



# Nuclear Metals, Inc. Superfund Site Concord, MA

U.S. EPA | HAZARDOUS WASTE PROGRAM AT EPA NEW ENGLAND



**THE SUPERFUND PROGRAM** protects human health and the environment by investigating and cleaning up often-abandoned hazardous waste sites and engaging communities throughout the process. Many of these sites are complex and need long-term cleanup actions. Those responsible for contamination are held liable for cleanup costs. EPA strives to return previously contaminated land and groundwater to productive use.

## REMEDIAL ACTION UPDATE #4:

### Phase 2 Site-Wide Sediments and Soil Update

Phase 2 of the Site-Wide Sediments and Soils Remedial Action is underway, with the soil excavation of the former Building D area having started in Spring 2025. The [100% Design – Sitewide Sediment and Soils Phase 2](#) was approved by EPA in May 2025. The areas being excavated under Phase 2 are shown on Figure 1 and includes the excavation of the following areas: Former Buildings B, C, D; former Butler Buildings, areas between buildings. The Phase 2 excavation plans include 20,500 cubic yards of soil to be excavated and disposed off-site. Drawing C-405 from the Phase 2 Remedial Design is included at the end of the fact sheet and shows the initial planned excavation areas during Phase 2. Following excavation, the area will be restored using clean backfill.

The soil management process is detailed in the photo log at the end of the fact sheet. The process includes the following:

- dust monitoring around the perimeter of the work area (Photo 1);
- dust minimization controls such as misters and wetting on-site roadways (Photos 2, 3, and 6);
- excavation of soil from the work area and on-site transportation to the waste processing area (Photos 2 3, and 4);
- the stockpiling of soils in the on-site waste processing area where soils are held after excavation before off-site disposal (Photos 4 and 5);
- loading of soils into lined off-site transportation trucks (Photos 7 and 8); and,
- scanning of trucks for radiation prior to site departure (Photo 9).

## KEY CONTACTS

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Figure 1, at the end of the fact sheet, shows a summary of soils excavated to date, planned excavations under Phase 2, and remaining soils to be excavated/areas undergoing further investigation.

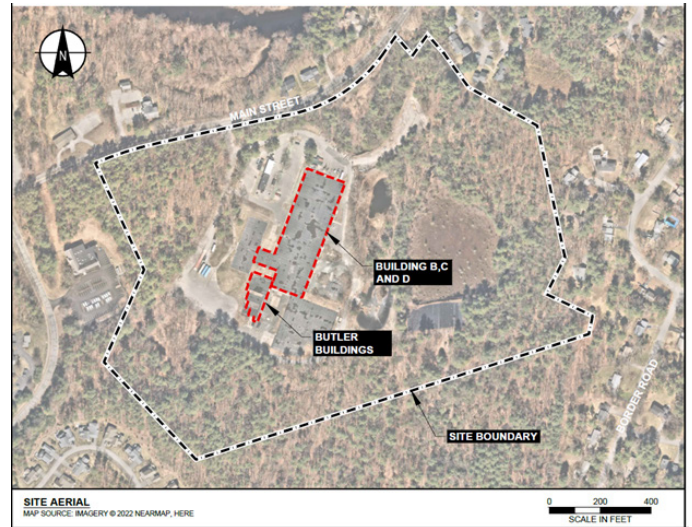
**In-Situ Sequestration Within the Holding Basin Area**

The Remedial Action is on-going for In-Situ Sequestration of Uranium in Overburden Within the Holding Basin. Injections of the microscale zero-valent iron started in December 2024 and are 75% complete. The injections are expected to continue until July 2025. In-Situ Sequestration, or ISS, is the injection of microscale zero-valent iron (mZVI) into the ground. The iron particles immobilize the uranium present in the groundwater, which will limit the movement of the uranium contaminated groundwater plume under the former Holding Basin area on the Nuclear Metals/Starmet property.

