

F. H. Paschen

Dust Control Plan

**Former Carnotite Reduction Company Site Chicago,
Illinois**

December 10, 2021

Revision 05

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1 Introduction

This Dust Control Plan (plan) was prepared for F.H. Paschen (FHP) and its subcontractors to describe activities to be conducted at the Former Carnotite Reduction Company (Carnotite) site in Chicago, Illinois. This plan is provided in accordance with the summary of work specification No. 01 11 00, section 1.3.7. This plan also assures compliance with Illinois Emergency Management Agency (IEMA), Division of Nuclear Safety Radioactive Materials License IL-02467-01 issued to the City of Chicago Department of Assets, Information & Services (AIS) condition item 21 and ancillary conditions in items 20, 22, and 23 of the license.

The following presents roles and responsibilities for dust measurement and control, a summary of the dust producing work zone and activities, dust control measures, and best management practices.

Work zone and perimeter air particulate sampling and dust monitoring will be conducted by Tetra Tech, Inc. and Stan A. Huber Consultants, Inc. (TT/SACHI) as described in Tetra Tech's Health and Safety and Radiation Protection Plan (HASP/RPP) and Field Sampling Plan (FSP) (Tetra Tech 2021a and b). If work area or site perimeter air monitoring action levels are exceeded or visible dust is observed, dust control measures will be immediately implemented.

2 Project Summary

The scope of work consists of excavation of approximately 22,000 tons of contaminated soil containing radium-226 (Ra-226), total uranium (UTOT), and thorium-230 (Th-230) from the Carnotite site located at 434 East 26th Street in Chicago. Soil contamination is present beneath the East 26th Street right-of-way and on the northern portion of the former Michael Reese Hospital property, currently owned by the City of Chicago. Previous investigations have identified soil contamination up to 14 feet. A maximum excavation depth of up to 15 feet below grade is expected.

The Carnotite site is located in an urban location on the south side of Chicago and all dust generation is a concern to the surrounding community. As a result, this Dust Control Plan provides control measures for all dust generated. Dust will be controlled whether or not it contains radiological constituents.

The following is a summary of the proactive dust control measures that will be implemented:

- FHP will conduct a daily tailgate meeting to discuss work activities and determine pathways where vehicular traffic is expected for the day.
- All vehicle and equipment routes will be proactively wetted prior to any movement on site on days when dust control activities are warranted.
- All work areas with potential to generate dust will also be proactively misted and wetted prior to initiating work each day.
- All dump trucks exiting the site will use the wheel wash prior to exit.
- All dump trucks carrying loose soil or backfill material will be covered with tarps.
- All radiologically-contaminated soil being transported off site will be in fully enclosed IP-1 bags.
- AIS will monitor weather conditions and will direct FHP to cease site work if sustained winds exceed 20 miles per hour averaged over a 10-minute period.
- Sect. 13-32-125 Construction site cleanliness and the Construction Site Cleanliness Rules and Regulations for the Maintenance of Construction Site Stockpiles and Prevention of the Off-Site Dispersion of Dust and Debris from Construction Sites will be followed at all times.

3 Particulates

Airborne particulates (dust) are the primary aerosol of concern. Dust includes particulates that could include the contaminants of concern, which are Ra-226, Th-230, and UTOT. Other particulates include normal dust (primarily silica), possible dust from concrete and asphalt resizing, and, if found, hazardous waste. Dust can be visual and respirable. Dust control measures outlined in Section 7 will be immediately implemented when (1) visible dust is observed, (2) air monitoring action levels are exceeded, or (3) conditions outlined in AIS' radioactive material license are present.

4 Particulate Generating Areas

The site is surrounded by a minimum 6-foot fence with 6-foot wind screen. Three zones are defined: the exclusion zone with known contamination, the contamination reduction zone with potential contamination, and the support zone maintained free of contamination. The area to be excavated is within the exclusion zone. Each zone has the potential to generate dust but only the exclusion zone contains soil that could lead to the inhalation or ingestion of dust with elevated (above background) levels of the contaminants of concern. Barring spills, the other zones and areas could be the source of non-radioactive particulates.

