpage for the Site at www.epa.gov/superfund/south-minneapolis-soil. An index and internet links to the documents included in the partial deletion docket is provided in Appendix A. The docket also includes information about the 2019 and 2021 partial Site deletions.

Deletion or partial deletion of a site from the NPL does not create, alter, or revoke any individual's rights or obligations. Deletion or partial deletion of a site from the NPL does not in any way alter the EPA's right to take enforcement actions, as appropriate. The NPL is designed primarily for informational purposes and to assist EPA management. Section 300.425(e)(3) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) states that a deletion or partial deletion of a site from the NPL does not preclude eligibility for future response actions, should future conditions warrant such actions. As these three properties are a part of the South Minn. Site, Section 300.425(e)(3) is applicable to this proposed action.

2.0 Agency Concurrence

EPA requested concurrence from MDA to delete these three properties of the South Minn. Site from the NPL on October 31, 2023. MDA issued a concurrence letter on November 23, 2023. A copy of MDA's concurrence letter is in Appendix B.

EPA's Office of Land and Emergency Management (OLEM) reviewed and approved this Site-Specific Justification for Partial Deletion on November 29, 2023. Region 5 expects OLEM to propose the Site for partial deletion in the Federal Register EPA's February 2024 NPL Deletions Update.

3.0 Community Involvement

EPA and MDA have, and will continue, to conduct public participation activities throughout all response actions for this Site, satisfying the provisions of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Sections 113(k) and 117, 42 U.S.C. §§ 9613(k) and 9617, and the NCP, 40 C.F.R. §§ 300.415(n), 300.430(f), 300.815, and 300.820. EPA will publish a notice advertising the availability of the NOIPD and the 30-day public comment period in a local newspaper, the Minneapolis Star Tribune, concurrent with the publication of the NOIPD in the Federal Register, in order to satisfy public participation procedures required by Section 300.425(e)(4) of the NCP. EPA will issue a press release announcing the proposed partial deletion and announce the proposed deletion on EPA's webpages for the Site at <https://www.epa.gov/superfund/south-minneapolis-soil>. EPA expects to complete these activities in February 2024.

The documents that EPA relied on for this report and to support the deletion of these three of the last four residential properties at the South Minn. Site from the NPL are available for public review in the partial deletion docket (see NPL Partial Deletion Docket Reports in Attachment A). This Partial Deletion Justification report and copies of the reports in the docket are also available to the public online at <https://www.regulations.gov>, Docket ID EPA-HQ-OLEM-2023-0471 and at EPA's webpage for the Site at <https://www.epa.gov/superfund/south-minneapolis-soil> under "Site Documents & Data". The docket also includes information about the 2019 and 2021 partial Site deletions.

4.0 Site Background and History

4.1 Location/Project Organization

The South Minn. Site (MND 000 509 136) is located in Minneapolis, Hennepin County, Minnesota, approximately two miles southeast of downtown Minneapolis. The Site included approximately 3,632 properties located on about 1,400 acres within an approximate three-quarter mile radius of the CMC Heartland Lite Yard State Superfund Cleanup Site (CMC Site), the primary source of the contamination at the South Minn. Site. The South Minn. Site boundary was based on air dispersion modeling which showed the potential area of arsenic deposition from past operations at the CMC Site (Figure 2).

EPA deleted the majority of the South Minn. Site that had been cleaned up and/or sampled and cleared for residential use (approximately 3,623 of 3,632 properties) from the NPL in 2019. Approximately 623 of these properties were remediated, and about 3,000 were sampled and cleared for residential use. Nine properties (Properties 01 to 06 and 09 to 11 in Figure 1) were excluded from the 2019 partial deletion because EPA was not given access to conduct sampling and/or remediation at these properties. These nine properties remained on the NPL.

In 2019 and 2020, EPA obtained access to complete sampling at six of the nine remaining properties (Properties 01 to 06) that still required sampling. EPA sampled these properties and the results indicated that the soil at five of these properties was below the cleanup criteria and did not require remediation (Properties 02 to 06). EPA deleted these five properties from the NPL in 2021.

EPA cleaned up the soil at the last four Site properties in September 2021. Three of these four properties were cleaned up to levels that allow for UU/UE (Properties 01, 10 and 11). EPA is now proposing to delete these properties from the NPL (see Table 1 and Figure 1). The last, remaining property at the Site (Property 09, Table 2), was remediated but requires the implementation of ICs to restrict land use because the property owner did not allow EPA access to excavate the soil below existing brickwork and sculptures in the backyard. This last property will remain on the NPL and is not being considered for deletion as part of this action.

The South Minn. Site is a residential soil cleanup. The CMC Site and the industrial and commercial properties located throughout the South Minn. Site area are not on the NPL and are not part of the South Minn. Site. Because these properties are not part of the South Minn. Site, EPA does not have the authority to conduct any investigation or cleanup activities on these properties as part of the South Minn. Site cleanup.

4.2 NPL Listing and Partial Deletions

EPA proposed the South Minn. Site to the NPL on September 27, 2006 (71 FR 56433) due to the potential health risks posed to residents from exposure to arsenic-contaminated soil. EPA finalized the South Minn. Site on the NPL on September 19, 2007 (72 FR 53463).

EPA proposed to delete approximately 3,623 of the South Minn. Site properties that had been cleaned up and/or cleared for residential use from the NPL on July 31, 2019 (84 FR 37195). Following public comment, the partial deletion of these properties was effective on September 30, 2019 (84 FR 37112). Nine Site properties that still required sampling and/or cleanup remained on the NPL after the 2019 partial deletion. Five of these properties were subsequently sampled in June 2020 and cleared for unrestricted residential use. EPA proposed these five properties for deletion on May 14, 2021 and finalized the partial deletion on September 14, 2021 (86 FR 51010).

Four South Minn. Site properties remain on the NPL. EPA is proposing to delete three of these four properties that were cleaned up in 2021 to levels that allow for UU/UE as part of this partial deletion action (Properties 01, 10, and 11, see Table 1 and Figure 1). The last Site property (Property 09, see Table 2) was also cleaned up in 2021 but requires ICs to restrict land use in some areas under brickwork and sculptures where remediation was not permitted. This last Site property will remain on the NPL until effective ICs can be implemented.

4.3 History of Contamination and CMC Site Cleanup

The primary source of the contamination at the South Minn. Site is the CMC Site, which is located at the northwest corner of Hiawatha Avenue and 28th Street in Minneapolis. Past herbicide and pesticide manufacturing operations at the CMC Site contaminated the South Minn. Site with arsenic. The CMC Site was cleaned up under MDA's State Superfund Cleanup Program in 2004-2005 and redeveloped into a 60,000 square foot light industrial building called the Hiawatha Business Center.

The Minnesota Department of Transportation (MnDOT) discovered the arsenic contamination at the CMC Site in 1994 when investigating the Hiawatha Avenue corridor for reconstruction. The MnDOT collected soil samples from the easternmost part of the CMC Site and detected organochlorine pesticides and elevated levels of arsenic in some of the soil borings.

In 1996, CMC Heartland Partners, the CMC Site property owner at the time, began investigating the CMC Site under the oversight of the MDA's Agricultural Voluntary Investigation and Cleanup Program. Later, the State of Minnesota added the CMC Site to the Minnesota Permanent List of Priorities, a list of sites eligible for cleanup under Minnesota's State Superfund Program. In 2003, the MDA formally requested U.S. Borax and CMC Heartland Partners to investigate and cleanup the CMC Site.

U.S. Borax's and CMC Heartland Partner's investigations detected arsenic in surface soil at the CMC Site at concentrations as high as 5,000 milligrams per kilogram (mg/kg). Groundwater below the CMC Site contained arsenic concentrations as high as 320,000 micrograms per liter ($\mu\text{g/l}$). The groundwater contamination extended approximately 1,800 feet west-southwest of the CMC Site.

U.S. Borax and CMC Heartland Partners cleaned up the CMC Site from 2004 to 2005 under the oversight of MDA's Superfund Program. The cleanup included the excavation, stabilization and off-site disposal of contaminated soil and debris from the property and institutional controls to restrict access to residual soil and groundwater contamination remaining at and downgradient of the CMC Site.

There are no private drinking water wells at the CMC Site or within the South Minn. Site area. The City of Minneapolis supplies all drinking water to the area from the Mississippi River. The City of Minneapolis, Minnesota Code of Ordinances Chapter 9, Section 1 requires that all properties within the city connect to the municipal water supply.

The Minnesota Department of Health (MDH) established a Special Well Construction Area (SWCA) to address the arsenic plume from the CMC Site in 2005. The SWCA applies to the construction, repair, and sealing of all wells and will remain in effect until further notice. The SWCA includes the area bounded by East 26th Street on the north, 26th Avenue on the east, Lake Street on the south, and Bloomington Avenue South on the west, within the City of Minneapolis. A copy of MDH's 2005 memorandum concerning the SWCA is available in the Docket.

2800 Hiawatha LLC acquired the CMC Site in 2005. 2800 Hiawatha LLC conducted an additional soil cleanup at the CMC Site under MDA's voluntary cleanup program, now called the AgVIC program, and redeveloped the property into the Hiawatha Business Center. 2800 Hiawatha LLC also monitored the arsenic concentrations in groundwater at the CMC Site. In 2018 the CMC Site was sold to Schadegg Development LLC. The MDA is working with Rio Tinto Canada, Inc., a successor to U.S. Borax, on continued investigation of the groundwater at the CMC Site.

4.4 Initial Response Actions at South Minn. Site

Due to the elevated concentrations of arsenic at the CMC Site, in 1999, the MDH recommended that soil sampling be performed in residential areas near the CMC Site (part of the area that would come to be known as the South Minn. Site). The prevailing summer winds were

determined to be from the southeast toward the northwest; therefore, the residential area located directly downwind of the CMC Site was the focus of this initial sampling effort.

MDA in conjunction with MDH, conducted the initial, limited sampling event at residential properties to the west (crosswind) and northwest (downwind) of the CMC Site in 2001. The results of the 2001 MDA sampling detected arsenic in soil at six of the 11 downwind properties sampled at concentrations as high as 24 to 210 milligrams per kilogram (mg/kg).