Drill rigs are used to inject the mZVI slurry into the subsurface . The injection locations are approximately 30-feet apart from each other and are within the Holding Basin area. After mZVI has been injected at all intervals at all locations, temporary monitoring wells will be installed to allow collection of groundwater from within the treatment area to confirm the effectiveness of the iron injections at decreasing uranium in groundwater concentrations. A future remedial design will cover the injection of additional iron in areas downgradient of the Holding Basin.

**What to Expect**

Soil will be transported off-site in lined and covered trucks to the off-site disposal facility. As cleanup work continues, residents should expect to see personnel and heavy equipment working on or about the Site. Normal working hours will be between 7:00 AM to 5:00 PM, Monday to Friday. During the soil excavation work, air monitoring and dust control and suppression will be performed for worker protection and public health. Load-out of waste material will occur through mid-December and will be approximately 9 to 18 trucks a day. Regular truck traffic (deliveries, backfill material, etc.) will be, on average 4 to 5 trucks per day. All wastes will be transported via truck and rail and be disposed of at an EPA approved facility. The Site contractors are coordinating with the Town in selecting the safest traffic truck routes that also help to alleviate a potential increase in traffic.



**Building D excavation area**



**Drill rig and injection mixing station set-up for microscale zero-valent iron injections**

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## Next Steps

The current Phase 2 on-site soil excavation and restoration is expected to continue until Fall 2025. The injections of microscale zero-valent iron (mZVI) will continue until July 2025. The Holding Basin Remedial Design is underway and the final design is anticipated to be completed in Fall 2025. The Holding Basin design includes the plans for the construction of the below ground vertical containment wall and Holding Basin surface cap. Soil excavations will continue throughout the next few years.

## SITE BACKGROUND

The Nuclear Metals, Inc. site – also known as the Starmet Corporation site – is located on a 46-acre parcel in Concord, Massachusetts. Nuclear Metals was originally a specialty metal research and development facility that was licensed to possess low-level radioactive substances including depleted uranium (DU). The Site was added to the National Priorities List in 2001 and following short-term actions to protect human health and the environment, the site's long-term cleanup is ongoing.

The remedy for the site, as outlined in the 2015 Record of Decision, includes the following:

- Excavation and off-site disposal of contaminated soils and sediments in various areas of the Site, approximately 85,000 cubic yards of material;
- Treatment of DU contaminated soils in the Holding Basin via injection using a stabilization agent to prevent leaching of contaminants to groundwater;
- Containment of Holding Basin stabilized soils with a low-permeability vertical wall and cover to isolate the stabilized soils and further limit mobility of contaminants by removing the flow of groundwater;
- Extraction and ex-situ treatment of VOCs and 1,4-dioxane in overburden and bedrock aquifers, and in-situ treatment of DU in overburden aquifer and natural uranium in bedrock aquifer;
- Long-term monitoring for effectiveness of in- and ex-situ treatment;
- Institutional Controls.

Five Remedial Design Reports are complete and approved by EPA. The [100% Design – Site-Wide Soil and Sediment in Areas of Interest \[AOI\] 8 and 9](#) and the [100% Remedial Design Knox Trail Groundwater Extraction System Expansion](#) reports were approved by EPA by September 2022. The [100% Design – Sitewide Sediment and Soils Phase 1](#) was approved by EPA in September 2023 and the [100% Remedial Design Report In-Situ Sequestration of Uranium in Overburden Within the Holding Basin](#) was approved by EPA in December 2024. Most recently, the [100% Design – Sitewide Sediment and Soils Phase 2](#) was approved by EPA in May 2025. Remedial Design Reports can be reviewed on the [NMI site](#) webpage. Remedial Designs for other areas of the site are underway and are expected to be completed in 2025 to 2027.