The activities in the exclusion zone that may release radioactive particulates include excavating the contaminated soil and filling the PACTEC LiftPac IP-1 (IP-1) bags. Additionally, removing concrete and asphalt to expose contaminated soil and resizing concrete and asphalt may also contribute to the generation of radiologically-contaminated particulates.

Activities in the other areas that may generate dust include excavating soil that is not radiologically-impacted, loading the soils into dump trucks, and/or placing it in temporary stockpiles. This includes hazardous waste; non-radiological, non-hazardous special waste (soil); and non-radiological non-hazardous non-special waste (soil). Other activities that may generate non-radiologically-contaminated dust may include excavation for the wheel wash tank and wastewater treatment plant containment area; placing stone to augment access roads; mobilizing and de-mobilizing the truck scale, trailers, frac tanks, and water treatment facility; trucks driving on roads; and trucks driving in the transload facility.

5 Roles and Responsibilities

5.1 FHP Superintendent

The FHP Superintendent will have overall responsibility for implementing dust control onsite, monitoring for effectiveness, monitoring for potential runoff, and upgrading the best management practices.

Specific oversight and direct responsibilities of the FHP Superintendent include:

- Wetting or misting the area being excavated.
- Spraying down the onsite roads as required.
- Working with the Radiation Safety Officer (RSO) to stop work if ordered by the RSO due to sustained winds.
- Wetting or misting areas when placing stone to augment roads and mobilizing/ de-mobilizing the truck scale, trailers, frac tanks, and water treatment facility.
- Employing street sweeping equipment, as necessary.
- Stabilizing the construction entrance / egress to reduce tracked dirt.

- Assuring trucks go through the wheel wash.
- Using non-chemical dust suppressants as necessary.
- Limiting the volume and time frame of material stored onsite.
- Reducing equipment speed as necessary, including the excavator bucket, to minimize dust.
- Employing dust control measures during freezing conditions.
- Suspending work activities if best management practices and response activities do not adequately mitigate dust generation.
- Restarting activities after a dust related suspension.

Additionally, the FHP Superintendent will assure that haul trucks stay on paved surfaces at the Carnotite site to minimize dust generation. If trucks must access unpaved areas, temporary haul roads will be installed and maintained with dust suppression measures to eliminate dust generation and cross contamination at the Carnotite site.

5.2 FHP Workers

All FHP subcontracted workers are responsible for minimizing dust generating activities where possible during their assigned tasks. For example, contractors will wet concrete debris during resizing to minimize dust generation. Truck drivers will maintain minimum legal speeds for haul trucks to minimize dust generation. If a worker observes visual dust, the observation should be reported immediately to the FHP Superintendent.

All workers are responsible for proactively mitigating dust.

In addition, dust control measures will be discussed daily before the start of work at the tailgate health and safety meeting. Any potential dust generation activities from work areas, onsite haul routes, or other areas will be discussed and the measures that could be implemented that day to immediately eliminate dust will be planned and discussed. The individual(s) responsible for implementing the dust control measures will also be identified daily so the daily workforce knows whom to contact if they observe dust being generated.

6 Action Levels

6.1 On-Site Particulates

The radioactive material license dust and particulate action levels and requirements include:

- a. The RSO shall order all outdoor contaminated waste handling operations (e.g., excavation or loading of trucks) to cease in the event of adverse weather (e.g., sustained winds exceeding 20 miles/hour averaged over a 10-minute period or rainfall exceeding 0.25 inch/hour). In addition, any time visible dust is observed at the site, the RSO shall take actions immediately and dust suppression methods must be implemented within 20 minutes to stop the generation of visible dust.
- b. The licensee shall ensure, for the purposes of dust control that each truck hauling contaminated soil has either a soil moisture content that is sufficient to prevent visible dust generation or the soil on the top of the load is wet before transporting it.
- c. All trucks carry loose soil or backfill material will be covered with a tarp. Trucks carrying radiologically-impacted soil will be transported in fully enclosed IP-1 bags and hence will not require a tarp.

- d. All above grade, outdoor, stockpiles and associated exposed faces of contaminated materials shall be covered as discussed in Section 7.

Tetra Tech's HASP/RPP and FSP contain additional details regarding action levels for work area and site perimeter radiological air particulate, as well as dust monitoring and air monitoring activities (Tetra Tech 2021a and b).