Based on the 2001 sampling event and neighborhood concerns, MDA and MDH determined that additional sampling to the northwest and west of the CMC Site was warranted. MDA conducted a second study in 2003. MDA developed the sampling design for the 2003 study to obtain statistically valid data using a grid overlain on the Phillips neighborhood with the majority of samples falling on residential properties.

MDA's contractor collected soil samples from a total of 242 locations and 167 properties during the 2003 sampling. MDA's contractor additionally collected 12 duplicate samples for quality control and 23 co-located samples to give an indication of spatial variability.

Thirty-five samples collected from 27 of the properties contained arsenic at concentrations greater than or equal to the Minnesota Pollution Control Agency (MPCA) unrestricted land use standard of 10 mg/kg. In 11 of the samples, the concentration of arsenic was greater than 100 mg/kg. Four of those samples contained arsenic at concentrations exceeding 200 mg/kg.

4.5 EPA Emergency Removal Actions

In 2004, MDA requested EPA's assistance to determine whether a time critical removal action was warranted to address the arsenic concentrations detected in the residential soil. EPA agreed to perform an additional investigation. EPA collected samples from 192 properties, primarily in the vicinity of the properties previously identified as hotspots, from a depth of zero to three inches below ground surface.

EPA consulted with the Agency for Toxic Substances and Disease Registry (ATSDR) and determined that arsenic concentrations equal to or greater than 95 mg/kg in surface soil posed an acute risk to human health and warranted an emergency removal action. Based on the results of multiple sampling events conducted in the Phillips neighborhood (the vicinity of East 26th Street and Bloomington Avenue), EPA identified 30 properties that exceeded the 95 mg/kg criterion.

EPA conducted a removal action in 2004 to mitigate the threat. EPA excavated the top 12 inches of soil from the yards and the top 18 inches of soil from play areas and gardens at the 30 identified properties. EPA removed an average of 106 cubic yards of arsenic-contaminated soil from each excavated property. EPA also collected post-excavation soil samples from each property to document the residual arsenic concentrations remaining in each yard after

excavation. EPA backfilled each property to pre-existing grade with clean topsoil and seeded the excavated areas with grass seed.

In 2005, EPA sampled 540 additional properties in the Phillips neighborhood to ensure that 100 percent of the residential properties most likely to be impacted by wind deposition from the CMC Site were evaluated for potential impacts. EPA also sampled another 60 properties to identify whether areas in other wind directions surrounding the CMC Site were impacted.

EPA's sampling effort identified another 31 properties with arsenic concentrations above 95 mg/kg. EPA began a second removal action in 2005. During the 2005 removal action, EPA excavated and disposed of arsenic-contaminated soil consistent with the 2004 removal activities.

5.0 Remedial Investigation/Feasibility Study (RI/FS)

5.1 Remedial Investigation (RI)

EPA conducted a Remedial Investigation (RI) at the South Minn. Site from 2005 to 2007. The objective of the RI was to address the remaining arsenic contamination at the Site and have 100 percent of the residential properties, schools, and parks within the modeled boundaries of the South Minn. Site sampled for arsenic. EPA also collected soil samples for arsenic analysis from community gardens, playgrounds associated with church schools, and a cemetery.

EPA developed the boundary for the South Minn. Site using the Industrial Source Complex 3 air dispersion model, information from past operations at the CMC Site, and wind-rose data for Minneapolis to predict where arsenic may have been deposited in soil at concentrations greater than 10 mg/kg. EPA made slight adjustments to the modeled boundary so that an entire block would be sampled (Figure 2).

EPA did not sample previously sampled properties during the RI unless only one discrete sample had been collected from that property. The RI also did not address groundwater. Groundwater was previously investigated and is being addressed as part of the CMC Site cleanup (see Section 4.3, History of Contamination and CMC Site Cleanup).

EPA conducted the RI surface soil sampling in 2006. EPA conducted the sampling by collecting five samples from separate areas of each property and combining them into one composite sample for analysis. EPA collected the soil samples from the top three inches of soil below any grass if present.

EPA collected the soil samples from both the front yard and the back yard wherever possible. EPA also collected samples from side yards and gardens depending on their size. For larger properties such as parks and schools, EPA divided the property into sub-areas and collected composite samples from each sub-area.

The RI included subsurface soil sampling at 20 soil boring locations throughout the South Minn. Site. The subsurface soil borings were located to provide data to characterize the vertical distribution of arsenic at properties with varying arsenic concentrations. EPA collected the subsurface soil samples from each boring at one-foot intervals from zero to five feet, and at a depth of ten feet.

EPA evaluated the 2006 soil sampling results against the previous soil sampling results collected from 2001 to 2005. EPA determined that the data were compatible and could be evaluated as a single data set for the RI. The total number of properties sampled for arsenic from 2001 to 2006 was 3,578. One-hundred and thirty-five properties within the South Minn. Site remained unsampled because the property owners did not allow EPA access. EPA also conducted a statistical evaluation and determined that the background concentration of arsenic in surface soil from natural and man-made sources within the Site area was 16 mg/kg.

The results of the surface and subsurface soil investigations at the South Minn. Site indicated that arsenic was present in the soil at varying concentrations across the area (Figure 3). The arsenic concentrations ranged from background concentrations up to 2,880 mg/kg. The vertical extent of arsenic concentrations above background appeared to be no greater than three feet below ground surface and, in most cases, was within the upper two feet of soil. This indicated that the mobility of the arsenic in the soil was limited.

Of the 3,578 properties sampled, the majority of residential properties (2,600 properties) had arsenic concentrations below MPCA's unrestricted land use standard of 10 mg/kg. Seven-hundred and eighty-one residential properties contained concentrations of arsenic below EPA's removal action level for arsenic of 95 mg/kg, but above MPCA's unrestricted land use standard of 10 mg/kg. One-hundred and ninety-seven residential properties had arsenic concentrations in soil above EPA's removal action level of 95 mg/kg.

The properties with arsenic concentrations above EPA's removal action level of 95 mg/kg were scattered throughout the South Minn. Site area. EPA addressed these properties through removal actions EPA completed by 2008. All sample results from the schools, parks, playgrounds, and the cemetery were within background levels and these properties did not require remediation.

5.2 Risk Assessment

EPA's RI included a Human Health Risk Assessment (HHRA) to evaluate the risks to human health from the arsenic contamination detected at the South Minn. Site. As part of the HHRA, EPA calculated potential risks due to varying concentrations of arsenic at residences with and without vegetable gardens, and for construction workers.

Using reasonable maximum exposure assumptions, EPA determined that an arsenic concentration of 25 mg/kg or less in soil is protective of adults and children residing within the South Minn. Site area for up to 50 years at homes with vegetable gardens. This concentration of

arsenic corresponds to a cancer risk of 1×10^{-4} (one additional case of cancer for every 10,000 individuals similarly exposed) and a noncancer hazard of 1 (no noncancer health effects), which are within EPA's acceptable risk range. Approximately 486 homes exceeded the 25 mg/kg residential threshold. The HHRA also determined that arsenic concentrations of 261 mg/kg or less are protective of construction workers, which is higher than the 25 mg/kg concentration of arsenic determined to be protective of residents.

The HHRA estimated that most of the risk posed by the soil is due to the incidental ingestion of soil and dust (approximately 70 percent), and to eating garden vegetables (approximately 25 percent). A small proportion of the estimated risk (approximately 4 percent) is from dermal contact with soil, and a very small relative proportion of potential risk (less than 0.05 percent) is from the inhalation of dust. The calculated risks to residents and construction workers are likely overestimated due to the uncertainties and conservative assumptions required throughout the HHRA process.

The RI included a Screening Level Ecological Risk Assessment (SLERA) to evaluate potential risks to ecological receptors from the arsenic-contaminated soil at the South Minn. Site. The SLERA concluded that no population-level ecological risks were expected from the arsenic contamination. In addition, EPA's Ecological Soil Screening Levels for arsenic of 43 mg/kg for avian wildlife and 46 mg/kg for mammalian wildlife were higher than the 25 mg/kg concentration of arsenic determined to be protective of people. There are no water bodies or wetlands within the South Minn. Site.

5.3 Feasibility Study (FS)

EPA conducted a Feasibility Study (FS) to develop and evaluate cleanup alternatives to address the unacceptable levels of arsenic found at the South Minn. Site. The FS evaluated six cleanup alternatives: (1) no action; (2) remove soil with arsenic levels above 25 mg/kg to a depth of 12 inches (18 inches in garden areas); (3) remove soil with arsenic levels above 16 mg/kg to a depth of 12 inches (18 inches in garden areas); (4) remove soil with arsenic levels above 25 mg/kg to a depth of 12 inches (18 inches in garden areas) and remove soil deeper than 12 inches with arsenic levels above 95 mg/kg; (5) remove all soil with arsenic levels above 25 mg/kg; and (6) remove all soil with arsenic levels above 16 mg/kg. For all cleanup alternatives except the no action alternative, the excavated soil would be disposed of at a landfill.

6.0 Remedy Selection

6.1 2008 Record of Decision (ROD)

EPA selected a cleanup remedy for the South Minn. Site in a 2008 Record of Decision (ROD). EPA's remedial action objectives for the arsenic-contaminated soil at the South Minn. Site are to control the concentrations of arsenic in soil to limit residential contact with arsenic and minimize the potential for dermal contact, ingestion, and inhalation exposures.