## GLOSSARY OF TERMS

In-situ treatment.....treatment methods that are done in place without moving the treatment media/waste (e.g. injections of microscale zero-valent iron for in place treatment)

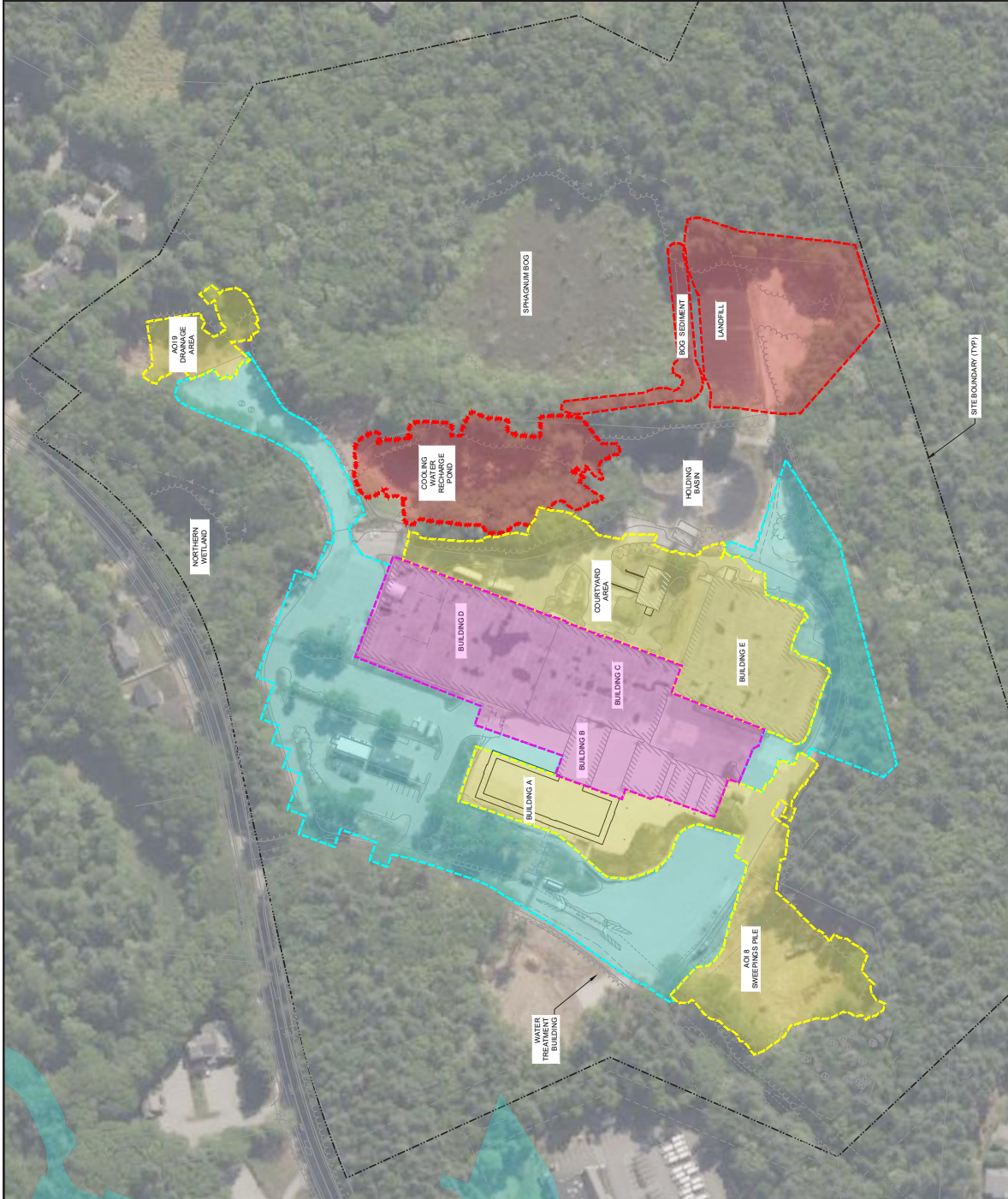
Ex-situ treatment.....treatment actions that are done when media/waste are taken from their original location and treated elsewhere (e.g., groundwater extraction and treatment)

