

**TECHNICAL MEMORANDUM**

**SUBJECT**            **Dust & Air Monitoring Summary**

**SITE**                **The Heights Development, 2200 Larpenteur Avenue East, Saint Paul, Minnesota**

**DATE:**              **03/24/2024**

**FROM:**              **Kenneth Larsen, PE, PG, Vice President, Principal Engineer - Braun Intertec**  
**Mark Keefer, PG, Principal Scientist -Braun Intertec**

On behalf of Saint Paul Port Authority (SPPA), Braun Intertec Corporation has completed environmental monitoring and documentation services related to response action implementation in accordance with the *Revised Response Action Plan, Hillcrest Redevelopment Site, Saint Paul, Minnesota*, dated September 1, 2022 (2022 RAP), which was approved by the Minnesota Department of Agriculture (MDA) in a correspondence dated October 28, 2022, and by the Minnesota Pollution Control Agency (MPCA) Petroleum Brownfield (PB) and Voluntary Investigation and Cleanup (VIC) Programs in a correspondence dated September 22, 2022.

The response actions were implemented to address various soil impacts at the Site associated with the past golf course operations. The main contaminant at the site was mercury in soil from the past use of fungicides on the greens, tee boxes, fairways and in the maintenance area.

Response actions completed during Response Action Plan implementation included excavation and off-site disposal of mercury-impacted, arsenic-impacted, petroleum-impacted and intermixed debris-impacted soils and confirmation sampling of the remediated areas.

During excavation of the impacted soils, Braun Intertec performed both dust monitoring and air monitoring for mercury. The purpose of the dust monitoring was to monitor dust generated at the Site and minimize dust generation and exposure to dust particulates during the implementation of remedial actions and during mass grading at the Site. Mercury was not detected in any of the air samples collected and analyzed during the soil remediation at the Site.

Additional information is provided below concerning the procedures and equipment used to perform dust and air monitoring.

**Particulate and Air Monitoring Results**

As part of the response actions, Braun Intertec performed particulate monitoring across the Site to monitor for airborne dust.

The particulate monitoring was performed in accordance with the *Dust Monitoring Plan for Response Action Implementation, The Heights Development, Former Hillcrest Golf Course Site, Saint Paul*, prepared by Braun Intertec and Dated March 31, 2023 (2023 Dust Monitoring Plan). The 2023 Dust Monitoring Plan was approved by the MDA in a letter dated May 10, 2023.

As part of the 2023 Dust Monitoring Plan, a site specific action level (SSAL) was calculated per Occupational Safety and Health Administration (OSHA), and National Ambient Air Quality Standards for Particle Pollution standards. The SSAL was used to establish various actions that would occur at the site if particulate concentrations approached the SSAL.

The particulate monitoring included the use of real time air monitoring equipment with real time data alerts, which were then used by Braun Intertec staff to direct onsite contractors to implement actions onsite to address dust as needed. As part of the response action plan dust control measures were implemented during excavation, this primarily was accomplished through wetting of the soils, minimizing open excavation areas, and adjusting work during high wind events.

The particulate dust monitoring consisted of five stationary dust meters as well as one portable dust monitor. In addition to the dust meters, there was a weather monitoring station on the site which is used to monitor wind speed, direction, and temperature in real time. This data was then used to adjust the location of the stationary particulate meters to ensure that they are located properly to effectively monitor generated dust.

The stationary dust monitors provided real time data of the particulate readings to both the Braun Intertec field staff and project manager. In addition, the dust meters were programmed and connected to the cellular network in order to send out automated text and e-mail alerts if the dust monitoring thresholds established for the Site were exceeded. The notification threshold was set at 0.1 milligrams per meter cubed ( $\text{mg}/\text{m}^3$ ), which was well below the site-specific action level of  $0.621 \text{ mg}/\text{m}^3$ .

In general, one stationary dust meter was set in the upwind direction from the planned site work each morning, one or two dust meters were set immediately downwind of the active excavation areas, and two or three dust meters were set in a fan pattern downwind of the excavation areas. The Braun Intertec field professionals near the work area also utilized a portable dust meter that they carried with them. Braun Intertec also monitored particulate readings from a stationary dust meter located approximately 2 miles from the Site to monitor regional air quality to see if that affected particulate measurements.

Photos and a screenshot of the typical dust monitoring setup, and data interface is included in the photo log in Attachment 1.

Dust monitors were left operating at the Site overnight and over the weekends even when the Site was not active to ensure dust levels remained below the SSAL.

