Revised Response Action Plan

Hillcrest Redevelopment Site
Saint Paul, Minnesota
MPCA Brownfields Site ID: BF0001281
MDA Project No.: JAL101091523

Prepared for

Saint Paul Port Authority

Professional Certification:
I hereby certify that this plan, document, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Geologist under the laws of the State of Minnesota.

Mark D. Keefer, PG
Business Unit Leader, Senior Scientist
License Number: 47350

Project B1903316.00
September 1, 2022

Braun Intertec Corporation

116586214.1 0049912-00041

BRAUN INTERTEC
The Science You Build On.

Braun Intertec Corporation
1826 Buerkle Road
Saint Paul, MN 55110

Phone: 651.487.3245
Fax: 651.487.1812
Web: braunintertec.com

September 1, 2022

Project B1903316.00

Mr. Josh Leable
Project Manager, Incident Response Unit
Minnesota Department of Agriculture
625 Robert Street
St. Paul, MN 55155

Mr. Andrew Nichols
Project Manager
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155

Re: Revised Response Action Plan
Hillcrest Redevelopment Site
St. Paul, Minnesota
MPCA Brownfields Site ID: BF0001281
MDA Project No.: JAL101091523

Dear Mr. Leable/Mr. Nichols:

On behalf of the Saint Paul Port Authority, Braun Intertec Corporation has prepared the attached revised Response Action Plan (RAP) for the Hillcrest Redevelopment Site located in St. Paul, Minnesota (Site). The original RAP, dated March 1, 2022, was prepared by Braun Intertec and submitted to the MDH/MPCA for review and approval (March 2022 RAP). The March 2022 RAP was approved by the MPCA in a letter dated May 3, 2022 and approved by the MDH in a letter dated April 29. 2022. Both the MPCA and the MDH approval letters requested some adjustments and additional information as a condition of the RAP approvals. In addition, after the March 2022 RAP was submitted to the MDA/MPCA, the soil cleanup standards (soil reference values) for several compounds, and specifically mercury, were updated by the MPCA in April 2022. Braun Intertec has prepared this Revised RAP for MDH and MPCA review and approval to address approval conditions identified in the MDA and MPCA approval letters and to update the RAP in accordance with the revised soil cleanup standards.

This Revised RAP describes response actions that will be implemented to manage contaminated soils, sediments and other media required to obtain environmental assurances and RAP implementation approvals from the Minnesota Department of Agriculture (MDA) and Minnesota Pollution Control Agency (MPCA) and facilitate planned redevelopment at the Site. The RAP includes a Construction Contingency Plan (CCP) that provides procedures for managing unanticipated contaminated materials that may be encountered during project construction.

Review and approval of the enclosed Revised RAP is requested from both the MDA and MPCA voluntary programs by no later than Monday October 31, 2022 to facilitate the submittal of cleanup grant applications on Tuesday, November 1, 2022.

If you have any questions or comments regarding this report or the project in general, please contact Ken Larsen at 952-995-2455 or Mark Keefer at 952.995.2493.

Sincerely,

BRAUN INTERTEC CORPORATION

Kenneth A. Larsen, PE, PG
Vice President/Principal Scientist

Mark D. Keefer, PG
Business Unit Leader, Senior Scientist

c: Monte Hilleman, Saint Paul Port Authority
Steve Heurung, Stoel Rives

Attachment:
Response Action Plan

Table of Contents

Description **Page**

Table of Contents (continued)

Table of Contents (continued)

Figures

Tables

Table of Contents (continued)

Appendices

A. Introduction

Braun Intertec Corporation was retained by the Saint Paul Port Authority (SPPA) to prepare this Revised Response Action Plan (RAP) for the proposed Hillcrest Redevelopment Site located in St. Paul (Site). The original Site RAP, dated March 1, 2022, was prepared by Braun Intertec and submitted to the Minnesota Department of Agriculture (MDA) and the Minnesota Pollution Control Agency (MPCA) for review and approval (March 2022 RAP). The March 2022 RAP was approved by the MPCA in a letter dated May 3, 2022 and approved by the MDH in a letter dated April 29. 2022. Both the MPCA and the MDH approval letters requested some adjustments and additional information as a condition of the RAP approvals. In addition, after the March 2022 RAP was submitted to the MDA/MPCA, the soil cleanup standards (soil reference values) for several compounds, and specifically mercury, were updated by the MPCA in April 2022. Braun Intertec has prepared this RAP for MDH and MPCA review and approval to address approval conditions identified in the MDA and MPCA March 2022 RAP approval letters and to update the RAP in accordance with the revised soil cleanup standards.

This RAP describes response actions that will be implemented to secure environmental assurances and RAP implementation approvals from the MDA and MPCA and facilitate the planned mixed-use redevelopment of the Site. The environmental response actions in this RAP include procedures for managing contaminated soil, sediment, and groundwater impacts identified by Remedial Investigation (RI) of the Site. The RAP also includes a Construction Contingency Plan (CCP) that describes requirements for responding to unanticipated contaminated materials that may be encountered during project construction. This RAP is being submitted to the MDA Voluntary Investigation and Cleanup (AgVIC) Program, the MPCA Voluntary Investigation and Cleanup (VIC) Program, and the MPCA Petroleum Brownfields (PB) Program for review and approval. If any modifications or changes to the RAP are required, an addendum or amendment outlining such modifications or changes will be submitted to the MDA and MPCA. The Site is enrolled into the respective voluntary programs and was assigned MDA Project No.: JAL101091523 and MPCA Brownfields Site ID: BF0001281.

This RAP generally follows MDA Guidance Document Agricultural Chemical Incident Remedial Investigation Report and Corrective Action Plan, Guidance Document 10 (September 2001) and MPCA Guidance Document *Brownfield Program Response Action Plans (October 2018)*, including the inclusion of a CCP for responding to unexpected environmental conditions on the Site. Details on managing different types of soil contamination at the Site to ensure that the excavation, stockpiling, and handling of soils at the Site are protective of human health and the environment, both in the short-term during construction and for the long-term during subsequent Site use are also provided.

Upon completion of the response actions addressed in this RAP, the SPPA anticipates requesting RAP Implementation Report Approval Letters and No Further Action Determinations from the MDA and MPCA. This RAP was prepared on behalf of and for use by the Saint Paul Port Authority in accordance with the contract between the Saint Paul Port Authority and Braun Intertec. No other party has a right to rely on the contents of this Revised Response Action Plan without the written authorization of Braun Intertec.

A.1. Planned Redevelopment

The planned redevelopment of the Site will result in a new multi-use development. The redevelopment will include areas of light industrial and commercial use, high, medium, and low-density residential use, associated parking/drive areas, new infrastructure, recreational park use, and passive greenspace areas. Added infrastructure included with the redevelopment includes installing electric, sewer and water utility lines, and constructing several public streets and stormwater management systems. Conceptual Maps depicting the current planned redevelopment configuration and future land uses is included as Appendix A.

A.2. Project Objectives

This RAP includes the environmental response actions required to address known contaminated media to obtain environmental assurances and RAP implementation approvals from the MDA AgVIC Program, MPCA VIC Program, and MPCA PB Program and facilitate planned site use. Specifically, upon completion of the response actions addressed in this RAP, the SPPA anticipates requesting RAP Implementation Report Approval Letters and No Further Action Determinations from the MDA and MPCA.

A.3. Anticipated Schedule

Response action implementation in accordance with this RAP is expected to start in April 2023 and will be coordinated with earthwork activities related to mass grading for redevelopment and construction of public roadways, associated utilities, and related infrastructure. The response actions are anticipated to be completed by December 2023; however, the sequencing of response actions and related completion timeframes may be modified to prioritize site grading and infrastructure construction at locations of the Site where redevelopment will occur first.

After implementation of the RAP across the Site, Redevelopment construction on the individual parcels comprising the Site will occur in phases, with construction on the first redevelopment parcel to start as early as October 2023 (with completion dates in 2024). Remaining parcels at the Site will be redeveloped

over time with full capacity of the redeveloped Site anticipated by approximately 2033. Additional information on response action sequencing and completion dates will be provided to the MDA and MPCA when the information becomes available and in advance of construction.

B. Site Background

B.1. Site Location and Description

The Site is located at 2200 Larpenteur Avenue East in Saint Paul, Ramsey County, Minnesota (see Figure 1).

The Site is approximately 112 acres in size and includes six separate parcels. At the time of the site assessments and investigations supporting this RAP, the Site consisted of a vacant 18-hole golf course that included club facilities, driving range, practice putting greens, and support buildings. A vacant clubhouse with associated paved parking lot, swimming pool, vacant pool building, vacant golf cart sheds, and vacant garages were located in the northwest corner of the Site. The former fairways extended south of the clubhouse. A vacant maintenance area was in the southeastern area of the Site that includes a former maintenance shop building, former maintenance storage building, and former agricultural chemical storage and mixing buildings (i.e., agricultural chemical buildings). Earthen berms were located along the southeastern Site boundary next to and south of the former maintenance area. Two unsealed water wells and two small petroleum above ground storage tanks (ASTs) were also identified at the Site. A site sketch is included as Figure 2.

According to the 2019 Former Hillcrest Golf Course Site Phase I Environmental Site Assessment (Phase I ESA), the Site had been operated as a golf course since the 1920s until it was closed in 2017. The former golf course layout is shown on Figure 3. The surrounding area land use has generally consisted of cultivated agricultural land progressively followed by residential and light commercial (retail) development.

B.2. Site Land Use History

Prior to the 1920s the Site was cultivated agricultural land or grazing land. The Hillcrest Golf Course was developed in the 1920s as a full size 18-hole private golf course/club that included clubhouse facilities, a swimming pool with pool building, driving range, practice putting greens, tennis courts, and various support buildings on the north side of the Hillcrest Site, and agricultural chemical storage buildings and maintenance shop on the southeastern side. Earthen berms, which contain contaminated soils and

intermixed debris, are located along the southeastern boundary of the Site next to and south of the maintenance area and two unsealed water wells. The golf course ceased operations in 2017 and the Site has remained vacant since that time.

During use as a golf course, various petroleum products were used and stored on the Site. Specifically, three past petroleum releases have been reported at the Site, Leak ID# 5050; Leak ID# 6222; and Leak ID# 18327. Based on the property use at the time of the releases, all three petroleum release leak sites were closed by the MPCA following review of the follow up site investigations, or in the case of Leak ID #6222, review of the limited soil cleanup actions taken following tank removal (i.e., excavation, hauling and treatment of an estimated 180 tons of petroleum-impacted soil).

B.3. Site Assessments/Investigations by SPPA

B.3.a. Overview

Previous environmental investigations performed at the Site have identified soil, sediment, soil vapor, and groundwater impacts associated with the past use of the Site as a golf course. The SPPA performed a Phase II Environmental Site Assessment (ESA) of the Site to investigate the Recognized Environmental Conditions (RECs), Historical RECs (HRECs), and Controlled RECs (CRECs) identified in the Phase I ESA. In addition, the SPPA recently performed a remedial investigation (RI) of the Site in support of the planned redevelopment. Results of previous environmental investigations are included in the document entitled: Remedial Investigation Report, Former Hillcrest Golf Course Site, St. Paul, Minnesota, dated March 1, 2022 (2022 RI Report). The following sections summarize the results of the previous environmental assessments and investigations completed by the SPPA.

B.3.b. Phase I Environmental Site Assessment

Prior to property acquisition in June 2019, the SPPA retained Braun Intertec to complete a Phase I ESA of the Hillcrest Site in accordance with ASTM Standard Practice E1527-13. The Phase I ESA results were documented in a report entitled: *Phase I Environmental Site Assessment, Former Hillcrest Golf Course, McKnight Road and Larpenteur Avenue East, St. Paul, Minnesota*, dated June 10, 2019 (2019 Phase I ESA).

In summary, the 2019 Phase I ESA identified the following RECs related to the Site:

1) the presence of remaining contamination from past petroleum tank leaks,
2) the potential for agricultural chemical releases to the soil and groundwater,
3) the potential for the repeated historical application of fungicide to result in an accumulation of mercury in the soils over time, and

4) the potential presence of contaminated soils and buried regulated waste materials in berms present at various locations. No HRECs or CRECs were identified for the Site in the 2019 Phase I ESA.

Braun Intertec amended the 2019 Phase I ESA in response to the MDA's letter to the SPPA dated July 19, 2019. The amended Phase I ESA is presented in the letter entitled: *Phase I Environmental Site Assessment Addendum, Agricultural Chemical Incident Investigation, Former Hillcrest Golf Course, St. Paul, Minnesota*, prepared by Braun Intertec and dated August 15, 2109 (2019 Phase I Addendum).