Overburden.....soil that overlays bedrock

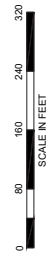
Remedial Design (RD) ... the phase in Superfund site cleanup where the technical specifications for cleanup remedies and technologies are designed

Remedial Action (RA).... follows the remedial design phase. It involves the actual construction or implementation phase of the Superfund site cleanup

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- LEGEND**
- SITE BOUNDARY
  - BUILDING SLAB
  - FUTURE INVESTIGATION AND EXCAVATION AREAS
  - COMPLETED SOIL EXCAVATION AREA
  - FUTURE PLANNED EXCAVATION AREA (2022-2023)
  - PHASE 2 PLANNED EXCAVATION AREA (2023)



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**SITE-WIDE SEDIMENT AND SOILS EXCAVATION AREAS**

SCALE AS SHOWN  
 MAY 2023

FIGURE 1

**LEGEND**

PROPOSED HOLDING BASIN WALL ALIGNMENT AS OF 6/26/13 (ALIGNMENT SUBJECT TO CHANGE)

30' X 30' PRE-CHARACTERIZATION GRID

PRE-CHARACTERIZATION SAMPLING LOCATION

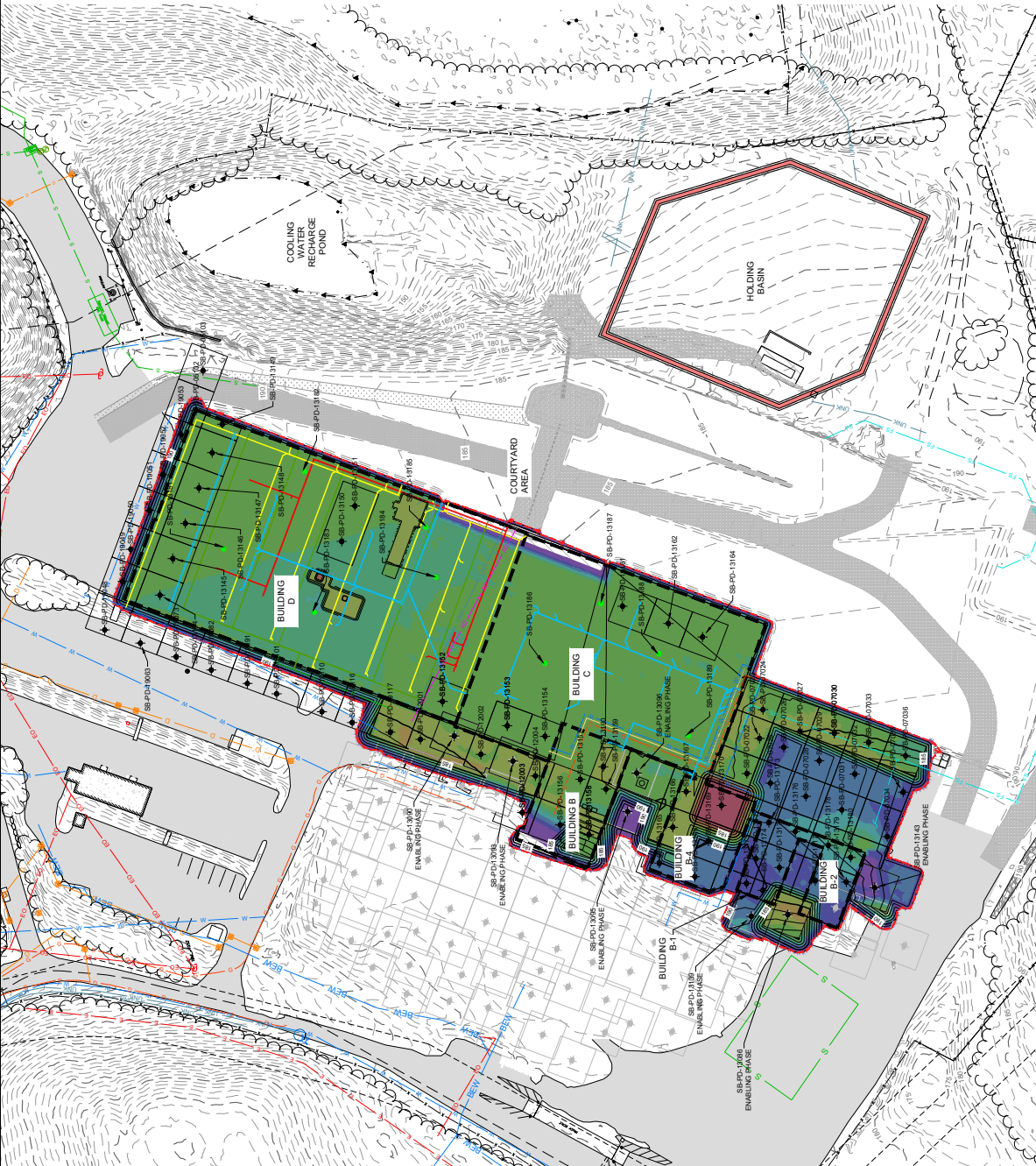
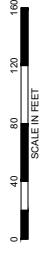
BUILDING SLAB SUPPLEMENTAL SOIL CHARACTERIZATION SAMPLES