The major components of EPA's selected cleanup remedy for the South Minn. Site in the ROD, as modified by a slight, non-significant change documented in a September 23, 2009, EPA Memorandum include:

- (1) Inventory and document the existing conditions at the areas requiring cleanup;
- (2) Excavate soil to a depth of 12 inches below grade in yards and to a depth of 18 inches below grade in garden areas that have a total arsenic concentration above 25 mg/kg;
- (3) Post-excavation soil sampling to document arsenic concentrations in the remaining soil;
- (4) If the samples at the base of the excavation exceed the deep soil arsenic cleanup standard of 95 mg/kg, then excavate soil until the deep soil cleanup standard is met or to a maximum depth of ten feet;
- (5) If the samples at the base of the excavation exceed the deep soil arsenic cleanup standard, place a permanent, permeable highly-visible marker layer in the bottom of the excavation to provide a visual barrier over soils that were not excavated during the remedial actions and may contain residual contamination above the deep soil cleanup standard;
- (6) Backfill excavations with clean fill and topsoil to the original grade;
- (7) Restore the excavated areas (i.e., restoring vegetation by seeding the final graded surface and planting replacement plants identified prior to excavation during the inventory);
- (8) Collect samples from excavated soil to confirm the soil is not characteristically hazardous and may be transported to and disposed of at a permitted and compliant Resource Conservation Recovery Act (RCRA) Subtitle D landfill;
- (9) If soil is found to be characteristically hazardous, the soil may be stabilized and solidified at a centralized off-site treatment area and disposed of at a RCRA Subtitle D landfill, or not stabilized and disposed of as a hazardous waste at a RCRA Subtitle C landfill; and
- (10) Place institutional controls (ICs) on properties where the arsenic cleanup standard was not met at the bottom of the excavation in the form of use-restrictions to define areas of remaining concern or zoning and permit requirements to limit exposure.

The selected remedy applies only to the residential and residential-type properties at the South Minn. Site. The CMC Site and the commercial and industrial properties in the area are not on the NPL and are not part of the South Minn. Site. Additionally, the commercial and industrial properties in the area typically have little open ground and are mainly covered by asphalt, concrete or buildings which limits the potential for soil exposure.

6.2 Cleanup Standards

EPA's selected cleanup standards for arsenic at the South Minn. Site are:

- (1) 25 mg/kg for soil located zero to 12 inches below grade (or to 18 inches below grade in gardens), and
- (2) 95 mg/kg for soil down to a depth of 10 feet below grade.

These concentrations of arsenic correspond to a cancer risk of 1×10^{-4} (one additional case of cancer for every 10,000 individuals similarly exposed) and a noncancer hazard of 1 (no noncancer health effects) for residential exposure to surface soil, and to a cancer risk of 2×10^{-5} (two additional cases of cancer for every 100,000 individuals similarly exposed) and a noncancer hazard of 0.4 (no noncancer health effects) for construction worker exposure to subsurface soil and are within EPA's acceptable risk range.

The subsurface soil cleanup standard of 95 mg/kg corresponds to a cancer risk of 4×10^{-4} and a noncancer hazard of 4 to residents. These calculated risks are slightly above EPA's acceptable risk range. However, residential exposure to deep, subsurface concentrations of arsenic is only expected in rare circumstances and for short periods of time, and less frequently than a construction worker. Any risks from exposure to arsenic contamination in deep soil would also be mitigated through the inevitable mixing of the deep soil with the clean, shallow soil above, resulting in lower exposure point concentrations. Therefore, EPA considers the 95 mg/kg acute exposure-based removal action level provided by ATSDR to be appropriate for subsurface soil and protective over the long-term.

As indicated in the HHRA, most of the risk at the South Minn. Site was due to the incidental ingestion of soil and dust by residents and to residents eating garden vegetables. A small proportion of the estimated risk is from dermal contact with soil, and a very small relative proportion of potential risk is due to inhalation of dust. EPA's remedial action objectives for the South Minn. Site take into consideration that control of the soil concentrations of arsenic will address each of the exposure pathways contributing to the overall risk.

7.0 Remedy Implementation

7.1 Remedial Design (RD) and 2012 and 2016 Remedial Actions (RAs)

EPA conducted the Remedial Design (RD) phase of the South Minn. Site cleanup from 2008 to 2009. EPA conducted the majority of the Remedial Action (RA) construction work for the South Minn. Site from 2009 to 2011. In 2016 and 2018, EPA conducted additional remedial activities and/or sampling at properties where EPA was not previously able to obtain the owners' consent for access.

EPA deleted all properties that had been cleaned up and/or sampled and cleared for residential use from the NPL in 2019 (3,623 out of 3,632 properties). Approximately 623 of these properties required remediation and about 3,000 were sampled and cleared for residential use. Additional information about the cleanup of these properties can be found in the Response Actions section of the 2019 *Federal Register* Notice of Partial Deletion (84 FR 37112) which is available in the partial deletion docket (Appendix A).

EPA obtained access to sample six of the nine properties that remained on the NPL and sampled these properties in 2019 and 2020 (Properties 01 to 06). EPA determined that five of these properties did not contain arsenic at concentrations above the cleanup criteria and did not require remediation (Properties 02 to 06). EPA deleted these five properties from the NPL in September 2021. Additional information about the sampling of these properties can be found in the Remedy Implementation section of the February 9, 2021 Justification for Partial Deletion and the March 14, 2022 Remedial Action Report – Revision 2 (RA Report) which are available in the partial deletion docket in Appendix A.

7.2 2021 RA

The remaining four properties at the Site (identified as Properties 01, 09, 10, and 11 in the 2022 RA Report and on Figure 1) were excluded from the 2019 and 2021 partial deletions for the following reasons:

- EPA was not able to obtain access to sample Property 01 until 2019; this property was remediated in late 2021.
- Properties 10 and 11 were sampled in 2008 and contained arsenic above the cleanup levels, however, due to access issues, EPA was not able to remediate these properties until 2021.
- Property 09 was sampled in 2006 and required cleanup, however, EPA was only granted access to remediate the boulevard and front yards of the property, not the backyard. EPA remediated the boulevard and front yard in 2011 but was not granted access to remediate the backyard until 2021. This property has been remediated; however, ICs are required to address residual soil contamination under brickwork and statues that EPA was not authorized to excavate. As such, this property is not included in the proposed deletion and is not discussed further in this report. Additional information concerning this property may be found in the 2012 and 2022 RA Reports.

EPA's contractors, Tetra Tech, Inc. (Tetra Tech) and Environmental Restoration, LLC (ER), mobilized to the Site to conduct the 2021 RA on August 30, 2021, and demobilized from the Site on September 30, 2021. Following excavation and restoration activities, each property owner was contacted to schedule a post-construction meeting. The property was thoroughly inspected by ER, EPA, and the property owner, and each property owner signed a close-out letter

confirming that the property had been restored to the condition agreed to during the preconstruction meetings and any outstanding issues to be addressed were identified. Post-construction photographs were taken of each property.

Minor variances from the remedy, as described in the ROD, were incorporated in the 2021 RA and included:

- Sod was used for restoration instead of grass seed specified in the ROD.
- Property owners were reimbursed for annual and perennial plants identified in an inventory prior to excavation that were damaged or destroyed during excavation instead of planting replacement plants as specified in the ROD.
- A portable x-ray fluorescence (XRF) analyzer was used as a screening tool concurrently with confirmation sampling to provide “real-time” arsenic concentrations to determine if additional excavation would be required per the ROD in lieu of waiting for laboratory analytical results.

These variances did not change the goal or effectiveness of the remedy but allowed the RA to be completed more efficiently given the limited scope of the 2021 RA.

Tetra Tech submitted a final RA Completion Report – Revision 2 on March 14, 2022. EPA approved the RA Report on March 17, 2022. Information about the major activities conducted during the 2021 RA are summarized in the following sections.

7.2.1 Pre-Excavation Soil Sampling

EPA was granted access to conduct soil sampling at Property 01 in 2019 and determined that this property required remediation. In 2021, EPA resampled Property 10 at the owner’s request to reverify that the soil cleanup was required. EPA did not resample Property 11, which was identified for cleanup in 2008. A summary of the sampling results is provided in Table 3.

The soil sampling was conducted using a five-point composite soil sampling strategy consistent with previous Site investigations. One composite soil sample was collected from the front yard and one composite soil sample was collected from the back yard of each property for laboratory analysis (two composite samples per property). Each composite soil sample (front yard or back yard) was composed of equal volumes of soil collected from five locations throughout each “front” or “back” yard. The five soil samples used for the composite sample were collected from the center of each front or back yard and then halfway between the center and each corner of that yard. Each of the five soil samples used for each composite sample were collected from the top three inches of soil, below grass if present.

The five aliquots from each “front” or “back” yard were homogenized in a plastic bag, placed into the appropriate sampling container, and submitted to the laboratory for analysis. All samples were analyzed for total arsenic by EPA Method SW 846 6020B and the laboratory data was validated.

7.2.2 Waste Characterization

Waste characterization sampling was conducted prior to the RA to determine a disposal facility for the excavated soil. One waste characterization sample was composited from two properties (Property 09 and Property 11) collected from zero to six inches below ground surface. The composite samples were analyzed for toxicity characteristic leaching procedure (TCLP) lead and arsenic. Based on the waste profile, the material was accepted for disposal as a nonhazardous waste at the Waste Management Subtitle D landfill in Elk River, Minnesota. The waste profile, waste profile approval, and Off-Site Rule documentation is included in Attachment 2 of the 2022 RA Report.

7.2.3 Backfill Sampling

EPA tested the backfilling materials to confirm they were suitable for residential use prior to construction. Samples of general backfill and topsoil were collected from vendors using five-point composite sampling for each material type. The five aliquots were homogenized in a plastic bag and submitted to ALS Environmental - Holland Laboratory (ALS) in Holland, Michigan for analysis. The samples were analyzed for herbicides, pesticides, polychlorinated biphenyls, volatile organic compounds, semivolatile organic compounds, metals, and cyanide.

Arsenic was detected in the backfill samples at a maximum concentration of 2 mg/kg and in the topsoil sample at a maximum concentration of 5.1 mg/kg. These concentrations were below the cleanup standard for arsenic of 25 mg/kg in the ROD. Benzo(a)pyrene, a semivolatile organic compound that can occur from burnt organic matter, was detected in the backfill samples at a maximum concentration of 0.72 mg/kg and in the topsoil samples at a maximum concentration of 0.12 mg/kg. Based on EPA's Regional Screening Levels (RSLs), this maximum concentration of benzo(a)pyrene in the backfill materials (0.72 mg/kg) corresponded to a cancer risk of 6.5×10^{-6} (6.5 additional cases of cancer for every 1 million individuals similarly exposed) which is within EPA's acceptable risk range, and is below noncancer risk levels. Therefore, EPA determined that all of the backfill materials were acceptable for residential use.