The 2019 Phase I Addendum identified eight high risk areas (HRAs) at the Site consisting of the following:

- Agricultural chemical storage buildings loading areas.
- Damaged floors in the agricultural chemical storage buildings (3 buildings).
- Agricultural chemical mixing/washout area.
- Drainage area adjacent to mixing/wash area.
- Berms on eastern portion of Property.
- Golf greens and practice greens constructed before 1994.
- Tee boxes.
- Fairways.

As requested by the MDA during an October 29, 2019, site walk, Braun Intertec added (a) the primary pesticide/fertilizer storage building, and (b) the associated loading area as standalone HRAs.

In addition, as part of the 2019 Phase I Addendum, Braun Intertec reviewed the historical agricultural pesticide and fertilizer use at the former golf course. The facility primarily used granular and soluble fertilizers consisting of various brands and formulations of nitrogen, potassium, and phosphorus-based fertilizers. The majority of these fertilizers were applied to greens, tee boxes, and fairways with occasional applications to roughs and around the clubhouse area.

The facility used a variety of pesticides including fungicides, herbicides, insecticides, and algicides for various applications across the golf course. Based upon available usage records it appears that these were used in smaller quantities primarily on the greens, but occasionally on the fairways, approaches, and tees, and sporadically around the clubhouse. Common pesticides used included 2, 4-D, imidacloprid, Dicamba, chlorothalonil, iprodione. Reportedly, the facility had discontinued use of mercury-based fungicides sometime prior to 1994.

B.3.c. Phase II Environmental Site Assessment

In 2019, Braun Intertec conducted a Phase II ESA, in support of the SPPA acquiring the Site, the results of which are presented in the report entitled: *Preliminary Phase II Environmental Site Assessment, Former Hillcrest Golf Course, St. Paul, Minnesota*, dated June 10, 2019 (2019 Phase II ESA).

The 2019 Phase II ESA consisted of geotechnical and environmental soil borings, temporary perched groundwater monitoring wells, soil vapor probes, and a sub-slab vapor point. In addition, soil samples were collected throughout the former golf course including from the maintenance berm.

The following provides a summary of the conclusions of the 2019 Phase II ESA:

- Past and current Phase II ESAs detected both non-petroleum and petroleum compounds in soil at various locations and depths across the Site. The highest concentrations of mercury impacts were detected in soil samples collected from the former greens and related fringe/apron areas. Mercury concentrations were detected consistently on tee boxes, sampled fairways, and in soil near the "mixing area" where fungicides are known to have been mixed with water and loaded into the turf management equipment for use on the golf course. The mercury concentrations in the fairways and tee boxes varied with some soil sample results exceeding the Residential and Commercial/Industrial soil reference values (SRVs) in-place at the time of the investigation.

- Additional non-petroleum impacts to soil from polycyclic aromatic hydrocarbons (PAHs) and arsenic were also detected at a few locations at the Hillcrest Site, but these impacts are relatively minor in extent and magnitude. Petroleum impacts were also detected at the Hillcrest Site and were limited to the area of the three "closed" petroleum leak sites that were discussed previously.

- Several soil berms with intermixed debris and solid waste are present in the wooded area south of the maintenance shop on the east side of the property and adjacent to McKnight Road. Debris types observed in the soil include brick, asphalt, concrete, carpet, drain tile, conduit, plastic, etc. A composite soil sample consisting of several discrete soil samples collected from different areas of the soil berms with observed debris detected mercury at a concentration exceeding the Commercial/Industrial SRV in-place at the time of the investigation.

- Groundwater samples collected during the Preliminary Phase II ESA did not detect evidence of significant or widespread contamination by petroleum compounds or hazardous

substances. The only detection of a contaminant in groundwater above a drinking water standard was diesel range organics (DRO) in the sample collected near the previously investigated and closed petroleum leak sites.

- Low concentrations of volatile organic compounds (VOCs) were detected in soil vapor samples collected during this investigation. However, no VOCs in the soil vapor were detected at concentrations above the MPCA action levels requiring consideration for redevelopment.

The 2019 Phase II ESA report concluded that additional environmental investigation(s) would be needed to further delineate and define the magnitude and extent of the identified impacts at the Site in consideration of future redevelopment.

B.3.d. Remedial Investigation

Braun Intertec conducted a RI to further define the impacts identified during the 2019 Phase II ESA. The scope of the RI was detailed in the Remedial Investigation Work Plan dated March 27, 2020 (RI Work Plan), with minor additional sampling addressed in the RI Work Plan Addendum dated June 12, 2020, and RI Work Plan Addendum #2 dated October 7, 2021.

The RI Work Plan was approved by the MDA Incident Response Staff on May 5, 2020, and the RI Work Plan Addendum was approved by email on June 23, 2021. The investigation was partially funded from a U.S. Environmental Protection Agency (EPA) Assessment Grant Number BF00E02723. As such, all field work and sampling procedures were conducted in accordance with the Quality Assurance Project Plan (QAPP), dated September 26, 2019, that was previously submitted to and approved by EPA Region 5. As required under the QAPP, a Sampling and Analysis Plan (SAP) document containing the same elements of the RI Work Plan was prepared by Braun Intertec and dated May 11, 2020, the SAP was submitted to the EPA Region 5. The RI Work Plan Addendum #2 was approved by MDA Incident Response Staff on November 2, 2021.

The RI was primarily performed between June and August 2020, with additional investigation performed in November 2021 and July 2022.

The results of the RI were included in the 2022 RI Report dated March 1, 2022, which included a summary of the data presented in the 2019 Phase II ESA. The updated tables and figures from the RI are included in this RAP, the table and figures were updated to reflect the April 2022 revised Soil Reference Values published by the MPCA.

In addition, per the March 2022 RAP, there were portions of the Site where some of the planned RI soil sampling locations were inaccessible due to flooding. In July of 2022, the flooding had receded to the point where most of these samples could be collected. July 2022 soil sampling is included with the RI results described below.

The RI consisted of soil borings, hand auger, test pits, sediment samples, groundwater samples, and surface water samples. The RI investigation included the following:

- Ten test pits (TT-1 through TT-10) excavated in areas of potential buried debris.
- Thirteen soil borings completed in agricultural maintenance and washout areas.
- Four soil borings in former petroleum tank areas.
- One soil boring in the north parking lot.
- Conversion of three of the soil borings into permanent monitoring wells.
- Twenty-one hand augers around the clubhouse.
- Over 200 shallow hand auger borings throughout the golf course areas (i.e., fairways, green, tee boxes and roughs).
- Over 50 multipoint composite samples (comprised of 574 individual aliquots) throughout the fairways.
- Approximately 100 hand auger borings in potential wetlands or pond sediments.
- Groundwater samples collected from the three monitoring wells, the existing irrigation well, and maintenance area wells at the facility.

Soil samples were submitted to Pace Analytical Services LLC (Pace) of Minneapolis and analyzed for a combination of the following parameters:

Analyte	**Analytical Method**
VOCs	EPA 8260
TKN	EPA 351.2
PAHs	EPA 8270C
Nitrate-Nitrite	EPA 353.2
Chlorothalonil	EPA 8270
GRO	WI MOD GRO
DRO	WI MOD DRO
Chlorothalonil	EPA 8270
Propiconazole	EPA 8321
Iprodione	EPA 8270
MDA list 2	EPA 8321
RCRA Metals/mercury	EPA 6020/7471

The following provides a summary of the conclusions of the 2022 RI:

- Investigations at the Site have detected both non-petroleum and petroleum compounds in soil at various locations and depths across the Site. The non-petroleum impacts included widespread mercury contamination from the historical use of specialty fungicides and other turf management agricultural products associated with golf courses dating back to the 1930's and into the 1990's.

- The highest concentrations of mercury were detected in soil samples collected from the former greens and related fringe/apron areas. Mercury concentrations were detected consistently on greens, tee boxes, fairways, and in soil near the "mixing area" where fungicides are known to have been mixed with water and loaded into the turf management equipment for use on the golf course.

- The mercury concentrations in the fairways varied with many soil sample results exceeding the residential and commercial/industrial SRVs.

- Mercury concentrations exceeding the SRV were detected in all of the greens, and the majority of tee boxes.

- Mercury concentrations in the fairways typically range from 0.3 to 20.2 mg/kg. Approximately half of the fairways had detections of mercury at concentrations greater than residential SRVs.

- Mercury concentrations in the golf course roughs were typically well below the residential SRV and generally in the range of naturally occurring mercury concentrations. There were some exceedances of the mercury SRV in localized areas near cart paths or operation areas.

- Petroleum impacts detected at the Site are primarily associated with the past use and storage of diesel fuel and gasoline products in the former maintenance shop area located on the east side of the Site adjacent to McKnight Road. Specifically, there were three separate petroleum leak site numbers opened by the MPCA for the releases reported in the vicinity of the former maintenance shop area at the property. The MPCA closed these leak site numbers following review of the previously completed petroleum release investigations and/or soil corrective action.

- Non-petroleum impacts to soil from PAHs and arsenic have also been detected at a few locations at the Site.

- Test pits encountered buried debris at the Site. The buried debris includes the area of the former pool house and tennis courts, which contained various fill soils intermixed with debris. The observed debris included paint cans, concrete, asphalt, plastic, pieces of tennis court and other solid garbage materials. The debris was present intermittently down to a depth of approximately 5 ft below ground surface (bgs). Trace debris (wood or concrete) was encountered in soils near the maintenance buildings to depths of 7 ft bgs. DRO was detected in the soil associated with the buried debris at concentrations exceeding the MPCA unregulated fill criteria. VOCs were detected in soil vapor samples collected from the buried debris area.

- Several soil berms containing contaminated soils intermixed with debris are present in the wooded area south of the maintenance shop on the east side of the property and adjacent to McKnight Road. Debris types observed in the soil include brick, asphalt, concrete, carpet, drain tile, conduit, plastic, etc. A composite soil sample consisting of several discrete soil samples collected from different areas of the soil berms with observed debris detected mercury at concentrations exceeding the Residential and/or Commercial/Industrial SRV and PAHs detected concentrations below SRVs.

- Groundwater samples collected by Braun Intertec did not detect evidence of significant or widespread contamination by petroleum compounds or hazardous substances. Dissolved barium was the only metal detected in the water samples; however, the detected concentrations were well below the drinking water standard for barium.

- DRO was detected at 540 micrograms per liter (ug/l) in shallow groundwater at boring location ST-8, in the former washout/tank area of the Site. DRO was not detected above the laboratory reporting limits in the other groundwater samples analyzed during the investigations.

- The presence of residual petroleum-related shallow groundwater contamination associated with the closed leak sites in the maintenance area, that was previously investigated, is a known condition, and would only be a concern for redevelopment if dewatering for construction was required and/or if a stormwater infiltration feature was planned for this specific area of the Site.

- Mercury (total or dissolved) was not detected above laboratory reporting limits in the surface water or groundwater samples analyzed during the Site investigation.

- Low concentrations of VOCs were detected in soil vapor samples collected during this investigation. However, none of the detected concentrations of VOCs in soil vapor were above the MPCA's action level of 33X the residential intrusion screening values (ISVs) in any of the sample locations.

Figure 4 shows the sampling locations for all of discreet samples collected at the Site; Figure 5 summarizes the soil analytical data collected at the Site by Braun Intertec during the Site investigation. Summary data tables for all data collected to date are included in the attached Tables 1-14.

B.3.e. Additional Soil Sampling and Analysis - Wetland South of Maintenance Area

Due to the presence of standing water, several of the planned soil samples in the potential wetland south of the maintenance area (see the RI Addendum #2) could not be collected prior to 2022. Braun Intertec collected the following soil samples on July 13, 2022: SED-6, SED-6 E, SED-6 S, SED-6 W, PW-6C, PW-6C N, PW-6C W, PW-6D, PW-6D W, and PW-6D W. The soil samples were collected and analyzed per RI Addendum #2. The results of this additional investigation are included in Table 14 and shown on Figure 5, lab data from the additional sampling is included in Appendix B the MDA data review checklist is included in Appendix B as well. The Additional mercury impacts above the established SRVs or screening SLV are addressed as discussed in Section G.1.f below.

B.4. Published Geologic Information

B.4.a. Topography

According to the United States Geological Survey (USGS) 7.5-minute topographic map series, St. Paul East, Minnesota quadrangle, the Site elevation ranges from approximately 1,000 feet to approximately 1,060 feet above mean sea level and the terrain is rolling (2019 Phase I ESA).

B.4.b. Geology

The unconsolidated sediments in the Site vicinity are Pleistocene age till deposits that consist of sandy loam, clay loam, and silty clay loam. The till deposit is generally reddish brown in color and is locally compact (2019 Phase I ESA).

The depth to bedrock in the Site vicinity is 100 to 150 feet below land surface (2019 Phase I ESA). The uppermost bedrock units in the Site vicinity include the Middle Ordovician, Decorah Shale on the western

portions of the Site, the Platteville and Glenwood Formations on most of the central and northern portions of the Site, and the St. Peter Sandstone on the southern portions of the Site (2019 Phase I ESA).