BUILDING AREAS WHERE PRE-CHARACTERIZATION SAMPLING IS NOT PROPOSED (WAS NOT COMPLETE)

EXCAVATION DEPTH TABLE	DEPTH RANGE (FEET)	COLOR
	0 - 1	Blue
	1 - 2	Light Blue
	2 - 3	Light Green
	3 - 4	Light Yellow
	4 - 5	Yellow
	5 - 6	Orange
	6 - 7	Red-Orange
	7 - 8	Red
	8 - 9	Dark Red
	9 - 10	Brown

**NOTES:**

- FOR SURVEY AND GENERAL NOTES SEE G-101. FOR LEGEND SEE G-102.
- EXISTING CONDITIONS SHOWN IN COURTYARD AND BUILDING E AREAS REPRESENT PROPOSED CONDITIONS AS OF 6/26/13 AT THE TIME OF PHASE 2 REMEDIAL ACTION.



Phase 2 excavation areas (Drawing C-405).

## Photographs 1-6



**Photo 1:** Dust monitoring stations are installed around the perimeter of the work area to monitor ambient dust levels during work. The dust monitoring stations record dust levels in real time and are monitored by project personnel.



**Photo 2:** Mister spraying water over Building D soils and excavation area. The wetting of the soil and work area minimizes dust generation.



**Photo 3:** Soil excavation from Building D area. Soils are loaded into an off-road dump truck for transport to the on-site site Waste Processing Area.



**Photo 4:** Excavated soils are transported via off-road dump truck to the on-site Waste Processing Area (WPA).



**Photo 5:** The Waste processing area (WPA) is where soils are temporarily stockpiled before being loaded into trailers for off-site disposal.



**Photo 6:** The site roadways are wetted multiple times per day with a water truck to decrease dust generation due to on-site truck traffic.

## Photographs 7-9



**Photo 7:** Lined, dump trailers are filled with soil. Each truck is lined and covered prior to leaving the Site. Between 30-35 tons of soil are put into each truck.



**Photo 8:** Soil is trucked from Concord, Mass. to Worcester, Mass. where it is transferred to a rail car for final transportation and disposal in Michigan at an EPA approved and licensed disposal facility.



**Photo 9:** In order to protect site workers, truck drivers, and the community, the outside of each truck is scanned for radiation prior to leaving the site.