No other chemicals were detected in the backfill materials at concentrations above EPA RSLs equal to a noncancer hazard of one or a cancer risk greater than 1×10^{-6} . A detection summary table with comparisons to the EPA RSL for residential soil is provided the 2022 RA Report in Table 2-1.

EPA screened the sod source materials with an XRF to determine if elevated concentrations of arsenic were present in the root zone of the sod. A five-point composite soil sample was collected from just below the sod surface and was screened with the XRF. The median reading of five individual readings of the composite sample was below the detection limit of the XRF and was determined to be useable.

7.2.4 Soil Excavation

During the soil excavation, ER maintained two points of continuous access for residents, when possible, with one point of continuous access at all times. Signs and protective measures including high-visibility construction fencing and barricades were installed to protect pedestrians and street traffic. Temporary construction fences were also maintained around active excavation areas.

Manual excavation (hand digging) was used to excavate materials within 48 inches of utility markings to locate buried utilities within or near excavation areas. Once a utility line was visually identified, ER used manual excavation to remove materials within 24 inches of the utility. Hand excavation was also performed in tight areas that impeded mechanical excavation or where heavy equipment could potentially damage structures.

Mechanical excavation using a dedicated mini-excavator was used at each property, where possible, to the target depths of 12 inches below grade within yard areas and 18 inches below grade within garden areas. Within eight feet of tree trunks, excavation was performed using manual excavation methods only to minimize damage to tree roots. During excavation activities, ER protected local infrastructure from damage and minimized soil tracking at residential properties by placing plywood sheets over sidewalks and driveways to minimize damage.

Soil excavation was generally performed to within one foot of permanent structures (e.g., home foundations, sidewalks, and roads) and at a 1:1 slope away from the permanent structures/surfaces. Manual and mechanical excavation techniques were used near concrete structures, such as sidewalks, driveways, and patios, to remove impacted soil while maintaining the integrity of the structure.

Prior to backfilling, a post-excavation survey was conducted in each excavated yard area to verify that the target depth was attained. Property-specific excavation activities are summarized more fully below.

Property 01

Soil excavation at Property 01 began on September 23, 2021, and was completed on September 30, 2021. Soils were excavated to a depth of 12 inches in the backyard, with the exception of a small strip north of a shed which could only be excavated to a depth of six inches. The front yard was excavated to a depth of 12 inches with the exception of an area along the south fence line that was excavated to a depth of 18 inches due to the presence of fill material consisting of a gray gravel or cinder. The front yard retaining wall along the sidewalk was removed and not replaced at the direction of the property owner. A total of 13 truckloads of soil were transported the landfill for a total removal of approximately 77 tons of soil. One backyard confirmation sample and one front yard confirmation sample were collected at depths of 12 inches and sent to ALS for analysis. The confirmation samples were collected using five-point

composite sampling and were field screened with the XRF. No samples contained arsenic at concentrations that exceeded the site-specific deep soil residential cleanup level of 95 mg/kg. See Table 3.

Property 10

Soil removal activities at Property 10 began on September 20, 2021, and were completed on September 23, 2021. Soil was excavated to a depth of 12 inches in the backyard and 12 inches in the front yard, with the exception of the east right-of-way, which was excavated to a depth of six inches due to tree roots. A total of 14 truckloads of soil were transported to the landfill for a total removal volume of approximately 80 tons of soil. One backyard confirmation sample and one front yard confirmation sample were collected at depths of 12 inches and sent to ALS for analysis. The confirmation samples were collected using five-point composite sampling and were field screened with the XRF. No samples contained arsenic at concentrations that exceeded the site-specific deep soil residential cleanup level of 95 mg/kg. See Table 3.

Property 11

Remedial activities at Property 11 began on August 31, 2021, and were completed on September 10, 2021. Soils were excavated to a depth of 18 inches in the backyard, with the exception of the southwest corner between the fence and the garage, which could only be excavated to a depth of six inches. A total of 36 truckloads of soil were transported to the landfill for a total volume of approximately 191 tons of soil. One confirmation sample was collected from the backyard at a depth of 12 inches below ground surface and a second confirmation sample was collected at a depth of 18 inches. Both samples confirmed that the site-specific deep soil residential cleanup level of 95 mg/kg was met. One front yard confirmation sample and a second duplicate sample were collected at a depth of 12 inches and did not exceed the cleanup criteria. The confirmation samples were collected using five-point composite sampling. The final confirmation samples screened with the XRF also indicated that the cleanup levels were attained. See Table 3.

7.2.5 Transport and Disposal

Excavated soil from the Site properties was direct loaded into dump trucks and transported to Waste Management's solid waste landfill in Elk River, Minnesota without requiring treatment. All haul trucks had waste soil loaded at the residential properties using a dedicated mini-excavator and went directly to the landfill for disposal. Spills that occurred during loading were cleaned up and placed into the truck. Before leaving an excavation area, each truck underwent dry decontamination measures, as necessary, and the load was tarped. Residential streets were cleaned as necessary using brooms. Additional information about the transport and disposal of the excavated soil is available in Table 2-2 and Attachment 2 of the 2022 RA Report.

7.2.6 Site Restoration

ER conducted backfilling and site restoration activities once the post-excavation survey at a property confirmed that the target depths and XRF screening levels had been achieved. Mini-excavators were used, where possible, to place general backfill material from the base of the excavation to within approximately six inches of the original grade within yard areas, except in garden areas where 18 inches of topsoil was placed. Backfill was compacted to reduce the potential for settlement.

A mini-excavator was used, where possible, to place topsoil over the general backfill material to within one inch of the original grade (the soil in the sod mat accounted for the final inch of topsoil) to meet final grade requirements and to prepare the property for sod placement. Topsoil in sodded areas was lightly compacted to minimize settlement while still allowing for water infiltration and root penetration. In garden/landscaped areas, 18 inches of topsoil was placed instead of backfill.

Landscaping and maintenance activities for each property included the placement of sod over backfilled excavation areas and 2 weeks of maintenance. Where applicable, landscaping features (e.g., mulch, pavers, boulders, landscaping rock, and edging) were replaced following sod installation. Following sod installation, the sod was watered three times per week for two weeks.

7.2.7 Air Monitoring

Personal Air Monitoring

During the first two days of excavation, ER conducted personal air monitoring for lead and arsenic for health and safety purposes. On August 31, 2021, personal air monitors were placed on a laborer, an equipment operator, and two laborers/truck drivers. On September 1, 2021, personal air monitors were placed on a laborer, an equipment operator, and two truck drivers. All results were below the laboratory detection limit and the personal air monitoring was discontinued. Copies of the analytical results and chain of custody are available in Attachment 1 of the 2022 RA Report.

Dust Monitoring

Tetra Tech conducted daily real-time air monitoring for particulate matter (PM) in the upwind and downwind direction during the removal activities at each property in accordance with the March 28, 2021, Sampling and Analysis Plan for Residential Soil Sampling and focused Removal Activities, Revision 1 (SAP), unless otherwise noted below. The PM monitoring results were compared to the values below to determine whether mitigative measures were required (e.g., using water for dust control):

- 2.5 milligrams per cubic meter (mg/m³) Level C (e.g., respirator) action level;

- 0.1 mg/m³ Occupational Safety and Health Administration Permissible Exposure Limit (PEL); and
- 0.01 mg/m³ American Conference of Governmental Industrial Hygienists Threshold Limit Value (TLV), which is an 8-hour time weighted average concentration.

Comparison to the TLV, PEL, and Level C action levels assumed a worst-case scenario in which all of the PM detected was 100 percent arsenic.

At Property 01, air monitoring was conducted each day during excavation activities except for September 23, 2021, when the only onsite activity was moving equipment to the property, and September 30, 2021, when the only onsite activity was minimal wrap up work and due to predicted rain. No exceedances of the action level, PEL, or TLV were recorded.

At Property 10, air monitoring was conducted each day during excavation activities except for September 20, 2021, due to rain. On September 21, 2021, only the upwind air was monitored due to equipment failure. The faulty equipment was replaced the afternoon of September 22, 2021. No exceedances of the action level, PEL, or TLV were recorded.

At Property 11, dust monitoring was conducted each day during excavation activities except for September 3, 2021, due to rain, and September 10, 2021, when the only onsite activity was laying sod. No exceedances of the action level or PEL were recorded. Slight exceedances of the 0.01 mg/m³ TLV were noted on a few days at concentrations ranging from 0.011 mg/m³ to 0.013 mg/m³, and water was sprayed over the dirt for dust control.

The complete documentation of the dust monitoring results is provided in Table 2-4 of the 2022 RA Report.

8.0 Sampling Results and Attainment of Cleanup Criteria

Post-excavation soil confirmation sampling was conducted in accordance with the 2021 SAP at the bottom of each excavation (back or front yard) yard and submitted to ALS for analysis to confirm that the cleanup standard for arsenic in deep soil of 95 mg/kg was met at each property. The laboratory analysis was conducted and validated in accordance with Tetra Tech's programmatic Superfund Technical Assessment and Response Team Quality Assurance Project Plan (QAPP), Revision 2, dated August 2020.

Field screening with an XRF was also used concurrently with the confirmation sampling to provide a "real-time" arsenic concentration to determine if additional excavation would be required in lieu of waiting for the laboratory analytical results.

The soil confirmation sampling was conducted using a five-point composite soil sampling strategy and involved collecting one composite soil sample from the front yard and one composite soil sample from the back yard of each property for XRF screening and laboratory

analysis (two composite samples per property). Each composite soil sample (front yard or back yard) was composed of an equal volume of soil collected from five locations throughout each “front” or “back” yard. The five soil samples used for the composite sample were collected from the center of each front or back yard and then halfway between the center and each corner of that yard. Each of the five soil samples used for each composite sample were collected from the top three inches of soil, below grass if present.