Site-specific information regarding soils identified by the Site investigations is provided in the Site Conceptual Model provided in Section C.

B.4.c. Hydrogeology

The reported depth to groundwater in the Site vicinity is 100 to 200 feet below land surface. Shallow groundwater may occur at shallower depths above clay layers. The depth to first groundwater at the Site as measured in the three permanent monitoring wells installed as part of the RI ranged from 4 ft bgs to 29.9 ft bgs, corresponding to an elevation of 996 to 1014 ft msl. A table of the well details including measured water depths in included in Appendix C. According to published geologic information, the regional groundwater flow direction in the Site vicinity is generally westerly (2019 Phase I ESA). However, the local direction of groundwater flow may be affected by nearby streams, lakes, wells, and/or wetlands and may vary seasonally.

Site-specific information regarding groundwater conditions identified by the Site investigations is provided in the Site Conceptual Model provided in Section C.

B.5. Exposure Risk

The impacted soils identified at the Site are readily accessible below the grass and thin topsoil layer at each green and fringe as well as in many of the tee boxes, fairways, the maintenance area, in localized areas of the clubhouse area soils, the buried debris areas, some of the wetland sediments and in small areas of some rough's areas. Currently, the former golf course is open green space and there are no dedicated uses for the area. The area is not open to public use and the Site is surrounded by a security fence. Shallow petroleum impacts were previously identified associated with the closed leak sites in the maintenance area.

The response actions presented in Section G below will address the removal of impacted soils. The cleanup goals for the RAP are presented in Section F below.

The investigations to date have not identified groundwater or surface water impacts at the Site above the relevant drinking water standards, except for the residual petroleum impacts to perched water associated with the closed leak sites. Site investigations have not detected concentrations of VOCs in soil vapor above the MPCA's action level of 33X the residential intrusion screening values (ISVs) in any of the sample locations at the Site.

C. Site Conceptual Model

The historic information summarized above, and the RI results presented in the 2022 RI Report were used to prepare a site conceptual model that envisions future redevelopment of the Site.

The Site Conceptual Model incorporates the current Site use and conditions, former Site uses and conditions, planned Site uses, physical setting, characterization of impacts to the Site from the contaminants of concern (COCs), and a discussion of potential receptors and exposure pathways.

C.1. Current Site Use and Conditions

The Site was developed and used as a golf course from the early 1920s until golf course operations ceased in 2017. The Site is currently occupied by the former golf course operations structures, including unmaintained greens, tee boxes, and fairways, a driving range, practice putting greens, and support buildings. A vacant clubhouse with associated paved parking lot, swimming pool, vacant pool building, vacant golf cart sheds, and vacant garages are in the northwest corner of the Site. There was an original clubhouse that was severely damaged by fire in 1962. The remains of the destroyed clubhouse were demolished and replaced with a new clubhouse that was subsequently demolished between 1994 and 2000 and replaced by the current existing vacant clubhouse in 2000. The former fairways extended south of the club house. A vacant maintenance area located in the southeastern portion of the Site includes a former maintenance shop building, former maintenance storage building, and former agricultural chemical storage and mixing buildings (agricultural chemical buildings). Earthen berms containing various fill soils with debris are located along the southeastern Site boundary next to and south of the former maintenance area. Two out of service (the pumps were removed in 2020) unsealed water wells are present at the Site, including three shallow monitoring wells installed during the 2020 RI and two deeper production wells, an out of service irrigation well located near the center of the site, and an out of service production well located in the maintenance area.

Golf operations included the storage and mixing of agricultural chemicals. The storage and mixing of chemicals was primarily performed in and around the agricultural chemical storage buildings and the fill/wash out area and wash pad (Figure 2). The facility was using the mix load pad for washing and filling of pesticide equipment. The load pad and associated area drain to a low-lying area immediately south of the maintenance area. The golf course facility used a variety of pesticides, which included fungicides (including a mercury-based fungicide), herbicides, insecticides, and algicides for various applications across the golf course. Based upon available usage records it appears that these were used in small quantities, primarily on the greens, but occasionally on approaches and tee boxes.

The facility also used granular and soluble fertilizers consisting of various brands and formulations of nitrogen, potassium, and phosphorus-based fertilizers. Available records indicate the fertilizers used at the largest quantities were granular fertilizers. According to Tom Schmidt, a former Hillcrest Golf Course Greens Keeper, these fertilizers were applied to greens, tee boxes, and fairways, with occasional applications to roughs and around the clubhouse area. Available usage records indicate that the soluble fertilizers were primarily used on the greens.

In addition, historically the Site had several petroleum underground storage tanks (USTs) and ASTs on the Site. Three gasoline USTs were previously located on the Site, including one 560-gallon tank and two 1,000-gallon tanks. Leaks were reported for two of the former gasoline USTs and one former unregistered diesel AST. The USTs were located south of the former maintenance building (Leak #6222) and south of the agricultural chemical storage building (Leak #5050), the unregistered diesel AST was located west of the Maintenance Storage Building (Leak #18327). The leak locations are shown on Figure 2. The MPCA assigned a closed status to UST Leak ID# 5050 on June 1, 1992; to UST Leak ID# 6222 on September 26, 1994; and to AST Leak ID# 18327 on June 15, 2011. Leak ID # 6222 and Leak ID # 18327 were reportedly closed with remaining soil and groundwater contamination.

The Site topography varies across the Site with rolling hills, berms, low areas, such that the Site elevation ranges from approximately 1,000 feet to approximately 1,060 feet above mean sea level and the terrain is rolling. The stormwater from the Site appears to infiltrate in the green space areas or runs off by sheet flow to the existing stormwater sewer system.

The Site is located in a fully developed residential/light commercial area that was originally developed for cultivated agricultural land, grazing land, and residential use. By the early 1980s, a small retail strip mall was developed on an adjoining property to the north and another small retail strip mall was developed on an adjoining property to the northeast by the early 1990s. The retail development on the adjoining property to the northeast includes a gasoline filling station, which has operated since approximately 1990. The areas to the east, south, and west of the Site are residential developments.

C.2. Stratigraphy

The Site stratigraphy consists of a surficial fill deposit underlain by native soil deposits. Specifically, soils at the Site consist of the following:

- Variable fill soils/fill soils with debris
- Organic soils/peat
- Alluvium, fluvial, and glacial tills

The Site is covered with topsoil or topsoil fill consisting of sandy clay/clayey sand, sandy silt or silt with various amounts of organics materials. The topsoil is underlain with various fill materials consisting of primarily clayey sands, sands, silty sands, clay or sands with silts to depths ranging from 1 to 10 feet bgs. The soils in the lower elevations in the eastern and northeastern portions of the Site initially consist of a combination of existing fill, organic swamp deposits, and soft alluvial soils that extend to depths of 4 to 9 feet below existing grades. Clayey sands or clayey sand with gravel were encountered below these surficial materials to depth of 25 feet bgs in the borings advanced at the Site.

C.2.a. Fill soils

C.2.a.1. Berms

There are two soil berms on the Site, one is located north of the agricultural chemical storage buildings, and a second larger berm located south of the maintenance area (Figure 2).

The northern berm consisted of sandy lean clay fill over native sandy lean clay. The southern berm consisted of intermixed poorly graded sand and silt, clayey sand, or sandy lean clay fill soils with varying amounts of debris. In portions of the southern berm, organic peat soils intermixed with debris was observed beneath the debris bearing clays and sandy clay fill soils The debris consisted of various materials including bricks, concrete, carpet, glass, golf balls, metal pipes, and areas that appeared to be ash and other burned trash. The debris was observed in depths ranging up to 10 feet bgs.

C.2.a.2. Buried Debris-Containing Fill

The area of the former pool house and tennis courts contained various fill soils intermixed with debris including paint cans, concrete, asphalt, plastic, pieces of tennis court, and other solid garbage materials. The debris was present intermittently down to a depth of approximately 5 feet bgs.

Trace debris (wood or concrete) was encountered in soils near the maintenance buildings to depth of 7 feet bgs. The buried debris areas are shown on Figures 6 and 7.

C.2.a.3. Other Fill

There are various other fill soils at the Site including topsoil or topsoil fill consisting of sandy clay/clayey sand, sandy silt or silt with various amounts of organic materials, were underlain with various fill materials consisting of primarily clayey sands, sands, silty sands, clay or sands with silts to depths ranging from 1 to 10 feet bgs.

C.2.b. Native Soil

Native soils at the Site include the following:

- organic swamp deposits
- soft alluvial soils consisting of clayey sands or clayey sand with gravel

C.2.c. Groundwater Conditions

Groundwater, suspected to be perched, was encountered in some of the borings advanced during the 2019 Phase II ESA at depths ranging from approximately 5 to 13 feet bgs. During the 2020 RI, perched groundwater was encountered intermittently at several borings at depths ranging from 7.5 to 15 feet bgs.

Perched groundwater was measured in the three permanent monitoring wells installed as part of this investigation at depths ranging from approximately 4 feet bgs at MW-2 (located near the agricultural chemical storage/maintenance buildings), to approximately 19 feet bgs at MW-1 in the northern parking lot, to approximately 22 feet bgs at monitoring well MW-3 located in the south end of the site.

Groundwater was measured at approximately 134 feet bgs in the facility well located next in the maintenance area (Maintenance Well), and at approximately 190 feet bgs in the well located near the Third Hole tee box (Irrigation Well).

Based upon the investigations performed by Braun Intertec, groundwater impacts have not been detected at the Site with the exception of trace detections of dissolved barium Site wide, estimated trace concentrations of List 2 pesticides in a duplicate water sample collected from a well located in the former maintenance area (detected in duplicate sample only, but not in the original sample), both of which were at concentrations below relevant drinking water standards, and elevated residual concentrations of DRO in one sample taken near the former UST basins (also in the former maintenance area).

C.2.c.1. Surface Water Conditions

Surface water is present in several ponds across the Site, and in a drainage, swale located southwest of the maintenance area. Based upon the data collected to date, the surface water at the Site does not appear to have been impacted by mercury from historic Site operations.

Contaminants of Concern

The COCs detected during the Site investigations are listed in this Section. Additional information regarding the COCs, including their locations on the Site and concentrations, are provided in Section D.

C.2.d. Petroleum Compounds

Petroleum contamination at the Site will be addressed under the MPCA PB Program. Specific petroleum compounds detected at the Site include (by media type):

Soil

- Diesel range organics
- Xylenes

Groundwater

- Diesel range organics

Soil Vapor

- Benzene
- Ethylbenzene
- n-Heptane
- n-Hexane

C.2.e. Agricultural Chemicals

Contamination related to the storage, management, and use of agricultural chemicals at the Site will be addressed under the MDA AgVIC Program. Specific agricultural chemical-related compounds detected during the Site investigations include (by media type):

Soil

- Mercury (from past agricultural chemical use)
- Total Kjeldahl Nitrogen (TKN)
- Nitrate-Nitrogen

Groundwater

- 2,4-D
- 2,4-DB
- 2,4,5-T
- 2,4,5-TP (Silvex)
- Bentazon
- Dicamba
- MCPA
- Picloram
- Triclopyr

C.2.f. Non-Agricultural Chemicals

Contamination related to non-agricultural chemicals will be addressed under the MDA VIC Program. Specific non-agricultural chemical hazardous substances detected during the Site investigations include (by media type):

Soil

- Mercury (from non-agricultural chemical sources)
- Arsenic
- Lead
- Chromium
- Cadmium
- Acenaphthene
- Acenaphthylene
- Anthracene
- Benz(a)anthracene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Benzo(a)pyrene
- Benzo(g,h,i)perylene
- Chrysene
- Dibenz(a,h)anthracene
- Fluoranthene
- Fluorene
- Indeno(1,2,3-cd)pyrene
- Naphthalene
- Phenanthrene
- Pyrene

Groundwater

- Barium, Dissolved

Soil Vapor

- Acetone
- 2-Butanone (Methyl ethyl ketone, MEK)
- Carbon disulfide

- Chloromethane
- Cyclohexane
- 1,3-Dichlorobenzene
- Dichlorodifluoromethane
- Ethanol
- Ethyl acetate
- Methylene chloride (Dichloromethane)
- 2-Propanol (Isopropyl alcohol)
- Propylene
- Tetrahydrofuran

D. Contaminant of Concern Locations and Characteristics

D.1. Golf Course Areas

Golf Course Areas include those locations at the Site where active past golf course operations occurred; it is assumed that some level of active maintenance and chemical use occurred in and around these areas. Operations in the Golf Course Areas include the chemical storage and mixing area, the wash out and maintenance area, and greens, tee boxes, fairways, sand traps and associated roughs.

The following sections describe the various golf course areas and the types of contamination present in each area. Summary information pertaining to the need for response actions are also provided for each area.