In addition to monitoring for particulates via the onsite dust meters, Braun Intertec collected bulk air samples down wind of the excavation areas. The bulk air samples are collected from two locations using pumps and filter cartridges. The two locations were sampled bi-weekly for a total of four samples collected per week. The bulk air cartridge samples were then sent to Bureau Veritas Laboratory for analysis of mercury. Mercury was not detected in any of the air samples collected and analyzed during the soil remediation at the Site.

**Attachments:**

- 1.** Photolog: Typical Dust Monitoring Set up and Data Interface

## Attachments

### Photographic Log



|            |  |                                 |
|------------|--|---------------------------------|
| Date:      | 8/9/2023                                       | <b>BRAUN</b><br><b>INTERTEC</b> |
| Direction: | Facing west                                    |                                 |
| Subject:   | Dust meter station near active excavation area |                                 |



|            |                                     |                                 |
|------------|-------------------------------------|---------------------------------|
| Date:      | 8/10/2026                           | <b>BRAUN</b><br><b>INTERTEC</b> |
| Direction: | Facing west                         |                                 |
| Subject:   | Excavation of mercury impacted soil |                                 |



|            |                                   |                                 |
|------------|-----------------------------------|---------------------------------|
| Date:      | 2023                              | <b>BRAUN</b><br><b>INTERTEC</b> |
| Direction: | Aerial view                       |                                 |
| Subject:   | Dust meter station set up example |                                 |

|  |                              |   |   |   |  |  |                      |                     |                     |
|--|------------------------------|---|---|---|--|--|----------------------|---------------------|---------------------|
|  | <b>Braun Met Station</b>     | 5.1<br>Speed (mph)                        | 347<br>Hum N                              | 66.2<br>Temp (F)                        | 973<br>Pres. (mBar)                      | 57<br>Hum. (%)                           | 0<br>Daily Rain (in) | 08/17/2023 16:58:40 |                     |
|  | <b>Station E</b>             | 0.042<br>Conc (mg/m <sup>3</sup> )        |   |   |  |  |                      |                     | 08/17/2023 16:58:41 |
|  | <b>Station A</b>             | 0.032<br>PM 1 Conc (mg/m <sup>3</sup> )   | 0.032<br>PM 2.5 Conc (mg/m <sup>3</sup> ) | 0.033<br>PM 4 Conc (mg/m <sup>3</sup> ) | 0.037<br>PM 10 Conc (mg/m <sup>3</sup> ) | 0.043<br>Total Conc (mg/m <sup>3</sup> ) |                      | 08/17/2023 16:58:41 |                     |
|  | <b>Station B</b>             | 0.036<br>PM 1 Conc (mg/m <sup>3</sup> )   | 0.035<br>PM 2.5 Conc (mg/m <sup>3</sup> ) | 0.036<br>PM 4 Conc (mg/m <sup>3</sup> ) | 0.036<br>PM 10 Conc (mg/m <sup>3</sup> ) | 0.036<br>Total Conc (mg/m <sup>3</sup> ) |                      | 08/17/2023 16:58:42 |                     |
|  | <b>Station C</b>             | 0.027<br>PM 1 Conc (mg/m <sup>3</sup> )   | 0.029<br>PM 2.5 Conc (mg/m <sup>3</sup> ) | 0.029<br>PM 4 Conc (mg/m <sup>3</sup> ) | 0.03<br>PM 10 Conc (mg/m <sup>3</sup> )  | 0.03<br>Total Conc (mg/m <sup>3</sup> )  |                      | 08/17/2023 16:58:42 |                     |
|  | <b>Station D</b>             | 0.026<br>PM 1 Conc (mg/m <sup>3</sup> )   | 0.026<br>PM 2.5 Conc (mg/m <sup>3</sup> ) | 0.026<br>PM 4 Conc (mg/m <sup>3</sup> ) | 0.026<br>PM 10 Conc (mg/m <sup>3</sup> ) | 0.026<br>Total Conc (mg/m <sup>3</sup> ) |                      | 08/17/2023 16:58:41 |                     |
|  | <b>AirNow - Harding H.S.</b> | 0.015<br>PM 2.5 Conc (mg/m <sup>3</sup> ) | ---                                       | ---                                     | ---                                      | ---                                      | ---                  | 08/17/2023 09:00:00 |                     |

|            |                       |                                 |
|------------|-----------------------|---------------------------------|
| Date:      | 2023                  | <b>BRAUN</b><br><b>INTERTEC</b> |
| Direction: | Screen Image          |                                 |
| Subject:   | Dust meter interphase |                                 |