The five aliquots from each “front” or “back” yard were homogenized in a plastic bag, placed into the appropriate sampling container, and submitted to ALS for analysis. All samples were analyzed for total arsenic by EPA Method SW 846 6020B and the laboratory data was validated.

The results of the confirmation sampling are provided in Table 3 and verify that Properties 01, 10 and 11 meet the deep soil criteria of 95 mg/kg at the bottom of the excavations. The concentrations of arsenic remaining at the properties in the composite verification samples ranged from 13 mg/kg to 35 mg/kg.

9.0 Demonstration of Cleanup Activity Quality Assurance/Quality Control (QA/QC)

Guidelines for the QA/QC procedures used throughout the RA were outlined in Tetra Tech’s programmatic QAPP (Revision 2, August 2020) and the various Site-specific management plans prepared by Tetra Tech or their subcontractor, Environmental Restoration, LLC (Environmental Restoration), and submitted to EPA. QA/QC and other procedures outlined in the planning documents allowed Tetra Tech and EPA to determine that the reported results were accurate and adequate to ensure satisfactory execution of the RA, in a manner consistent with the requirements of the ROD. The procedures outlined in the plans also ensured that the work would be performed in a manner protective of human health and safety. The relevant Site-specific plans followed by Tetra-Tech for the 2021 RA included:

- 2020 QAPP: Describes the analytical methods and procedures and data handling and documentation procedures used for obtaining the analytical results required for the RA, including data validation. This document also outlined the administrative procedures to be used to ensure proper implementation of the plan.
- 2021 SAP: Presents the proposed confirmation sampling activities at the Site and specifies the sampling procedures and protocols to be followed. The SAP also addressed the sampling numbering procedures, documentation, tracking, and handling, and included the Air Monitoring Plan.
- Health and Safety Plan Emergency and Rapid Response Services (HASP), prepared by Environmental Restoration, dated May 2021. This plan provided general guidance for onsite safety. Specifically, the HASP provided information regarding safety procedures

for use around heavy equipment, environmental hazards (heat stress and severe weather), Site control zones, medical surveillance, and health and safety enforcement.

EPA's contractor, Tetra Tech, conducted the June 22, 2021, soil sampling and confirmatory soil sampling in accordance with the 2021 SAP and the samples were analyzed by ALS and validated by Tetra Tech in accordance with the SAP and the 2020 QAPP. Tetra Tech followed all Standard Operating Procedures outlined in the SAP and collected appropriate QA/QC samples including field duplicate samples. Tetra Tech documented the sample collection activities in field logbooks, which are included in the 2022 RA Report.

10.0 Operation and Maintenance (O&M) and Institutional Controls (ICs)

No O&M or ICs are required for the three properties included in this partial deletion. The September 2021 confirmation sampling indicates that these properties meet the cleanup standards for soil in the ROD and are acceptable for UU/UE. No follow up activities are required.

11.0 Five-Year Reviews (FYRs)

The ROD requires EPA to conduct statutory FYRs for the South Minn. Site if cleanup standards are still exceeded at the maximum practicable excavation depth at a property, resulting in hazardous substances, pollutants or contaminants remaining above levels that allow for UU/UE. EPA conducted FYRs of the Site in 2014 and 2019.

FYRs are no longer required for the three properties included in this partial deletion or for the properties deleted from the Site in 2019 and 2021 because these properties have been remediated and/or sampled and cleared for UU/UE. EPA will continue to conduct statutory FYRs of the remaining property that EPA was not allowed to fully remediate under the existing brickwork and sculptures that requires ICs.

The next FYR for the Site is due in May 2024.

12.0 Determination that Properties Meet the Criteria for Partial Deletion

The three properties listed in Table 1 of the South Minn. Site (Properties 01, 10, and 11) meet all site completion requirements specified in OLEM Directive 9320.2-23, Close Out Procedures for National Priorities List Sites. All cleanup actions and remedial action objectives for these properties set forth in the 2008 ROD have been implemented for all pathways of exposure. The confirmation soil sampling data collected from these properties indicates that these properties

are acceptable for UU/UE. The selected remedial action, RAOs, and cleanup levels for these properties are consistent with EPA policy and guidance.

Section 300.425(e) of the NCP, 40 C.F.R. § 300.425(e), states that a Superfund site or a portion of a site may be deleted from the NPL when no further response action is appropriate. EPA, in consultation with the State of Minnesota, through the MDA, has determined that all required response actions have been implemented at these three properties, and that no further response action is appropriate. The property that still requires ICs (Property 09) is not included in this partial deletion action and will remain on the NPL (Table 2). MDA sent EPA a letter concurring with EPA's proposed deletion of these three properties from the NPL on November 23, 2023.

13.0 Approval

Approved by:

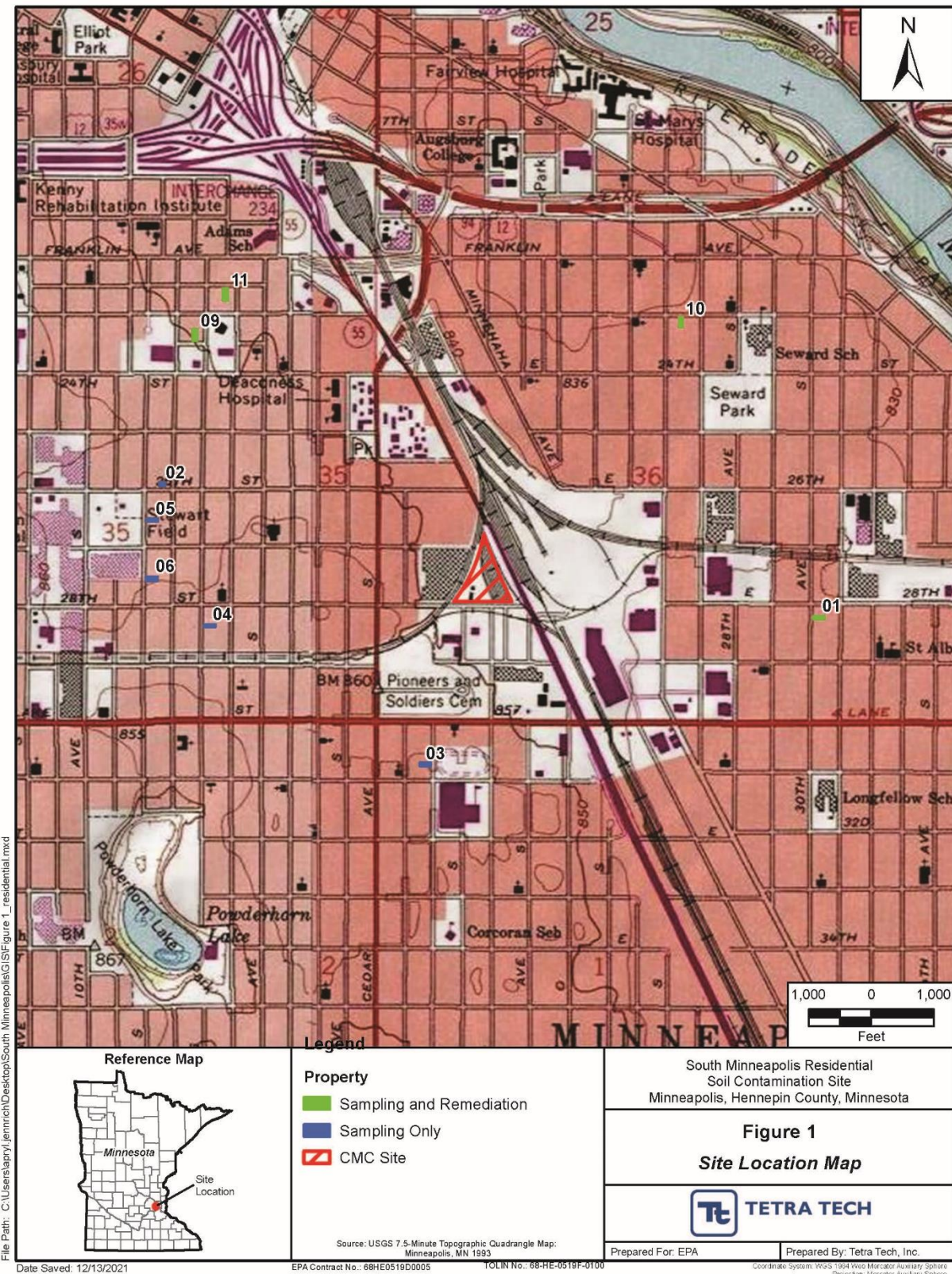
1/3/2024

X Douglas Ballotti

Douglas Ballotti, Director
Superfund & Emergency Management Division
Signed by: DOUGLAS BALLOTTI

U.S. EPA, Region 5

Figure 1: Location of Properties 01, 10 and 11 Proposed for Deletion (2024)



File Path: C:\Users\japryl\jermich\Desktop\South Minneapolis\GIS\Figure 1_residential.mxd