D.1.a. Agricultural Chemical Storage/Maintenance Area

There are four buildings with associated paved loading areas that comprise the agricultural chemical storage/maintenance area (Figure 2). These are the agricultural chemical storage building, the maintenance storage building, the agricultural chemical storage shed and the maintenance building. Shallow soils (0-0.5 feet bgs) in portions of the exterior paved loading area for the agricultural chemical storage building, and the exterior soils adjacent to the side loading door of the maintenance storage building (Figure 2) are intermittently impacted with mercury at concentrations that exceed the residential and commercial/industrial SRVs. Soil samples collected beneath the floors of the buildings in agricultural chemical storage/maintenance area and around the agricultural chemical storage shed and the maintenance building did not identify elevated concentrations of mercury above the established SRVs or screening soil leaching value (SLV).

Summary Information

- Response Actions Required: Yes.
- COCs Triggering Response Action: Mercury in Soil.
- Relevant SRVs: Residential/Recreational SRVs for Mercury in Soil = 2.7 mg/kg.
- Relevant SRVs: Commercial/Industrial SRVs for Mercury in Soil = 3.1 mg/kg.
- Relevant Screening SLV: Screening SLV for Mercury in Soil = 3.3 mg/kg.
- Lead Program: MDA AgVIC Program.

D.1.b. Water Fill/Chemical Mixing Area

The former water fill/chemical mixing area is located west of the maintenance buildings and near the wash pad (Figure 2). Soils in the water fill/chemical mixing area are impacted with elevated concentrations of mercury above the established SRVs and/or screening SLV to depths ranging up to 4 feet bgs. Borings and hand augers completed around the water fill/chemical mixing area indicate that the deeper mercury impacts (>1 feet bgs) are limited to the area immediately around the water fill pipes.

Summary Information

- Response Actions Required: Yes.
- COCs Triggering Response Action: Mercury in Soil.
- Relevant SRVs: Residential/Recreational SRVs for Mercury in Soil = 2.7 mg/kg.
- Relevant SRVs: Commercial/Industrial SRVs for Mercury in Soil = 3.1 mg/kg.
- Relevant Screening SLV: Screening SLV for Mercury in Soil = 3.3 mg/kg.
- Lead Program: MDA AgVIC Program.

D.1.c. Greens and Tee boxes

Most of the shallow soils (0-0.5 feet bgs) in the greens and associated fringe areas and the tee boxes are impacted with mercury at concentrations that exceed the established SRVs. While some of the mercury concentrations detected in soil samples collected from the deeper soils (1-1.5 feet bgs) exceeded SRVs, most of the deeper soils (>1 feet bgs) were not impacted above SRVs. In addition, soils in the 8th hole green are impacted with arsenic above SRVs in the surface samples (0-0.5 feet bgs) and the deeper samples 1-1.5 ft bgs.

Summary Information

- Response Action Required: Yes.
- COCs Triggering Response Action: Mercury in Soil.
- Relevant SRVs:
    - Residential/Recreational SRVs for Mercury in Soil = 2.7 mg/kg.
    - Commercial/Industrial SRVs for Mercury in Soil = 3.1 mg/kg.
    - Residential and Commercial/Industrial SRVs Arsenic in Soil = 9 mg/kg.

- Relevant Screening SLV: Screening SLV for Mercury in Soil = 3.3 mg/kg.
- Lead Programs:
  - MDA AgVIC Program – Mercury in soil.
  - MPCA VIC Program – Arsenic in soil.

D.1.d. Fairways

During the RI, the fairways were divided into several decision units (DU). These decision units (See Figure 8) were sampled as described in the RI Addendum #2 to characterize the fairways for mercury impacts in soil. Based upon the results of the DU sampling, shallow soils (<1 feet bgs) in the fairways contain varying concentrations of mercury. The concentrations of mercury in the fairways range from 0.32 to 20.2 mg/kg. Approximately half of the fairway area DUs described by RI Addendum #2 have mercury impacts in soil that exceed the established SRVs or screening SLV. The fairways with SRV or screening SLV exceedances are shown on Figure 9.

Summary Information

- Response Action Required: Yes (in approximately ½ of the fairway area decision units).
- COCs Triggering Response Action: Mercury in Soil.
- Relevant SRVs:
  - Residential/Recreational SRVs for Mercury in Soil = 2.7 mg/kg.
  - Commercial/Industrial SRVs for Mercury in Soil = 3.1 mg/kg.
- Relevant Screening SLV: Screening SLV for Mercury in Soil = 3.3 mg/kg.
- Lead Program: MDA AgVIC Program

D.1.e. Rough Areas

The soils in the golf course rough areas generally have concentrations of mercury below the established SRVs and screening SLV, with most concentrations within the range of typical background concentrations for mercury. There are a few localized areas of the roughs where the Site investigations have detected elevated concentrations of mercury in soil that exceed the established SRVs and screening SLV. These impacted rough areas are located near cart paths, immediately adjacent to fairways, or adjacent to sand traps near an impacted green. The areas of the rough that require remediation are shown on Figure 9.

Summary Information

- Response Action Required: Yes (isolated locations).
- COCs Triggering Response Action: Mercury in Soil.
- Relevant SRVs:
  - Residential/Recreational SRVs for Mercury in Soil = 2.7 mg/kg.
  - Commercial/Industrial SRVs for Mercury in Soil = 3.1 mg/kg.

- Relevant Screening SLV: Screening SLV for Mercury in Soil = 3.3 mg/kg.
- Lead Program: MDA AgVIC Program

D.2. Golf Course Support Areas

The Golf Course Support Areas include the vacant clubhouse and the area in the vicinity of the former clubhouse, the pool house and the former clubhouse/tennis courts, and the golf cart and storage sheds located near the clubhouse.

The following sections describe the various Golf Course Support Areas and types of contamination present in each area. Summary information pertaining to the need for response actions are also provided for each area.

D.2.a. Clubhouse Area

Most of the soils in the Clubhouse Area are not impacted above cleanup standards. There are, however, isolated areas of shallow soils in the Clubhouse Area that are intermittently impacted with mercury above SRVs. The mercury impacts around the clubhouse were primarily in the 0-0.5 feet bgs depths, with the deeper 1-1.5 feet bgs typically having mercury concentrations below the established SRVs. As discussed in the 2022 RI, both agricultural chemical and non-agricultural chemical sources of mercury in soil are believed to be present in the Clubhouse Area.

Shallow soils (0-0.5 feet bgs) near the small storage shed northwest of the clubhouse (DSS-2, DSS-2W) are impacted with polycyclic aromatic hydrocarbons (PAHs) above residential SRVs. The PAH soil contamination in this area appears to be limited to the surface soils based upon data collected during the Site investigations. The area of impacts above SRVs in the Clubhouse Area are shown on Figure 5.

Summary Information

- Response Action Required: Yes.
- COCs Triggering Response Action: Mercury and PAHs in Soil.
- Relevant SRVs:
  - Residential/Recreational SRVs for Mercury in Soil = 2.7 mg/kg.
  - Commercial/Industrial SRVs for Mercury in Soil = 3.1 mg/kg.
  - Residential/Recreational SRV for PAHs in Soil = 2 mg/kg.
  - Commercial/Industrial SRV for PAHs in Soil = 23 mg/kg.
- Relevant Screening SLV: Screening SLV for Mercury in Soil = 3.3 mg/kg, and for PAHs = 1.4 mg/kg.
- Lead Programs:
  - MDA AgVIC Program – Mercury in soil from agricultural chemicals.

- MPCA VIC Program – PAHs in soil, Mercury in soil from non-agricultural chemical sources.

D.2.b. Former Pool house and Tennis Courts (Buried Debris Area)

The former pool house and tennis courts originally occupying the golf course were demolished between 1985 and 1991 and replaced with the current pool. Test trenches excavated in this area identified a Buried Debris Area, including buried concrete pads, intermixed with contaminated soils. Constituents of concern were identified in the Buried Debris Area above detection limits. However, no constituent of concern was detected in the Buried Debris Area above applicable SRVs and SLVs. DRO, however, was detected in TT-1 at concentrations above the MPCA unregulated fill criteria of 100 mg/kg. The presence of buried debris and concentrations of DRO require management of the soils and buried debris in this area per MPCA requirements for regulated fill soils.

Summary Information

- Response Action Required: Yes.
- COCs Triggering Response Action: DRO in soil.
- Relevant Standard:
  - Unregulated fill Criterion for DRO in soil = 100 mg/kg.
- Lead Programs:
  - MPCA VIC & PB Programs

D.3. Existing Wetlands

There are several low areas of the Site where intermittent standing water or surface saturate conditions exist but are not considered ponds or water features associated with the former golf course areas. These low areas are referred to as wetlands for the purpose of the Site investigations and response actions.

Shallow soils (0-0.5 feet bgs) in the wetlands are intermittently impacted with mercury at concentrations that exceed SLVs and/or SRVs. The impacts appear to be limited to surface soils (<1 feet bgs), with the exception of one small area where the impacts extended to approximately 2 ft bgs, primarily in the wetlands located downgradient of the maintenance area in the southeast portion of the Site, and in some isolated areas outside of the maintenance area. The locations of the wetlands that require remediation are shown on Figure 10.

Summary Information

- Response Actions Required: Yes.
- COCs Triggering Response Action: Mercury in Soil.
- Relevant SRVs:

    - Residential/Recreational SRVs for Mercury in Soil = 2.7 mg/kg.
    - Commercial/Industrial SRVs for Mercury in Soil = 3.1 mg/kg.
- Relevant Screening SLV: Screening SLV for Mercury in Soil = 3.3 mg/kg.
- Lead Program: MDA AgVIC Program.

D.4. Ponds

Several ponds associated with the former golf course are located on the Site. Shallow sediments (0-0.5 feet bgs) in the ponds are not impacted above established SRVs or screening SLVs, except for the small pond located adjacent to the 4th fairway, shown on Figure 5 sheet 9, which is impacted with mercury.

Summary Information

- Response Actions Required: Yes.
- COCs Triggering Response Action: Mercury in Soil.
- Relevant SRVs: Recreational SRVs for Mercury in Soil = 2.7 mg/kg.
- Relevant Screening SLV: Screening SLV for Mercury in Soil = 3.3 mg/kg.
- Lead Program: MDA AgVIC Program.

D.5. Southern Berm

A fill soil berm area located south of the agricultural chemical storage/maintenance area is impacted DRO, PAHs, and mercury contaminants. Mercury concentrations identified in the fill soils exceeded the SRVs. This Southern Berm Area also includes varying amounts of debris intermixed with the fill soils.

Summary Information

- Response Actions Required: Yes.
- COCs Triggering Response Action: Mercury in Soil.
- Relevant SRVs:
    - Residential/Recreational SRVs for Mercury in Soil = 2.7 mg/kg.
    - Commercial/Industrial SRVs for Mercury in Soil = 3.1 mg/kg.
- Relevant Screening SLV: Screening SLV for Mercury in Soil = 3.3 mg/kg.
- Lead Programs:
    - MDA AgVIC Program – Mercury in soil.
    - MPCA VIC Program – Intermixed debris with other measurable soil contamination.

D.6. Soil Vapor

Soil vapor samples collected at the Site to date have not identified soil vapor at concentrations greater than the 33 times (33X) residential and/or commercial/industrial intrusive screening values (ISVs). In addition, VOC contaminated media (i.e., sources of soil vapor) have not been identified at the Site. Water and soil samples collected by Braun Intertec at the Site have not identified VOCs, except for a trace detection of xylene in one soil sample. Therefore, based upon the soil vapor, water, and soil data collected to date, there does not appear to be a soil vapor area of concern at the Site. No response actions related to soil vapors are required to support redevelopment.

D.7. Groundwater/Surface Water

Constituents of concern have not been identified in groundwater or surface water samples collected at the Site at concentrations above relevant drinking water or surface water standards, with the exception of one elevated DRO detection in a groundwater sample collected in the former washout/UST area. The detection of elevated DRO in groundwater is shown on Figure 6B of the 2019 Phase II ESA, and is included as Appendix D.

Summary Information

Response Actions Required: Yes, as necessary to manage groundwater and surface water during RAP implementation and redevelopment. The lead regulatory programs for groundwater and surface water management will be both the MDA and MPCA since measurable concentrations of both agricultural and non-agricultural contamination have been detected in soil and groundwater at the Site during the previous and recent site investigations completed in support of this RAP and summarized in the 2022 RI Report.

E. Potential Receptors and Exposure Pathways

There is the potential for human health impacts from exposure to COC-impacted soil; such exposure may be via ingestion, inhalation, or dermal contact. Based on Site characterization data, direct exposure to soils impacted by COCs is the predominant exposure pathway at the Site.

E.1. Contaminant Impact Survey.