6.2 Off-Site Particulates

Dust emissions from on-site activities are not expected to extend to off-site locations due to implementation of on-site dust control measures. However, off-site dust control measures will be implemented to prevent dust generation at locations in close proximity to the Carnotite site. Trucks leaving the Carnotite site will go through a wheel wash to remove any dust-generating particulates. The roads in the vicinity of the Carnotite site will be kept free of dust-generating particulates, as needed, with a street sweeper and wetting with a water truck as described in Section 7.

Dust generation at the transload facility is not expected. The trucks leaving the Carnotite site will have gone through the wheel wash and will be driving on paved surfaces to the transload facility. The transload facility has paved surfaces where the transfer to the rail cars will take place. Due to the lack of exposed soil at the transload facility, dust generation is not expected.

Potential offsite emissions are from truck exhausts and are regulated by the United States Environmental Protection Agency (EPA) and National Highway Traffic Safety Administration (NHTSA). All vehicles will meet the EPA/NHTSA standards for truck exhaust.

7 Dust Control Measures

It is expected that dust control procedures will be implemented any time there is the potential for dust generation, including dust generation from Carnotite site operations. Dust control measures will primarily consist of wetting surfaces using water trucks or other water application measures (e.g., misters); other options are summarized below.

In the event of a particulate monitor action level exceedance or the observation of visible dust, one or more of the following dust control measures will be implemented immediately to meet the action levels for particulate monitors or visible dust. The measures below include general work practices and action level response activities to minimize dust generation.

- FHP will conduct a daily tailgate meeting to discuss work activities and determine pathways where vehicular traffic is expected for the day.
- All vehicle and equipment routes will be proactively wetted prior to any movement on site on days when dust control activities are warranted.
- All work areas with potential to generate dust will also be proactively misted and wetted prior to initiating work each day.
- Roads will be wetted using a 2000-gallon water truck with spray nozzles on the front and back of the truck. The water truck will be equipped with a 2-inch diameter discharge hose with a spray nozzle attachment.

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- A 400-gallon water tank will be pulled on a trailer with a pump and a 2-inch discharge hose and spray nozzle attachment for wetting surfaces.
- A 1.5-inch hose with a spray nozzle will be attached to a fire hydrant to wet excavation areas and other dust generating areas that the water truck cannot access.
- A 2-inch water cannon will be attached to a fire hydrant to wet excavation area.
- A wheel wash will be used to remove any dust generating particulates from the tires of trucks leaving the Carnotite site.
- Windscreens on work zone fencing will be used to reduce wind speed and dust generation in the work area. A minimum of a 6-foot wind screen on a 6-foot fence surrounds the Carnotite site.
- Water will be applied as appropriate to exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) and at truck staging locations at least two times per day: prior to daily work activities and during excavation/loading activities.
- Water will be sprayed on excavation-equipment buckets during excavation and loading.
- During extended inactivity, excavations and haul roads will be wetted and swept prior to inactivity.
- Haul trucks transporting construction debris material or soil that is not radiologically-contaminated offsite will be covered and will maintain at least 6 inches of space between the waste and the top of the truck bed.
- A water spray from a hose may be applied to soil before it is placed in IP-1 bags.
- The drop height from the loader's bucket into the IP-1 bag will be a practical minimum. The loader's bucket will be emptied slowly to minimize generation of dust.
- Onsite speeds of less than 8 miles per hour will be maintained for safety purposes and for dust control measures.
- Transport trucks will be cleaned to remove loose debris clinging to the sides and/or wheels to minimize offsite contaminants, prior to offsite departure.
- All dump trucks exiting the site will use the wheel wash prior to exit.
- Idling time of diesel-fueled commercial motor vehicle and ancillary equipment on the vehicle will be minimized by shutting equipment off when not in use and otherwise limiting idling times.
- Idling time of diesel-powered construction equipment (i.e., non-vehicular) will be limited.
- All construction equipment, diesel trucks, and generators will be equipped with Best Available Control Technology for emission reductions of nitrogen oxides and particulate matter.
- Maintenance and proper tuning will be performed on all construction equipment in accordance with manufacturer specifications.
- If other dust control measures are not effective, the simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time will be limited, to the extent feasible. In addition, activities will be phased to reduce the number of disturbed surfaces at any one time, to the extent feasible.
- Excessive misting or wetting of soil will be avoided to reduce creating puddles or runoff. If dust suppression techniques do not lower particulates to acceptable risk-based levels, work will be suspended until appropriate corrective measures are approved to remedy the situation or the wind velocity decreases such that conditions meet the particulate monitor action level.
- Dust control measures will include use of applicable soil stabilizers or chemical dust control agents that may be applied, as needed, to exposed or disturbed soil in excavations or stockpiles, when construction activity has