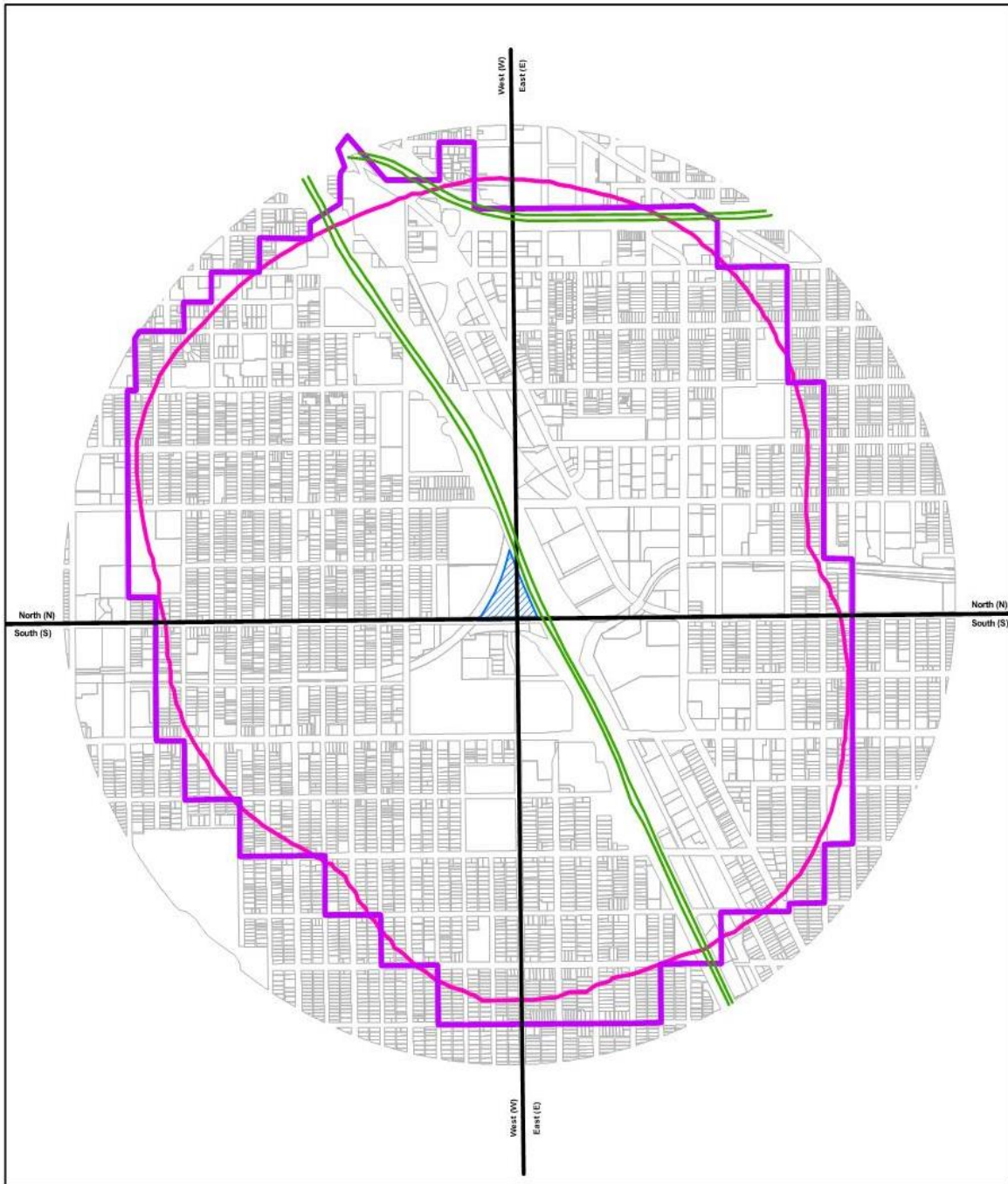
Date Saved: 12/13/2021

EPA Contract No.: 68HE0519D0005

TOLIN No.: 68-HE-0519F-0100





Coordinate system: WGS 1984 Web Mercator Auxiliary Sphere
 Projection: Mercator Auxiliary Sphere

Figure 2: Site Area/Air Dispersion Modelling



Legend

Arsenic Dispersion Boundary

-  USEPA Arsenic Dispersion Boundary
-  Modified Boundary to Include Full Blocks
-  Property Boundaries
-  CMC Heartland Lite Yard

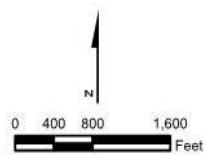
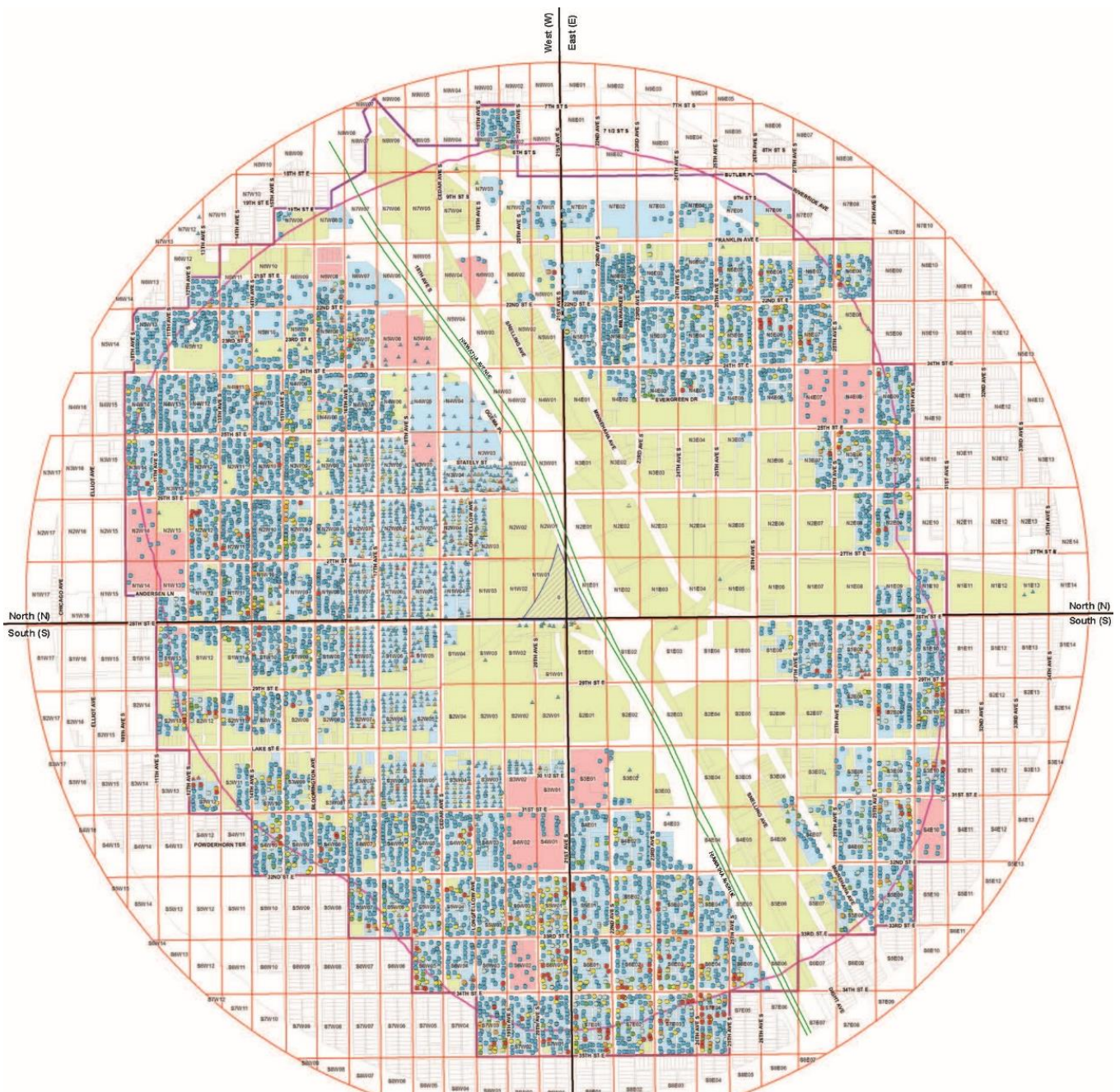


Figure 2
Air Dispersion Model Boundary
South Minneapolis Site
Minneapolis, MN



MKE 1\WAVE\PROJ\EPA\336752-SOUTH_MINNEAPOLIS\MXDS\FINAL_REPORT\FIG04-1_AIR_DISPERSION_MODEL_BOUNDARY.MXD 8/31/2007 09:03:18

Figure 3: Arsenic Concentrations in Surface Soil



<p>Legend</p> <p>Sample Type</p> <ul style="list-style-type: none"> ○ 2006 Sampling Events ▲ 2001 - 2005 Sampling Events <p>Samples with Results (mg/kg)</p> <ul style="list-style-type: none"> ● 0 - 10.0 (ppm) ● 10.0 - 20.0 (ppm) ● 20.0 - 30.0 (ppm) ● 30.0 - 60.0 (ppm) ● 60.0 - 95.0 (ppm) ● > 95.0 (ppm) 	<p>Arsenic Dispersion Boundary above 10 ppm</p> <ul style="list-style-type: none"> ■ Revised 2006 Residential Soil Sample Boundary ■ Arsenic Dispersion Boundary 	<p>Figure 4-2 Surface Soil Arsenic Results South Minneapolis Site Minneapolis, MN</p> <p>CH2MHILL</p>
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Table 1: Three Properties Proposed for Deletion 2024

South Minneapolis Residential Area Soil Contamination Site	
Property ID⁽¹⁾ Tax PIN Location	Notes
Property 01 36-029-24-44-0028 30th Avenue South	Remediated in September 2021
Property 10 36-029-24-12-0149 22nd Street East	Remediated in September 2021
Property 11 35-029-24-12-0085 21st Street East	Remediated in September 2021
(1) Property ID Assigned in 2022 RA Report.	

Table 2: Property NOT Included in 2024 Partial Deletion to Remain on NPL

South Minneapolis Residential Area Soil Contamination Site	
Property ID⁽¹⁾ Tax PIN Location	Notes
Property 09 35-029-24-12-0127 23rd Street East	Remediated in September 2021 But Requires IC to Restrict Land Use in Areas with Brickwork and Statues That EPA was Not Authorized to Excavate.
(1) Property ID Assigned in 2022 RA Report.	