Braun Intertec completed a Contamination Impacts Survey in general accordance with Attachment 2: Contamination Impacts Survey of MDA Guidance Document 9 - Remedial Investigation Work Plan Dated March 2022.

E.1.a. Human Exposure to Contaminated Soil

There are approximately 600 to 700 residential units within 1,000 feet of the Site. Assuming an average of 2.48 people per household based on US census data for the state of Minnesota (https://www.census.gov/quickfacts/MN), there are 1,488 – 1,736 residents within 100 feet if the Site.

Within the 1,000-foot boundary of the Site exists Playschool Child Care Inc (daycare center) at 1709 McKnight Rd N, Hayden Heights Playground (park area) at 1965 Hoyt Ave E, and Mounds Park Academy (school) at 2051 Larpenteur Ave E. Mounds Park Academy has an estimated student population of 520.

The Site is vacant and completely enclosed with locked security fence preventing access to the Site. Furthermore, the existing wells are secured with locking well covers. The Site is patrolled by security twice daily.

E.1.b. Groundwater

Per Saint Paul Regional Water Services and Minnesota Department of Health Well Division, there are no municipal wells within a one-mile radius of the Site.

According to the Minnesota County Well Index, there are more than 25 well logs listed within a one-mile radius of the Site. There are 37 well logs listed in Table 1 of Appendix E A. All identified wells are located east of Ruth St N, west of Sterling St N, south of Ripley Ave, and north of Maryland Ave E.

All available data for identified wells is summarized the Table A included in Appendix E. The Figure included in Appendix E shows locations of all wells listed on the Table 1 in Appendix E.

Reportedly, there are no known unregistered or abandoned wells according to the Minnesota Department of Health Well Division or The Ramsey-Washington Metro Watershed District within one mile of the Site.

The Site owner and owners of all properties that adjoin the Site were contacted to determine whether existing or abandoned wells are located on their properties. Owners were contacted via a mailer sent to all addresses. The results of the property owner well surveys are presented in Table 2 included in Appendix E.

Per Nicole Soderholm of The Ramsey-Washington Metro Watershed District there are no current or planned projects for groundwater development up to one-mile down-gradient of Site.

E.1.c. Surface Water

There are three small stormwater ponds within 200 feet of the Site across McKnight Rd N. The two ponds furthest north are not directly connected to Site surface water or groundwater. The southernmost surface water pond is connected to the Site via an inlet that connects to a culvert that runs under McKnight Rd N. Braun Intertec has previously sampled the surface water bodies on the Site for mercury; all of the analytical results of samples collected from the onsite water bodies were non-detect for mercury. The results of the previous surface water sampling were presented in the 2022 RI Report.

E.1.d. Other Potential Receptors

There is the potential for human health impacts from exposure to COC-impacted soil; such exposure may be via ingestion, inhalation, or dermal contact. Based on Site characterization data, direct exposure to soils impacted by COCs is the predominant exposure pathway at the Site. Issues associated with direct exposure are addressed in the proposed response actions described in this document including the Dust Control Plan within the Dust Control Specification.

E.2. Direct Soil Exposure Pathway

The potential receptors via direct soil exposure include current and future users of the Site and construction and utility workers (short term exposure). If impacted fill soils were removed from the Site and used as fill soils off-site, the potential receptors via direct soil exposure would include the users of those off-site properties, and construction workers, utility workers, and potentially the general public.

E.3. Leaching Pathway

Based on contaminant concentrations, there is a potential for the soil leaching to groundwater and/or surface water pathway to be completed from the elevated concentration of metals and PAHs in the soils at the Site. However, based upon the age of the releases at the Site and the recently completed groundwater and surface water investigation data collected by Braun Intertec, there are no indications that metals or PAHs in soils are leaching into surface water or and groundwater at the Site.

E.4. Water Ingestion Pathway

There is a potential risk of direct exposure to or ingestion of shallow perched contaminated groundwater in the maintenance area at the Site. However, groundwater at the Site is currently not used. There are

two out of service groundwater wells and three shallow monitoring wells currently located at the Site. The Site is vacant with a security fence preventing access to the Site and the wells are secured with locking well covers. Perched groundwater is present at depths greater than 4 feet bgs across the Site, further limiting the risk of direct contact with the perched groundwater.

F. Cleanup Standards and Definitions

The Site is currently vacant property. The planned redevelopment of the Site includes mixed use light industrial, commercial, recreational, passive greenspace, and residential uses. The planned residential uses will include low-, medium- and high-density housing. Response actions to be completed and the applicable cleanup standards for any given location at the Site will be determined by the planned future use that will occur at those locations.

Cleanup standards applicable to the Site and established in this RAP address the following potential exposure pathways: 1) direct human exposure to impacted soil, and 2) leaching from impacted soil that would result in impact to underlying groundwater.

The direct exposure pathway is addressed by the MPCA's Residential/Recreational and/or Commercial/ Industrial SRVs. The Residentials/Recreational SRV will apply in the portions of the Site planned for future residential, recreational, wetlands, and passive greenspace use (see Figure 11). The Commercial/Industrial SRVs will apply in the portions of the Site planned for future commercial or industrial use and within the public road rights-of-way planned for the development. Meeting Site cleanup standards established in this RAP will protect construction and maintenance workers under a short-term worker scenario for residual impacted soil that may be encountered by construction workers during the redevelopment of the Site and further maintenance of utilities at the redeveloped Site. Additionally, construction and maintenance workers' exposure to soil will be managed with the implementation of a Site-specific health and safety plan.

Utility corridors will be constructed within unregulated fill soils at base of and surrounding the utility after response actions have been completed at the Site. Residual contaminated soils or sediment and debris and/or regulated fill soils encountered during utility corridor excavations will be managed in accordance with the RAP or CCP as applicable.

In addition, in the areas of petroleum impacts soils excavated for redevelopment with PID screening values at or greater than 200 parts per million (ppm), and/or with DRO concentrations exceeding 100 mg/kg, will be properly managed and disposed of at a permitted off-site treatment/disposal facility.

Based on the identified COCs and the detected concentrations of COCs in Site soils, the nuisance dust standard of 2 milligrams per cubic meter (mg/m^3) will be enforced to provide protection for human health during construction activities related to response action implementation at the Site.

Leaching from contaminated soil to groundwater is addressed by applying the MPCA Screening SLVs to future greenspace areas, where surface water will be managed/infiltrated, such as wetlands, passive open space, park space and other stormwater management features. Planned wetlands and other stormwater management features are shown on the development plans included in Appendix A.

G. Proposed Response Actions

As described in Section E, direct human exposure to contaminated soils is the primary environmental risk impacting the planned redevelopment at the Site. The proposed response action activities presented herein will involve the excavation and management of impacted soils that were identified at the Site. The proposed response actions will address the identified soil contamination at the Site to protect human health and the environment at the Site and facilitate redevelopment. The response actions were selected based on Site conditions and appropriate cleanup standards for planned future land uses of the Site. A diagram depicting the future redevelopment and associated land uses is included as Figure 11. Note that the building layouts and identified infrastructure improvements may be modified before the development plan is finalized. The future use areas identified on Figure 11, however, are not anticipated to change and will guide responses actions and soil reuse requirements specific to end use of the Site as describe the following sections.

The planned response actions include the following:

- Removing and managing contaminated media during Site clearing and grubbing.
- Abandonment of the existing monitoring wells and abandoned groundwater wells at the Site.
- Building and existing structures demolition.
- Removal of subsurface utilities located within targeted soil remediation areas to provide access to impacted soils.
- Removal of subsurface irrigation infrastructure located within targeted soil remediation areas to provide access to impacted soils.
- Management of surface water and shallow groundwater at the Site to facilitate soil remediation.

- Excavation of mercury impacted soil/sediments exceeding established cleanup standards and disposal of the excavated material off-site.
- Management of residual mercury impacted soils with concentrations above naturally occurring background levels.
- Excavation of PAH and arsenic contaminated soil exceeding established cleanup standards and disposal of the excavated material off-site.
- Excavation and on- or off-Site management of regulated fill soils.
- Backfilling remedial excavations as needed with clean soil from on-Site and/or imported fill material from off-Site.
- Petroleum impacted soil excavation and disposal off-Site.
- Short term/temporary engineering controls (dust control, storm water control, Site access).

These actions are described in more detail in the following sections. Additional detail and specific requirements for implementing the work described below is provided in the Soil Management Plan included as Section H below.

G.1. Response Actions Related to Contaminated Media Excavation

The response actions related to the excavation of the identified areas of contaminated soil and sediment, including areas with mixed debris-containing materials will be monitored and documented by Braun Intertec engineers and scientists with experience with Brownfield redevelopment projects including soil, environmental, and geotechnical corrective actions.

Oversight of the earthwork and field screening for the COCs during earthwork activities will include real-time analysis for organic vapors, soil sampling and analysis for COCs excavation verification, tracking of contaminated soil stockpiles and volumes, surveying excavation boundaries and placement locations, and documenting the work in a RAP Implementation Report to support MDA and MPCA RAP implementation approvals and final environmental assurances.

A general discussion of the response actions needed to complete the required contaminated media excavations, based on previous environmental investigations and planned redevelopment, is presented below.

G.1.a. Site Clearing, Grubbing and Tree Removal/Replanting

Trees, stumps, surface vegetation, and related subsurface root systems will be cleared and grubbed as necessary to facilitate completion of response actions and redevelopment. In addition, select existing mature trees at the Site may be considered for intact removal and replanting at either an on-Site or off-Site location subject to consideration of the tree's location related to known existing contaminated soil and the potential for residual contaminated soil being attached to the removed root system.

The following summarizes the response actions and considerations that will apply to the Site clearing, grubbing and tree removal/replanting activities.

- Site clearing, grubbing, and tree removal activities that disturb Site soils will be observed and monitored by Braun Intertec staff. Site clearing and grubbing activities that occur and disturb soil within a known area of soil/sediment contamination will require management as a contaminated material under this RAP.
- At locations of known contaminated soil or sediment, the portions of the removed trees and vegetation with attached soil will be managed as contaminated material and will be disposed of off-Site at a permitted landfill (subject to landfill approval). If practical, the soil attached to the trees and vegetation from known areas of contamination will be manually removed as a response action under this RAP to allow removal and/or recycling of the vegetation as clean material without restriction. On-site staging or stockpiling of trees and/or vegetation with attached soil will be completed as needed, subject to the same daily covering requirements utilized for contaminated soils (see Section H.6).
- At locations with no known contaminated soil or sediment, the portions of the removed trees and vegetation with attached soil will be managed as clean material. This clean material will either be processed (e.g., chipped) and reused on-Site without restriction or hauled off-Site for reuse or recycling as unregulated material as appropriate. On-Site reuse locations will likely include future wetlands and greenspace areas subject to project need and material suitability. On-Site stockpiling and staging of the removed clean trees and related vegetation will be subject to erosion control project requirements.
- Above grade portions of trees and Site vegetation that can be removed without disturbing Site soils will be managed as clean material. The material will either be processed (e.g., chipped) and reused on-Site without restriction or hauled off-Site for reuse or recycling as unregulated material as appropriate. On-Site reuse locations will likely include future wetlands and greenspace areas subject to project need and material suitability. On-Site stockpiling and staging of the removed clean trees and related vegetation will be subject to erosion control project requirements.

- Existing mature trees at the Site will only be considered for intact removal and replanting if the tree's original location is outside of an area of soil or sediment contamination addressed by response action under this RAP. Existing trees from other non-contaminated locations will be considered eligible for intact removal and replanting. If replanted on-Site, the trees removed intact from uncontaminated areas will be replanted on-Site without further sampling or testing of the attached soil for contamination. However, soils attached to trees removed intact for off-Site replanting will be sampled and tested for mercury to confirm that the remaining attached soils meet the MPCA criteria established for unregulated soils.

G.1.b. Abandonment of the Existing Wells

Currently there are three monitoring wells, an irrigation well, and a maintenance area production well at the Site.

The three monitoring wells were installed by Braun Intertec and include the following:

- MW-1 (Unique number 849084), total depth is 25 feet bgs
- MW-2 (Unique number 849085), total depth is 20 feet bgs
- MW-3 (Unique number 849086), total depth is 30 feet bgs

An irrigation well and associated pump house are located approximately 600 feet north-northwest of the maintenance area. The location of the irrigation well and pump house corresponds to the location described for Unique Well Number 603061. The well depth is reportedly 486 feet.

An unregistered well was observed by Braun Intertec near the southwest corner of the Site in the vicinity of the maintenance buildings that did not appear to have a Unique Well Number. Based on previous reports and our interview with a previous employee of the former golf course, the well was apparently used for various washing and maintenance activities. The depth of the well and other information concerning the well is unknown.

The presence of unsealed wells can act as a conduit for impacts to migrate into groundwater. Therefore, response actions will be implemented by utilizing a licensed well contractor to seal the five wells described in this section in accordance with Minnesota Department of Health (MDH) regulations.