ceased, such as evenings, holidays, weekends, or prior to/during inclement weather or other extended construction hiatus, to reduce dust generated from wind. Applied products will be coordinated with disposal facilities and IP-1 bags for compatibility and acceptance prior to purchase and application.

Although stockpiling of radiologically-contaminated soil from the remediation excavation footprint is not expected, as a contingency measure, we will establish a Stockpile Area constructed of bins sectioned off on three sides with Jersey barriers for temporary storage of radiologically-contaminated soil and debris. The bins will be lined with 30-mil (0.030 inches) thick plastic sheeting, and the stockpiled soil or debris placed into the bins will be covered with 30-mil thick plastic sheeting. The 30-mil thick plastic sheeting will be secured in place with sandbags. The sandbags will be placed around the perimeter and over the 30-mil thick plastic sheeting to hold it in place. These stockpiles will be inspected daily to ensure no material is exposed to the atmosphere.

Stockpiling of non-radiologically-contaminated soil may be performed at the site for construction debris and soil, or minimal quantities of clean stone for site maintenance purposes. If stockpiles of non-radiologically-contaminated materials are generated, they will be managed as follows:

- Stockpiles of soil and debris will be maintained to avoid steep sides or faces that exceed the angle of repose.
- Stockpiles of soil and debris, if generated, will be sprayed with enough water or another accepted material to keep the debris slightly damp. Water spray will be applied at a sufficient quantity to wet the soil but prevent runoff from oversaturation.
- Crusting agents (tackifiers) will be applied to any stockpiles staged for extended periods (not expected).
- Stockpiles of soil and debris will be covered with plastic sheeting or other dust-suppressing material/ fabric, when not in use.
- A daily inspection of debris stockpiles will be conducted to ensure the integrity of protection. Such inspections will include a visual inspection of plastic cover surfaces. Any holes, tears, or any other potential sources of fugitive air emissions will be immediately re-stabilized or repaired.
- Soil and debris will be hauled off-site for proper disposal periodically, to minimize quantities stored on site.
- Stockpiles of clean soil, as confirmed by laboratory analyses, may be stored on site until use at the time of site restoration. These stockpiles will be managed as discussed above.

7.1 Dust Control Options during Freezing Weather

Frozen soils will lock the moisture in place and form an impervious surface, causing precipitation to run off. Meanwhile, unfrozen soils will allow water to soak in and drain through. There will be a water truck onsite with a hose and nozzle feature. The water truck will be emptied daily during freezing conditions to prevent the water from freezing overnight.

If dust becomes problematic when the air temperature is below freezing, FHP workers can spray the excavation. The water will result in particulates coalescing and preventing dusting.

Chemical dust control agents or soil stabilizers will be used as needed during freezing conditions in the excavation as discussed in section 7.0.

Any safety hazards as a result of freezing dust suppression methods will be addressed such as utilizing salt or sand to reduce slippery conditions.

8 References

- a. Tetra Tech, Inc. (Tetra Tech). 2021a. "Health and Safety and Radiation Protection Plan for Site Remediation, Revision 3, Former Carnotite Reduction Company Site." Prepared for the City of Chicago Department of Assets, Information and Services. July.
- b. Tetra Tech. 2021b. "Field Sampling Plan for Site Remediation, Revision 1, Former Carnotite Reduction Company Site." Prepared for the City of Chicago Department of Assets, Information and Services. August.
- c. Tetra Tech. 2020. "Decommissioning Plan, Revision 5, Former Carnotite Reduction Company Site." Prepared for City of Chicago Department of Assets, Information and Services. November.
- d. Illinois Emergency Management Agency (IEMA), Division of Nuclear Safety Radioactive Materials License IL-02467-01
- e. Arcadis. 2021. Health and Safety Plan/Radiation Protection Plan, Former Carnotite Reduction Company Site.

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