Table 3: Arsenic Data for Properties Included in 2024 Partial Deletion

Property ID ⁽¹⁾ Tax PIN Location	Pre-Excavation Sampling/ Resampling Date	Area Sampled	Arsenic Concentration (mg/kg)		Post-Excavation Sampling Date
			Pre-Excavation Concentration (Criteria 25 mg/kg for Soil Less than One Foot Below Ground Surface)	Post-Excavation Concentration (Criteria 95 mg/kg for Soil Deeper than One Foot Below Ground Surface)	
Property 01 36-029-24-44-0028 30th Avenue South	11/14/2019	Front Yard	260	35	09/28/2021
		Back Yard	62	31	09/27/2021
Property 10 36-029-24-12-0149 East 22nd Street	06/22/2021	Front Yard	32	21	09/21/2021
		Back Yard	34 – 35 ⁽²⁾	27	09/21/2021
Property 11 35-029-24-12-0085 East 21st Street	06/26/2008	Front Yard	99 - 111 ⁽²⁾	26 - 34 ⁽²⁾	09/02/2021
		Back Yard	86	20 (12-Inch Depth) 13 (18-Inch Depth)	09/02/2021 09/07/2022
<p>Highlighted Concentrations Above Criteria. (1) Property ID Assigned in 2022 RA Report. (2) Duplicate Sample.</p>					

**APPENDIX A: NPL PARTIAL DELETION DOCKET REPORTS INDEX - SOUTH MINNEAPOLIS
RESIDENTIAL SOIL CONTAMINATION SITE 2024**

NPL Partial Deletion Docket Reports Index: Initial, 11/23/2023
South Minneapolis Residential Soil Contamination Superfund Site, Minneapolis, Minnesota
EPA-HQ-OLEM- 2023-0471
EPA SEMS Collection ID No. 05-42443

EPA Document Region	Document ID	Document Date	Document Title	Pages	SEMS-Public Document URL
05	2005660	11/23/2023	STATE CONCURRENCE LETTER FOR PARTIAL DELETION	2	https://semspub.epa.gov/src/document/05/2005660
05	974430	03/17/2022	EPA LETTER RE: APPROVAL OF FINAL REMEDIAL ACTION REPORT	1	https://semspub.epa.gov/src/document/05/974430
05	985847	03/14/2022	[REDACTED] TETRA TECH - REMEDIAL ACTION REPORT (REVISION 2)	8,359	https://semspub.epa.gov/src/document/05/985847
05	969383	09/14/2021	FEDERAL REGISTER NOTICE: DELETIONS FROM THE NATIONAL PRIORITIES LIST (86 FR NO 176, 51010)	4	https://semspub.epa.gov/src/document/05/969383
05	400599	09/14/2021	Partial Deletion Narrative for South Minneapolis Residential Soil Contamination	1	https://semspub.epa.gov/src/document/11/400599
05	2003467	07/07/2021	US EPA MEMORANDUM RE: NO ADVERSE PUBLIC COMMENTS RECEIVED ON EPA REGION 5 SUPERFUND SITES PROPOSED FOR DELETION/PARTIAL DELETION IN NPL DELETIONS UPDATE (86 FR 26452), MAY 14, 2021	2	https://semspub.epa.gov/src/document/05/2003467

NPL Partial Deletion Docket Reports Index: Initial, 11/23/2023
South Minneapolis Residential Soil Contamination Superfund Site, Minneapolis, Minnesota
EPA-HQ-OLEM- 2023-0471
EPA SEMS Collection ID No. 05-42443

EPA Document Region	Document ID	Document Date	Document Title	Pages	SEMS-Public Document URL
05	2003484	05/21/2021	US EPA PUBLIC NOTICE - EPA PROPOSES REMOVING FIVE PROPERTIES FROM THE SOUTH MINNEAPOLIS RESIDENTIAL SOIL CONTAMINATION SITE SUPERFUND LIST FROM MINNEAPOLIS, MN - PUBLIC COMMENDS ACCEPTED THROUGH JUNE 14, 2021	1	https://semspub.epa.gov/src/document/05/2003484
05	2003485	05/18/2021	US EPA PRESS RELEASE - EPA PROPOSED PARTIAL DELETION OF SOUTH MINNEAPOLIS RESIDENTIAL SOIL CONTAMINATION SITE FROM SUPERFUND LIST - PUBLIC COMMENT PERIOD ENDS JUNE 14	2	https://semspub.epa.gov/src/document/05/2003485
05	2003363	05/14/2021	FEDERAL REGISTER NOTICE: PROPOSED DELETION FROM THE NATIONAL PRIORITIES LIST (86 FR 26452)	4	https://semspub.epa.gov/src/document/05/2003363

NPL Partial Deletion Docket Reports Index: Initial, 11/23/2023
South Minneapolis Residential Soil Contamination Superfund Site, Minneapolis, Minnesota
EPA-HQ-OLEM- 2023-0471
EPA SEMS Collection ID No. 05-42443

EPA Document Region	Document ID	Document Date	Document Title	Pages	SEMS-Public Document URL
05	2003238	02/09/2021	JUSTIFICATION FOR PARTIAL DELETION FROM THE NATIONAL PRIORITIES LIST FIVE RESIDENTIAL PROPERTIES OF THE SOUTH MINNEAPOLIS RESIDENTIAL SOIL CONTAMINATION SUPERFUND SITE, MINNEAPOLIS, FEBRUARY 2021	38	https://semspub.epa.gov/src/document/05/2003238
05	2003208	01/08/2021	MDA LETTER RE: SOUTH MINNEAPOLIS RESIDENTIAL SOIL CONTAMINATION SUPERFUND SITE, STATE CONCURRENCE LETTER FOR PARTIAL DELISTING, MDA PROJECT NUMBER RWA253129	2	https://semspub.epa.gov/src/document/05/2003208
05	963256	08/07/2020	[REDACTED] EPA LETTER RE: RESIDENTIAL SOIL SAMPLING RESULTS	1	https://semspub.epa.gov/src/document/05/963256
05	963257	08/07/2020	[REDACTED] EPA LETTER RE: RESIDENTIAL SOIL SAMPLING RESULTS	1	https://semspub.epa.gov/src/document/05/963257
05	963258	08/07/2020	[REDACTED] EPA LETTER RE: RESIDENTIAL SOIL SAMPLING RESULTS	1	https://semspub.epa.gov/src/document/05/963258

NPL Partial Deletion Docket Reports Index: Initial, 11/23/2023
South Minneapolis Residential Soil Contamination Superfund Site, Minneapolis, Minnesota
EPA-HQ-OLEM- 2023-0471
EPA SEMS Collection ID No. 05-42443

EPA Document Region	Document ID	Document Date	Document Title	Pages	SEMS-Public Document URL
05	963259	08/07/2020	[REDACTED] EPA LETTER RE: RESIDENTIAL SOIL SAMPLING RESULTS	1	https://semspub.epa.gov/src/document/05/963259
05	963260	08/07/2020	REDACTED EPA LETTER RE: RESIDENTIAL SOIL SAMPLING RESULTS, TWELFTH AND THIRTEEN AVENUE BLOCK CLUB COMMUNITY GARDEN	1	https://semspub.epa.gov/src/document/05/963260
05	2003170	08/04/2020	TETRA TECH - DATA VALIDATION REPORT	15	https://semspub.epa.gov/src/document/05/2003170
05	2003169	11/11/2019	TETRA TECH - SAMPLING AND ANALYSIS PLAN, REVISION 1	156	https://semspub.epa.gov/src/document/05/2003169
05	951025	10/01/2019	EPA FACT SHEET (SPANISH VERSION) - EPA FINALIZES PARTIAL DELETION OF SUPERFUND SITE FROM NATIONAL LIST	2	https://semspub.epa.gov/src/document/05/951025
05	951026	10/01/2019	EPA FACT SHEET (ENGLISH VERSION) - EPA FINALIZES PARTIAL DELETION OF SUPERFUND SITE FROM NATIONAL LIST	2	https://semspub.epa.gov/src/document/05/951026

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05	951027	10/01/2019	EPA FACT SHEET (SOMALI VERSION) - EPA FINALIZES PARTIAL DELETION OF SUPERFUND SITE FROM NATIONAL LIST	2	https://semspub.epa.gov/src/document/05/951027
05	951028	10/01/2019	EPA FACT SHEET (HMONG VERSION) - EPA FINALIZES PARTIAL DELETION OF SUPERFUND SITE FROM NATIONAL LIST	2	https://semspub.epa.gov/src/document/05/951028
05	2002338	09/30/2019	RESPONSIVENESS SUMMARY ADDRESSING PUBLIC COMMENTS ON THE NOTICE OF INTENT TO PARTIALLY DELETE THE SOUTH MINNEAPOLIS RESIDENTIAL SOIL CONTAMINATION SUPERFUND SITE MINNEAPOLIS, MINNESOTA FROM THE NATIONAL PRIORITIES LIST	11	https://semspub.epa.gov/src/document/05/2002338

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05	2002339	09/30/2019	US EPA MEMO RE: RECOMMENDATION FOR APPROVAL OF THE RESPONSIVENESS SUMMARY ADDRESSING PUBLIC COMMENTS ON THE NOTICE OF INTENT FOR PARTIAL DELETION	2	https://semspub.epa.gov/src/document/05/2002339
05	948897	09/04/2019	[REDACTED] PUBLIC COMMENTS SUBMITTED DURING COMMENT PERIOD FOR PROPOSED NPL PARTIAL DELETION	59	https://semspub.epa.gov/src/document/05/948897
05	948896	08/30/2019	[REDACTED] EAST PHILLIPS INDOOR FARM PROJECT PETITIONS SUBMITTED TO EPA	93	https://semspub.epa.gov/src/document/05/948896
05	2002330	07/31/2019	STAR TRIBUNE PRESS RELEASE - EPA PROPOSES REMOVING SOUTH MINNEAPOLIS RESIDENTIAL SOIL CONTAMINATION SITE FROM SUPERFUND LIST	1	https://semspub.epa.gov/src/document/05/2002330