These five wells will be properly abandoned per the MDH well code during RAP implementation activities. The location of the five wells is shown on Figure 12.

G.1.c. Demolition of Existing Buildings and On-Site Structures

Braun Intertec previously prepared and submitted to the MDA and MPCA, under separate cover, soil management plans for the planned demolition of the structures located in the Site's Maintenance Area and the Clubhouse Area. The specifics for soil management during building demolition in these areas can be found in the documents *Storm Sewer Rehabilitation & Building Demolition Soil Management Workplan Former Hillcrest Golf Course Site, Saint Paul, Minnesota*, dated July 26, 2021, and the *Building Demolition Soil Management Workplan, Former Hillcrest Golf Course Site – Clubhouse Area, Saint Paul, Minnesota* dated January 28, 2022 (2022 Clubhouse Demolition SMP).

The remaining buildings, including slabs and foundations, as wells as the water lines, sanitary/storm sewer lines and other buried utilities, will be demolished as part of the planned development work. The existing paved areas and concrete slab at the Site, where practical, will be reclaimed, crushed, and reused on Site as aggregate base materials for future roadways or parking areas (MNDOT Class 5). The re-use of reclaimed concrete and asphalt pavement is now a common practice and saves on the use of virgin aggregate. During demolition and removal activities, environmental observations and field screening for the presence of wastes from the historic floor drains, sumps, and piping and unanticipated impacted material will be performed.

Most of the hazardous materials have already been properly removed/abated from the existing structures. However, some asbestos containing materials (ACM) and/or other regulated building materials remain. These materials will be properly abated and removed prior to demolition. The foundations and utilities for these structures may contain waterproofing. Waterproofing can contain asbestos, therefore as these structures are unearthed during demolition the waterproofing will be sampled to evaluate whether the waterproofing contains asbestos.

The contract for demolition will include specifications to ensure that City and State permit conditions and rules are followed, including Site access control, utility abandonment, storm water control and fugitive dust monitoring and control.

There is some miscellaneous solid waste scattered around the Site. These items will be recycled or handled and disposed of in accordance with appropriate regulations. Any remaining solid waste debris such as miscellaneous debris and wood will be segregated and disposed of off-Site at appropriate permitted facilities in accordance with local, State and Federal requirements.

After demolition of the clubhouse, the below ground level will be backfilled with either on Site clean soils from the designated Borrow Area (2022 Clubhouse Demolition SMP) or approved imported soils (see Section G.4.e for imported soil requirements). Braun Intertec collected composite samples through the proposed borrow area soils for laboratory analysis to characterize the soils. Based upon the results of the

Borrow Area investigation, the borrow soils meet the definition of unregulated fills per MPCA guidance and can be reuse on Site. A table summarizing the borrow soil analytical results is include as Table 12.

The above ground structures that will be demolished are shown on Figure 13.

G.1.d. Management of Surface Water and Shallow Groundwater at the Site to Facilitate Soil Remediation

Dewatering of surface water in existing ponds and potential wetlands and shallow groundwater will be required to complete soil response actions in areas of the Site where surface water and shallow groundwater intersect with contaminated soil and sediment areas. Surface water and shallow groundwater will need to be dewatered and properly managed to allow access to the underlying impacted soils/sediments.

Constituents of concern have not been detected in surface water samples or shallow groundwater samples collected during the Site investigations at concentrations above relevant drinking water or surface water standards, with the exception of an isolated shallow groundwater sample collected near the former UST adjacent to the maintenance area of the Site. Discharge and/or treatment of stormwater, or any other dewatering action required for demolition or soil remediation, will be conducted in accordance with State, Federal, and local regulations and rules. Water from within the ponds and potential wetlands, as well as stormwater catch basins/manholes and piping, may be pumped out using a vac truck or similar equipment. Dewatered surface water or shallow groundwater removed during response action implementation will be either pumped into existing drainage pond(s) on the Site, stored in a vac truck or portable tanks, used for on-Site for dust suppression during Site excavations, transported for disposal at an off-Site permitted facility, or discharged under proper permits to the existing sanitary sewer system. Best management practices, including filtration and/or sediment settling tanks will be used during the water pumping activities to minimize the potential for contaminated sediments and/or soils to become intermixed with the water being managed. A sanitary sewer discharge permit and Minnesota Department of Natural Resources (DNR) water appropriations permit will be obtained for the required dewatering and water pumping/management activities as required.

G.1.e. Excavation of Mercury Impacted Soil/Sediment and Disposal Off-Site

A Braun Intertec environmental technician will be on-Site during response action excavation activities associated with the removal of mercury contaminated soils known to exceed Site cleanup standards. Proposed excavation areas are shown on Figure 10. Excavation areas will be pre-staked using GPS coordinates. The initial excavation depths identified on Figure 10, range from 1 to 5 feet bgs. The initial excavation depths are based upon the vertically stratified sampling data collected to date at the Site. Excavation boundaries (sidewalls and base) will meet either the Residential/Recreational SRV for mercury of 2.7 mg/kg or the Commercial/Industrial SRV for mercury of 3.1 mg/kg depending on the use for the

specific area. If confirmation sampling (see Section G.4.b below) indicates that residual mercury remains in a base or sidewall sample at concentrations above the Residential/Recreational or Commercial/Industrial SRVs, as appropriate, that area will be further excavated.

Excavated mercury-impacted soils exceeding established Site cleanup standards will likely be direct-loaded into trucks and transported to a permitted industrial landfill in Minnesota. However, if the direct loading cannot be used, these soils will be stockpiled on-Site until transportation and disposal arrangements can be made. Stockpiled soils will be placed on polyethylene sheeting or other impervious surface and covered with polyethylene sheeting at the end of each workday, which will be secured in place. The stockpile will be bermed to prevent storm water run-on and/or runoff.

During excavation of shallow impacted soils through the golf course, irrigation piping may be encountered. Shallow irrigation piping in areas requiring remedial excavation will be removed to provide access to impacted soils and handled in the following manner:

- The piping will be segregated from piping removed from non-impacted areas.
- The soil adhered to the piping that was removed from within remedial excavation areas will be disposed of off-Site at a permitted landfill.

G.1.f. Management of Mercury-Impacted Soils Above Background Concentrations, but Meeting Site Cleanup Standards

Based upon the sampling results to date, portions of the fairways, tee boxes, and wetland/ ponds are impacted with mercury above the Residential/Recreational and/or Commercial/Industrial SRVs. There are several tee boxes, large portions of the fairways and most of the potential wetlands/ponds that contain residual mercury impacts below the residential SRVs. The concentration of mercury in soil from these areas is mostly above typical background concentrations for mercury in soils, with some concentrations near cleanup standards.

Meeting the final grades at the Hillcrest Redevelopment Site will require a net soil export to balance the Site. If a suitable on or off-Site use of the referenced soil exceeding background mercury concentrations cannot be found, the material will either be sent off-Site for disposal at a permitted landfill or if the soils meet the MPCA requirements of unregulated fill, may be exported off-site (excluding type 2 soils which must remain onsite or be disposed offsite at an appropriate landfill). It will be more cost effective to manage the soil exceeding background mercury concentrations on-Site and export clean native soil to balance soils during redevelopment. Therefore, if suitable on-site locations are identified, the soil exceeding background mercury concentrations and meeting commercial/industrial SRVs will only be managed on-Site as a response action within public roadway rights-of-way and on property identified as commercial/industrial use as outlined in Section H of this RAP.

If soil meeting the definition of unregulated fill is reused off-site, it is noted that the MPCA's Best Management Practices for the Off-Site Reuse of Unregulated Fill Guidance Document recommends the following Best Management Practices for the placement of unregulated fill in sensitive settings:

- Avoid placing unregulated fill at schools, playgrounds, daycares, and residential properties. Unregulated fill is most suitable for use at industrial or commercial properties.
- Avoid placing unregulated fill in gardens where food for human/animal ingestion will be grown.
- Observe a minimum ten-foot separation distance between unregulated fill and the water table.
- Avoid placing unregulated fill where contaminants may be transported by run-off to lakes, rivers, wetlands, or streams.

Exported native soils from the site will follow the above requirements.

G.1.g. Excavation of PAH Contaminated Soil and Soil with Intermixed Debris

There are isolated areas of soils at the Site that are impacted with PAHs at concentrations above Residential/Commercial SRVs (e.g., clubhouse area and buried debris in the southern berm). There are also isolated areas at the Site with debris fill soils, which are impacted with Constitutes of Concern. These contaminated soils and debris fill soils will be excavated to the depth required by the planned development and to meet established Site cleanup standards. These excavated soils will be field screened with a photoionization detector (PID) equipped with 10.6 eV lamp. Geotechnical suitable soils with no impacts above Residential/Commercial SRVs or screening SLVs, and up to 10% debris may be reused as engineered fill beneath paved areas. Unregulated fill soils with no more than de minimis debris may be re-used beneath the future buildings. Contaminated soils and contaminated soils with mixed debris will be disposed of off-Site at a permitted landfill.

G.1.h. Petroleum Impacted Soil Excavation and Disposal Off-Site.

There is an area of shallow petroleum impacts associated with closed leak sites #5050 and #18327 located in the maintenance area of the Site.

The petroleum impacted soils will be managed in accordance with MPCA guidance as prescribed below.

In the areas where only petroleum contaminated soils are encountered the following applies:

- Petroleum-saturated or grossly contaminated soils shall be excavated and properly managed at an MPCA approved off-Site treatment/disposal facility.
- Soils excavated for redevelopment with PID screening values at or greater than 200 parts per million (ppm), and/or with DRO concentrations exceeding 100 mg/kg, will be properly

managed and disposed of at a permitted off-site treatment/disposal facility. If soils are transported off-site for disposal, the soils will be characterized and taken to a disposal facility permitted to accept those waste.

- Petroleum-contaminated soils less than 200 PPM (PID) may be thin spread on-site under paved surfaces within the areas zoned for commercial/industrial use.
- For utility corridors, soils with PID screening values at or greater than 10 ppm encountered during the installation of underground utilities will be removed and property managed as part of the RAP. If contamination remains at or above 10 ppm a vapor barrier will be placed around the installed utility corridor.

G.2. Short Term Monitoring/Temporary Engineering Controls

During the implementation of response actions, monitoring and controls will be in place for stormwater and dust generated from the soil response actions, mass grading, soil correction, demolition and related work.

G.2.a. Dust Control and Air Monitoring

Perimeter air monitoring will be performed during response action soil excavation and excavated soil handling and placement to document that the dust control activities are successful at keeping nuisance dust to levels below the nuisance dust standard. Dust monitoring will be accomplished with hand-held dust monitoring meters.

The dust monitoring will be defined in a Nuisance Dust Monitoring Plan/Specification that will require sampling and analysis and reporting daily while abatement, demolition, and soil earthwork is being performed.

G.2.b. Storm Water Pollution Prevention and Sediment Control Plan

An interim and phased Storm Water Management Plan will be developed to control erosion and sediment on-Site. This work will be detailed and approved in a Construction Site Storm Water Pollution Prevention Plan (SWPPP).

G.2.c. Site Access

Site security will include the existing security fences and signage to prevent unauthorized access during the work and in non-working hours.

G.3. Permits

A number of permits will be required by governmental agencies. A list of those permits potentially required is as follows.

- SWPPP/Erosion Control Plan: This plan is required by the MPCA, as well as the City of St Paul and the Ramsey-Washington Metro Watershed District. The plan will be prepared by the general contractor for the response action work. This contractor will also implement the plan during subsequent building and utility work. The plan and its implementation will ensure that storm water from the Site construction work, both during the RAP implementation and during subsequent Site building and utility construction, will not be unreasonably impacted and discharged off-Site. This will be accomplished through BMPs prescribed by the City of St Paul and the Watershed District.
- Land Alteration/Grading Permit: For the Site excavation, stockpiling and soil placement and compaction and final grading a grading permit may be required by the City of St. Paul and will be applied for by the general contractor for the response actions.

G.4. Methods and Procedures

G.4.a. Soil Screening

A Braun Intertec environmental technician with asbestos inspector credentials will be on Site during excavation activities when impacted soils are excavated at the Site. Soils will be observed for the presence of visual and olfactory indications of contamination. Direct olfactory evaluation of contaminated soil is not recommended for safety reasons, but incidental observations will be noted and acted on. The technician will follow MPCA-approved headspace methodology using a PID equipped with a 10.6-electron-volt lamp to monitor soil for the presence of organic vapors. A minimum of one sample for headspace analysis will be collected for every 10 cubic yards of potentially impacted soil removed. Screening results will be documented.

The headspace procedure is used to field-screen organic vapor levels in soils. The procedure consists of half-filling a new quart-sized sealable bag with a soil sample. The bag is quickly closed and headspace development is allowed to proceed for at least 10 minutes. The bag is shaken vigorously for 15 seconds, both at the beginning and the end of headspace development. After headspace development, the PID probe is inserted into the bag to one-half the headspace depth. The highest reading observed on the PID is then recorded.

In the area of the known petroleum impacts, as excavation proceeds, the field technician will collect and field screen soil samples frequently, enough to verify the need for soil removal (at least one sample for each 10 cubic yards of soil removed). Removed samples will be labeled with the prefix "R", the sample ID, and the sample depth. The field technician will document successive PID readings vertically below the source of release, indicating the location and depth of each sample on a map of the excavation.

G.4.b. Confirmation Sampling

As part of RAP implementation, Braun Intertec will perform confirmation soil sampling to verify Site cleanup standards are met and assist with managing the exposure pathways.

This section outlines the plan for confirmation soil sample collection and analysis from soils excavated during implementation of the RAP.

Following excavation of each impacted area, confirmation samples will be collected from the base and sidewalls of the excavation. The following additional details are provided.

Greens/Fringes Excavations

For each green and associated fringe area, the excavation will be divided into quadrants and one base confirmation soil sample will be collected per quadrant. Each quadrant sample will be a composite sample comprised of four aliquots. See Figure 14 for an example of this approach.

For sidewall samples, one confirmation sample will be collected for every 45 lineal feet and the side wall composites form each quadrant will be used to create a composite sidewall sample for each quadrant. Sidewall samples will be collected from the 0- to 6-inch interval at the excavation boundary. The 0- to 6-inch interval is used to confirm clean boundary because the fungicide was applied topically, and this interval is most applicable to identify whether impacts remain. All samples collected form the greens and associated fringe areas will be analyzed for mercury using EPA method 7471. In addition, the confirmation samples for the 8th Hole Green will be sampled for total arsenic using EPA method 6020.

Tee boxes and Rough Hot Spots

Confirmation samples will be collected from the base of those tee boxes and the rough with mercury concentrations in soil Residential/Commercial SRVs (See Figure 10). Confirmation samples will be collected from these areas in the same manner as for the greens/fringes described above.

Wetlands and Ponds

Confirmation samples will be collected from the base of those Potential Wetlands and Ponds with mercury concentrations in soil Residential/Commercial SRVs (See Figure 10). Confirmation samples will be collected from these areas in the same manner as for the greens/fringes described above.

Fairways

Confirmation samples will be collected from the base of the decision units in the Fairways that had detected concentrations of mercury in soil exceeding the Residential/Commercial SRVs (See Figure 8). The confirmation base excavation samples from the Fairways with surficial mercury impacted above Residential/Commercial SRVs will be collect in the same manner as described in the RI Addendum #2, which is summarized below.

The fairways are sub-divided into various decision units.

- In each decision unit where the concentration of mercury in surface soils was above Residential/Commercial SRVs, one composite soil sample will be created from several aliquots collected from the 1-1.5-foot soil interval for mercury analysis.
- On aliquot will be collected for every 2,000 square feet.
- Composite samples will be created by combining all aliquots from a decision unit at a similar depth into one composite sample per the protocols in the 2020 RI Work plan/2020 SAP.
- If the results of the 1-1.5 ft confirmation samples are greater than the mercury SRV, then another 6 inches of soil will be removed for off-site disposal, and another composite sample will be collected from that decision unit from the 1.5 to 2 ft bgs depth for lab analysis of mercury. This process will continue deeper in the applicable decision units until the soil detections are less than the SRV for mercury.

The Fairway decision units and aliquot sample locations are shown on the attached Figure 9. All samples collected form the fairways will be analyzed for mercury using EPA method 7471.

Excavation of Soils with Intermixed Debris

Soils from these areas will be screened using a 10.6 eV PID at a rate of approximately one headspace measurement for every 100 cubic yards (CY) of soil.

Soil samples will be collected for laboratory analysis from excavation sidewalls and base. Soil samples will be collected from these fill soils at a rate of one five-point composite sample and one grab sample per 2,500 CY. Composite samples will be analyzed for PAHs, DRO and Resource Conservation and Recovery Act (RCRA) metals. Grab samples will be analyzed for VOCs and GRO.

Petroleum Excavation

Petroleum post excavation sampling will be in accordance with MPCA guidance document Excavation of petroleum-contaminated soil and tank removal sampling, C-prp3-01, dated March 2017.

The Braun Intertec technician will collect bottom samples from the bottom of the excavation basin at a rate shown in the chart below. Bottom samples will be labeled with the prefix "B", the sample ID, and the sample depth.

Sidewall samples will be collected at a rate shown in the chart below; with a minimum of four sidewall samples (i.e., one from each side). The collected side wall samples will be collected at a depth of the highest PID readings during excavation. Sidewall samples will be labeled with the prefix "S", the sample ID, and the sample depth.

Confirmation samples will be analyzed for PAHs, RCRA metals, DRO and GRO.

The number of soil samples from the excavation areas from petroleum impacted areas will be collected based on the following:

Base of Excavation (ft^2)	**Number of Samples**	**Sidewalls (ft^2)**	**Number of Samples**
<500	1	<500	4
500-1000	2	500-1000	5
1000-1500	3	1000-1500	6
1500-2500	4	1500-2000	7
2500-4000	5	2000-3000	8
4000-6000	6	3000-4000	9
6000-8500	7	>4000	1 per 45 linear feet
8500-10890	8		

G.4.c. Areas with No Known Impacts or Debris Present

Protocols for characterizing fill and underlying native soil in these areas where no known impacts or debris is present are described below.

Soils excavated from these areas will be visually monitored by for obvious signs of potential impacts (visual, olfactory). Soils with no organic vapors detected will be re-used onsite as unrestricted fill. If soils are planned to be re-used off-site, then these soils will be sampled either from stockpiles on-site or through soil samples of the in-place soils including previously collected samples and characterized for potential off-Site reuse. Soil samples of soils for potential off-site re-use will be collected from these soils at a rate of one five-point composite sample and one grab sample per 5,000 CY. Composite samples will be analyzed for PAHs, eight RCRA metals, and DRO. Grab samples will be analyzed for VOCs and GRO. Soils reused off-Site will meet the MPCA's unregulated fill criteria.

Soils with organic vapors detected above background concentrations will be characterized for on-Site reuse or off-Site disposal. For other areas with elevated PID readings, soil samples will be collected from these stockpiles at a rate of one grab sample per 2,500 cubic yards (CY). Samples will be analyzed for VOCs, PAHs, RCRA metals, DRO, and GRO. Excess fill targeted for off-site reuse shall be from a native source and/or meet the MPCA's criteria for unregulated fill.

G.4.d. Sample Labeling and Handling

Sample bottle labels appropriate for the size and type of containers will be provided by the MDH certified laboratory analyzing the samples. All sample containers will be labeled prior to being filled. Each label will indicate at a minimum:

- Sample identification
- Date/time of sample collection
- Sampler's initials
- Required analyses
- Type of preservative

All labels will be completed in waterproof ink. Each sample collected will be given a unique sample identification code.

The field sampler will be responsible for the care and custody of the samples until they are transferred or properly dispatched to the laboratory. The samples will be shipped via courier or hand delivered to the laboratory. During transfer of custody, a properly completed chain-of-custody form will accompany samples.

G.4.e. Soil Import

Fill sources will be considered on a case-by-case basis and evaluated for the potential presence of contaminants in the material. If the fill source is from a site with no environmental concerns, such as native pit run material or from a residential development with no USTs or other environmental concerns, no analytical testing of the material will be conducted.

Acceptance of fill from other sources with potential environmental concerns will be made on a case-by-case basis. As part of the decision-making process, the land-use history of the source facility will be evaluated, existing environmental reports and analytical data will be reviewed, and the geotechnical suitability of the material will be assessed. If additional analytical testing of the material is deemed warranted after input from the MDA and MPCA, samples will be collected at a frequency of at least one sample per material type and a frequency no less than one sample per 2,000 CY of material. Analytical

parameters will be determined based on historic use of the source facility and the Site contaminants of concern. Analytical results will be compared to the Residential SRVs and Screening SLVs. Environmental monitoring of fill soils as they are loaded into trucks from the source facilities will be conducted if warranted based on the nature of the fill source location.

All imported fills will meet the requirements of the criteria specified in the MPCA's 2012 Unregulated Fill Guidance.

H. Soil Management Plan

This Soil Management Plan describes the management of the various soils present at the Site in regard to the RAP. Detailed procedures for soil management and activities related to this RAP will be included in engineering specifications that will be prepared prior to response action plan implementation.

H.1. Existing Cover and General Plan for Site Soils

The surface cover at the Site currently includes primarily grass covered open greenspace areas, mixed vegetation greenspace areas, buildings, cart paths, a parking lot, water features, and potential wetlands.

The future surface cover at the Site will include public streets, the future building pads, residential driveways, commercial parking lots and drive areas and associated curbs and drainage features, and greenspace areas.

During RAP Implementation, the known areas of impacted soils and debris-bearing fill soils exceeding the established Site cleanup standards will be excavated and managed to meet the Residential/Recreational and Commercial/Industrial SRVs and/or screening SLVs and then extending to depths sufficient to reach geotechnically suitable soils for constructing new pavement areas and associated utilities and excavated to environmentally suitable soils in the greenspace areas.

The impacted soils with concentrations of contaminants above Residential/Recreational and/or Commercial/Industrial SRVs, screening SLVs, unregulated fill criteria, including soils mixed with debris, once excavated will be either temporarily stockpiled, and/or directly hauled off-Site for disposal at a permitted landfill.

Soils impacted with residual contaminant concentrations below Site cleanup goals, but above background concentrations will be managed on Site if the soils are suitable for the planned Site development.

H.2. Site Soil Types

The primary soil types have been documented at the Site, including:

- Variable fill soils/fill soils with debris
- Organic soils/peat
- Alluvium, fluvial and glacial tills

Descriptions of these soil types are presented in Section C.2 and the nature of impacts are described in Sections C.3 and Section D of this document.

H.3. Site Earth Work Requirements for Existing Conditions

The Site response actions require earthwork for the proper management of mercury, PAHs, arsenic, and petroleum impacted soils at the Site. The scope of earthwork has been determined based on the environmental requirements to ensure that the COCs do not pose a risk to human health or the environment during and after the Site redevelopment. This section presents the requirements for the Site earthwork to ensure the environmental requirements are met in accordance with the RAP.

H.3.a. Environmental Soil Classifications

Based on previous environmental investigations the known COCs at the Site include mercury, arsenic, PAHs, and petroleum. The presence and magnitude (concentrations) of the COCs are not evenly distributed across the entire Site.

Figure 10 illustrates the known areas of soils that would be considered as regulated fill soils per the MPCA's Off-Site Use of Regulated Fill Policy, March 2012.

The soils at the Site will be placed into three use categories to be followed during RAP implementation. The three soils classification categories are provided in the following sections.

H.3.a.1. Type 1 Soils

These are either on Site soils or imported soils that meet the requirements to be considered unregulated fill per MPCA guidance. These soils may be reused on Site with no environmental restrictions. All geotechnically suitable Type 1 soils may be placed beneath buildings, pavements, and in utility corridors.

H.3.a.2. Type 2 Soils

Type 2 soils are soils from the tee boxes, fairways, ponds, and wetlands that contain residual mercury COCs impacts below the Residential/Recreational SRVs, but are above typical background concentrations for mercury and other COCs in soils in this region.

Type 2 soils reuse will be restricted to relocation and placement in portions of the Site zoned for future commercial/industrial use, and beneath public roads. Type 2 soils will not be placed in the portions of the Site zoned for residential use, wetlands, ponds, recreational greenspaces, or within 10-feet of the shallow water table at the Site.

H.3.a.3. Type 3 Soils

Type 3 soil are those on-Site soils that contain concentrations of contaminants exceeding appropriate SRVs/SLVs and/or petroleum cleanup standards. The areas of contaminated soils meeting the definition of Type 3 soils have been described above and are shown on Figure 10. Type 3 soils will be excavated and transported off-Site for proper disposal at an approved permitted facility. Figure 10 includes the calculated volumes of Type 2 and Type 3 soils based upon the results of the RI and subsequent soil sampling and analysis.

The remedial excavations in relation the planned development are shown on Figure 15.

H.4. Future Soil Placement Considerations

H.4.a. Pavements and Building Pads

All geotechnical suitable Type 1 and Type 2 Soils (per the restrictions outlined above in Section H.3) may be placed beneath pavements and building pads if determined to be geotechnically suitable for that purpose.

H.4.b. Utility Corridors

Utility Corridors will be constructed to ensure future workers installing or maintaining buried utilities will not be exposed to known COCs. The utility corridors will be constructed within soils meeting the established site cleanup standards. In practice, this will require that the excavation of debris and/or impacted soils that are present within the utility corridors will be completed and documented in advance of utility excavation. And placement of approved soils. The soils approved for use in the utility corridors include Type 1 and Type 2 Soils to the degree the materials are geotechnically suitable for the intended use and per the restrictions in Section H.3 for Type 2 soils.