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05	2003176	07/31/2019	FEDERAL REGISTER NOTICE PROPOSED RULE - NATIONAL OIL AND HAZARDOUS SUBSTANCES POLLUTION CONTINGENCY PLAN; NATIONAL PRIORITIES LIST: PARTIAL DELETION OF THE SOUTH MINNEAPOLIS RESIDENTIAL SOIL CONTAMINATION SUPERFUND SITE	1	https://semspub.epa.gov/src/document/05/2003176
11	2003177	07/31/2019	FEDERAL REGISTER NOTICE - DIRECT FINAL RULE - NATIONAL OIL AND HAZARDOUS SUBSTANCES POLLUTION CONTINGENCY PLAN; NATIONAL PRIORITIES LIST: PARTIAL DELETION OF THE SOUTH MINNEAPOLIS RESIDENTIAL SOIL CONTAMINATION SUPERFUND SITE	11	https://semspub.epa.gov/src/document/05/2003177
05	2002343	07/17/2019	EPA MEMO RE: HEADQUARTERS CONCURRENCE ON THE SOUTH MINNEAPOLIS RESIDENTIAL SOIL CONTAMINATION SUPERFUND SITE NOTICE OF INTENT FOR PARTIAL DELETION	6	https://semspub.epa.gov/src/document/05/2002343

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05	2002186	07/16/2019	US EPA INFORMATION REPOSITORY TRANSMITTAL LETTER RE: NPL DELISTING DOCKET FOR THE SOUTH MINNEAPOLIS NEIGHBORHOOD SOIL CONTAMINATION SUPERFUND SITE	1	https://semspub.epa.gov/src/document/05/2002186
05	2002342	07/11/2019	MDA LETTER RE: STATE CONCURRENCE LETTER FOR PARTIAL DELISTING	2	https://semspub.epa.gov/src/document/05/2002342
05	946071	06/18/2019	[REDACTED] EPA EMAIL - OSC EMAIL DOCUMENTING 2018 SOIL REMOVAL AT RESIDENCE	2	https://semspub.epa.gov/src/document/05/946071
05	947877	05/15/2019	[REDACTED] SECOND FIVE YEAR REVIEW REPORT (SIGNED) - SOUTH MINNEAPOLIS RESIDENTIAL SOIL CONTAMINATION SITE	56	https://semspub.epa.gov/src/document/05/947877
05	946075	08/01/2018	[REDACTED] CH2M HILL - DATA EVALUATION REPORT (WA NO. 242-RARA-B58Y / CONTRACT NO. EP-S5-06-01	52	https://semspub.epa.gov/src/document/05/946075
05	946077	12/16/2016	[REDACTED] CH2M HILL - FINAL REMEDIAL ACTION REPORT	570	https://semspub.epa.gov/src/document/05/946077

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05	546905	04/01/2016	CH2M HILL - UNIFORM FEDERAL POLICY QUALITY ASSURANCE PLAN	758	https://semspub.epa.gov/src/document/05/546905
05	946074	05/16/2014	[REDACTED] FIVE YEAR REVIEW REPORT (SIGNED) - SOUTH MINNEAPOLIS RESIDENTIAL SOIL CONTAMINATION SITE	99	https://semspub.epa.gov/src/document/05/946074
05	461419	10/21/2013	USEPA MEMORANDUM RE: MINOR CHANGE IN SOUTH MINNEAPOLIS RESIDENTIAL SOIL CONTAMINATION SITE REMEDY: EPA TO PAY CLEANUP COST SHARE FOR NINE AFFECTED RESIDENCES CONSTRUCTED AFTER 1963 WITHIN THE RESIDENTIAL SITE BOUNDARY	2	https://semspub.epa.gov/src/document/05/461419
05	444400	11/28/2012	EPA SUPERFUND PROPERTY REUSE EVALUATION CHECKLIST FOR REPORTING THE SITEWIDE READY-FOR-ANTICIPATED USE GPRA MEASURE	2	https://semspub.epa.gov/src/document/05/444400
05	442022	09/12/2012	EPA LETTER RE: APPROVAL OF REMEDIAL ACTION COMPLETION REPORT	2	https://semspub.epa.gov/src/document/05/442022

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05	946076	08/30/2012	[REDACTED] CH2M HILL - FINAL REMEDIAL ACTION REPORT	176	https://semspub.epa.gov/src/document/05/946076
05	946072	06/28/2012	[REDACTED] EPA - SITEWIDE READY FOR ANTICIPATED USE (SWRAU) - SOUTH MINNEAPOLIS RESIDENTIAL SOIL CONTAMINATION	11	https://semspub.epa.gov/src/document/05/946072
05	946073	06/28/2012	[REDACTED] EPA - RECOMMENDATION TO SIGN THE SITEWIDE READY FOR ANTICIPATED USE (SWRAU) DETERMINATION	20	https://semspub.epa.gov/src/document/05/946073
05	438642	04/13/2012	CITY OF MINNEAPOLIS CODE OF ORDINANCES TITLE 12 SECTION 248.30 - SELLER DISCLOSURE REQUIRED	1	https://semspub.epa.gov/src/document/05/438642
05	345957	09/23/2009	EPA MEMO RE: NON-SIGNIFICANT CHANGE TO 09/05/08 RECORD OF DECISION	2	https://semspub.epa.gov/src/document/05/345957
05	299953	09/05/2008	ADMINISTRATIVE RECORD SITE INDEX - SOUTH MINNEAPOLIS RESIDENTIAL SOIL CONTAMINATION - UPDATE #1 - REMEDIAL ACTION	2	https://semspub.epa.gov/src/document/05/299953

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05	309326	09/05/2008	RECORD OF DECISION (ROD) (SIGNED)	179	https://semspub.epa.gov/src/document/05/309326
05	299710	07/17/2008	ADMINISTRATIVE RECORD SITE INDEX - SOUTH MINNEAPOLIS NEIGHBORHOOD ARSENIC SITE - UPDATE - REMOVAL ACTION	1	https://semspub.epa.gov/src/document/05/299710
05	299550	05/21/2008	ADMINISTRATIVE RECORD SITE INDEX - ORIGINAL - REMEDIAL ACTION	19	https://semspub.epa.gov/src/document/05/299550
05	965324	11/01/2007	[REDACTED] CH2M HILL - REMEDIAL INVESTIGATION REPORT	534	https://semspub.epa.gov/src/document/05/965324
05	296266	09/19/2007	FEDERAL REGISTER - 40 CFR PART 300, NATIONAL PRIORITIES LIST, FINAL RULE	8	https://semspub.epa.gov/src/document/05/296266
05	259703	09/06/2006	ADMINISTRATIVE RECORD SITE INDEX - 2ND REMOVAL ACTION - CMC HEARTLAND - UPDATE #2	1	https://semspub.epa.gov/src/document/05/259703
05	248226	09/26/2005	ADMINISTRATIVE RECORD SITE INDEX - CMC HEARTLAND - UPDATE #2 - REMOVAL ACTION	1	https://semspub.epa.gov/src/document/05/248226

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05	2002161	03/21/2005	MDH MEMO RE: NOTICE OF DESIGNATION OF A SPECIAL WELL CONSTRUCTION AREA IN THE VICINITY OF THE CMC HEARTLAND LITE YARD SITE IN MINNEAPOLIS, MN	6	https://semspub.epa.gov/src/document/05/2002161
05	222850	09/27/2004	ADMINISTRATIVE RECORD SITE INDEX - 2ND REMOVAL ACTION - CMC HEARTLAND - ORIGINAL	1	https://semspub.epa.gov/src/document/05/222850
05	222883	09/03/2004	ADMINISTRATIVE RECORD SITE INDEX - CMC HEARTLAND - ORIGINAL	2	https://semspub.epa.gov/src/document/05/222883
05	2002164	Undated	TABLE 1 & FIGURES FOR NPL PARTIAL DELETION - SOUTH MINNEAPOLIS RESIDENTIAL SOIL CONTAMINATION SUPERFUND SITE	6	https://semspub.epa.gov/src/document/05/2002164

APPENDIX B: MINNESOTA STATE LETTER OF CONCURRENCE



November 23, 2023

Doug Ballotti
Director, Superfund & Emergency Management Division
U.S. Environmental Protection Agency, Region V
Ralph Metcalfe Federal Building
77 West Jackson Blvd.
Chicago, IL 60604

RE: South Minneapolis Residential Soil Contamination Superfund Site
MDA Project Number RWA253129
State Concurrence Letter for Partial Deletion

Dear Mr. Ballotti:

The Minnesota Department of Agriculture (MDA) has worked cooperatively with the United States Environmental Protection Agency (EPA) for many years in overseeing the investigation and cleanup of contaminated soil within the boundary of the South Minneapolis Residential Soil Contamination Site (South Minn. Site), located in Minneapolis, Hennepin County, Minnesota. In 2019 and 2021, in consultation with the MDA, the EPA deleted all but four of the approximately 3,632 residential properties at the Site from the National Priorities List (NPL). Now, EPA has developed a *Partial Deletion Justification Report* proposing to delete three of the last four residential properties from the NPL. This document confirms the EPA has completed all appropriate response activities for these three residential properties located within the South Minn. Site; and as such, is proposing to remove these residential properties from the NPL. One property had limited sampling and excavation conducted in 2021 because the property owner would not authorize EPA to excavate the soil under existing brickwork and statues at the property. For this property, EPA will continue to attempt to implement an Environmental Covenant to protect future residents and inform EPA if the brickwork and structures are removed. EPA will continue conducting five-year reviews of the property until unrestricted use/unlimited exposure status is granted following complete remediation of the property; until that time the property will remain on the NPL.

Commercial and industrial properties located within the boundary of the South Minn. Site do not require deletion because these properties are not part of the South Minn. Site and are not on the NPL.

The MDA concurs that the partial delisting of these three of the last four properties within the boundary of the South Minn. Site is appropriate because all appropriate response actions under the Comprehensive Environmental Response, Compensation and Liability Act have been completed for these properties.

If you have questions about this letter, please contact Lee Zettler at 651-201-6394 or lee.zettler@state.mn.us.

Sincerely,

DocuSigned by:

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Thom Petersen
Commissioner

Doug Ballotti
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cc: The Honorable Amy Klobuchar, United States Senate
The Honorable Tina Smith, United States Senate
The Honorable Ilhan Omar, United States Congress
The Honorable Omar Fateh, Minnesota Senate
The Honorable Hassan Hodan, Minnesota House of Representatives
Kelly Poulos, Remedial Project Manager, EPA
The Honorable Jacob Frey, Mayor, City of Minneapolis
Tom Frame, City of Minneapolis