In accordance with the RAP, soils placed into utility corridors must meet the following requirements:

- Soils will meet Residential/Recreational SRVs, including PAHs as expressed in benzo(a)pyrene (BaP) equivalent concentrations of 2 mg/kg, within the utility corridor.
- Screening SLVs will be met to the water table in areas where infiltration is allowed to occur.

H.4.c. Greenspace/Wetland Areas

In accordance with the RAP, greenspace areas will contain only approved on-Site soils or approved imported fill (see section G.4). Greenspace will contain only Type 1 soils and/or Type 2 soils (per the restrictions outlined above in Section H). Impacted fill soil exceeding Site cleanup standards (Type 3 soils) that currently exists in planned future greenspace areas will be excavated. These excavated soils will be transported off-Site for proper disposal. Site soils reused on Site and imported fill must meet the requirements of the RAP.

In accordance with the RAP, imported, impacted on Site fill soils, and other on-Site soils placed in the greenspace areas must meet the following requirements:

- Soils will meet Residential/Recreational SRVs, including PAHs as expressed in BaP equivalent concentrations of 2 mg/kg.
- Screening SLVs will be met to the water table in areas where infiltration is allowed to occur.
- Contain no more than a de-minimis amount of debris.

Leaching from contaminated soil to groundwater is addressed by applying the MPCA Screening SLVs to future greenspace areas, where surface water will be managed/infiltrated, such as wetlands, passive open space, park space and other stormwater management features. Planned wetlands and other stormwater management features are shown on the development plans included in Appendix A.

H.5. Site Controls

The following controls will be necessary during the soil correction activities to ensure the work is conducted in a manner that is protective to the health and safety of on-Site workers and the general public. A Site-specific health and safety plan (HASP) detailing personal health and safety measures will be prepared for the RAP Implementation. The earthwork contractor will also prepare a HASP that will address environmental concern, as well as those concerns normally associated with excavation and compaction.

Engineering controls will be implemented during the response actions to protect human health and the environment including Site-wide dust control (to ensure adherence with the nuisance dust standard), storm water control, and Site access. These controls will be designed, planned and documented throughout the RAP implementation to ensure thoroughness and as a technique to manage the construction. The specifications will provide details to the implementation of the temporary engineering controls.

H.5.a. Fugitive Dust

The primary COC exposure route of concern at the Site is inhalation of fugitive dust with elevated mercury, metals, or PAH concentrations. Currently, the Site is covered with grass/vegetation, which generally prevents the generation of dust. When earthwork occurs within the limits of soils with elevated metals or PAHs, controls must be in place to minimize the generation of dust during work and non-work hours.

The contractor will provide the defined and specified practices to control fugitive dust generation during Site activities. The purpose is to reduce the risk of exposure to airborne materials that may contain elevated COC concentrations and silica to workers at the Site and to the general public adjacent to the Site. These practices will be implemented when impacted soils are exposed at the ground surface. Records will be kept of the date, time, location, and method of dust suppression.

Dust from grading and soil consolidation actions will be controlled by applying water to the soils being worked. Visibly dry areas will be watered as they are observed. The amount of impacted soil that is exposed at the end of each work shift will be minimized, and those areas left exposed will be sprayed down to form a crust prior to the end of each work shift. The amount of water used for dust suppression will be carefully controlled so that runoff does not occur. Records will be kept of the date, time, location, and method of dust suppression.

H.5.b. Dust Control While Working

Dust from environmentally restricted soils must be kept to a minimum. Primary dust control measures include minimizing open soil areas, wetting soil with water, use of dust suppression agents, and using stockpile management practices.

The project dust control specification will be submitted to the MDA for approval prior to development. These options are discussed below.

H.5.b.1. Minimizing Open Soil Areas

In areas where soil correction work involves debris containing fill and/or PAH or RCRA metal-impacted soils, the disturbance of these soils will be limited to what will be corrected that each day to the degree feasible.

At the end of the day, all debris fill and/or PAH or RCRA metal-impacted soils may be covered with an interim cover. Acceptable interim covers, if deemed necessary at the time, include but are not limited to:

- A minimum of 2 inches native sand, sandy fill, clean organic soils, or imported soils;
- Spraying the exposed soils with water to form a crust;
- Cover sheeting that meets the minimum specification for stockpile materials; or
- An approved dust control agent.

H.5.b.2. Wetting Soils

Dust suppression via water spraying is considered an effective control method during working hours. The amount of water used for dust suppression will be carefully controlled so that runoff does not occur.

H.5.b.3. Alternative Controls

A number of alternative dust control measures exist. The engineering specifications and contract allows for the earthwork contractor to develop alternative means and methods to complete the job in accordance with the RAP. Braun Intertec will evaluate and approve or disapprove alternative dust suppression means and methods presented by the contractor.

H.5.b.4. Non-Work Hours

At the conclusion of each workday, excavated impacted soils will be covered with an approved interim cover.

H.6. Stockpile Management

During redevelopment, stockpiles may be created for impacted soils, asphalt, concrete, Site fill material, organic soils and native soils. The stockpiles will be maintained until the stockpiled material is transported off-Site or reused as fill on Site. Such stockpiles, if chemically impacted, will be covered when not being added to or subtracted from.

Stockpiles will be protected from storm water run-on/run-off and shall have effective erosion and sedimentation control features in accordance with the Stormwater Pollution Protection Plan (SWPPP). All material placement shall be in accordance with the requirements of the SWPPP. This shall include, at a minimum, installing berms or silt fences around potentially impacted soil stockpiles.

Soil stockpiles will be located throughout the project Site in areas adjacent to active work areas. These stockpiles will be created during the soil correction work as necessary. Stockpiles will be inspected daily to ensure cover materials are sufficient and material is not being lost to erosion/runoff.

H.7. Groundwater/Surface Water Management

During planned excavations and the installation of utilities and/or soil corrections, temporary groundwater dewatering may be necessary. Discharge and/or treatment of groundwater, stormwater, or any other dewatering action will be managed in accordance with State, Federal, and local agencies.

Contaminated groundwater and/or storm water will be managed by permit under the following approaches (as appropriate):

- A Metropolitan Council Environmental Services (MCES) temporary discharge permit may be obtained in order to facilitate the discharge of any contaminated groundwater or stormwater accumulated in Site excavations to appropriate nearby sanitary sewer connections. Monitoring, testing, and reporting will be required by MCES. Pre-discharge treatment will be completed for stormwater or groundwater collected during construction with contaminant concentrations or characteristics exceeding permit requirements. Anticipated pretreatment approaches (if required) could include product separation and/or carbon treatment.
- A National Pollutant Discharge Elimination System (NPDES) discharge permit may also be obtained in order to facilitate the discharge of construction-related water to appropriate nearby storm sewer connections. Monthly monitoring, testing and/or treatment and quarterly reporting would be required by the permit.

The MDA and MPCA will be notified when a final groundwater/dewatering plan is decided (if necessary).

I. Construction Observation and Documentation Plan

The following sections describe the types of observations that will be made and the types of documentation that will be prepared during implementation of the response action elements.

I.1. Field Reports

Field reports will be prepared to document construction activities at the end of each day. These reports will include the following information as applicable:

- Contractor's activities including type and volumes of material excavated and/or replaced (as necessary);
- Weather conditions at the Site, including any precipitation and wind conditions;
- Contractor's efforts in reducing dusty conditions or activities to eliminate Site runoff during wet conditions;
- Details of completed testing or samples collected for laboratory testing;
- Any unforeseen Site conditions encountered during the Work;
- Contractor's equipment that is on-Site and being used; and
- Health and safety status and issues.

I.2. Forms

Appendix F contains the forms that will be used as warranted to document construction activities, including:

- Daily Field Report;
- Project Health and Safety Field Meeting Form;
- Incident Report Form;
- Chain-of-Custody Record;
- Sample Control Log;
- Boring Log Form;
- Test Trench Form; and
- Air Monitoring Log.

I.3. Problem/Deficiency Identification and Corrective Action

The General Contractor and/or Earthwork Contractor will be required to inform the Braun Intertec Project Manager and the Owner, in a timely manner, of any problems/deficiencies that arise during RAP Implementation.

I.4. Plan Modification

Any proposed modifications to the RAP will be communicated to the MPCA in a timely manner. The RAP shall be modified if appropriate with written approval of the MDA, MPCA, Owner, and the Project Manager. A plan for any RAP modifications will be prepared if required and provided for the MDA and MPCA Project Managers for approval.

I.5. Photographs

The Braun Intertec environmental technician will take photographs to document observations, problems, and/or deficiencies, or Work in progress. The photographs for this project will include, at a minimum, the following:

- Pre-construction conditions
- Excavation of soils
- Stockpiling of soils
- Any unforeseen Site conditions encountered during construction
- Any compaction and backfilling taking place in excavated areas
- Grading operations
- Dust and water control operations
- Soil and water sampling
- Air monitoring
- Well and/or process utility abandonment
- Temporary closure activities
- Erosion control and storm water control procedures

J. Work Controls

The following sections describe the horizontal and vertical controls, environmental monitoring, access, and erosion control.

J.1. Horizontal and Vertical Controls

The reporting of results will require accurate knowledge of the actual Site elevations and locations. The topographic survey of the Site performed and will be used to prepare maps of the Site and to document areas of excavations and volumes of materials excavated or filled on-Site.

J.2. Environmental Monitoring During the Work

Air monitoring of vapors and dust emanating from excavations will be performed in accordance with the specific Site HASP. Organic vapors will be monitored using a PID to monitor worker breathing zones. Dust may be monitored using portable dust monitors. Other monitoring equipment for measuring oxygen, carbon dioxide, methane, explosive vapors (LEL), and other hazards will be available, if needed.

J.3. Erosion Control

The earthwork contractor will be responsible for implementing appropriate erosion controls in accordance with general permit requirements for stormwater control at construction sites. This typically includes installation of silt fences at the project boundaries and limits of excavations to control erosion during work on-Site. In addition, the Contractor will be responsible for providing rock construction entrances or performing street sweeping to prevent muddy or dusty conditions on city streets.

K. RAP Implementation Report

Following completion of response actions for the redevelopment, a RAP Implementation Report will be prepared and submitted to the MDA and MPCA for review and approval. The RAP Implementation Report will include the following at a minimum:

- Overview of the environmental response actions performed.
- Documentation of pre-demolition hazardous materials removal for demolished buildings.
- Documentation of water well and monitoring well sealing.
- Summary of environmental monitoring results during construction.
- Documentation of all contaminated soil excavations for materials targeted for off-site disposal (Type 3 Soils).
- Documentation of excavation and on-site placement of Type 2 soils meeting established geotechnical criteria.
- Disposal documentation including manifests and disposal facility approvals.
- Summary of off-site disposal material types and volumes.
- Documentation of imported fill sources and associated analytical testing results.
- All soil and groundwater analytical testing results completed for RAP implementation, including post-excavation verification sampling/testing results.
- Descriptions and documentation related to contingency actions (if any) completed during construction.
- Photographic documentation of response actions completed.

L. Construction Contingency Plan

The objective of this Construction Contingency Plan is to provide a protocol that will be followed if unanticipated environmental conditions are encountered during RAP Implementation and construction activities. These environmental conditions may include, but are not limited to:

- Buried drums or other containers.
- Underground storage tanks.
- Wells.
- Buried Debris.
- Asbestos-containing material.
- Buried foundations from historical structures.
- All other unknown contaminated media.

Specifically, based upon the Site history and the conditions observed during previous investigations, Braun Intertec has developed procedures related to the following unanticipated conditions could be encountered during construction and development activities at the Site:

- Petroleum impacted soils
- Buried demolition debris
- Unsealed wells

For the purposes of this CCP, indicators of potentially contaminated soil or groundwater include, but are not limited to the following:

- Odor, including gasoline, diesel, creosote (odor of railroad ties), mothballs, or other chemical-like odor.
- Soil stained green or black (not due to organic content), or with dark, oily appearance, or any unusual soil color or texture.
- A rainbow color (sheen) on contact water or soil.

Indicators of regulated wastes include, but are not limited to the following:

- Cans, bottles, glass, scrap metal, or wood (indicators of solid waste and a possible dump).

- Concrete or asphalt rubble (indicators of demolition waste).
- Roofing materials, shingles, siding, vermiculite, floor tiles, or any fibrous material (indicators of demolition waste that could contain asbestos, lead or other chemicals).
- Culverts or other pipes with tar-like coating, insulation or transite (indicators of asbestos).
- Ash (ash from burning or regulated materials may contain lead or other chemicals).
- Sandblast residue (could contain lead or other metals).
- Treated wood, including, but limited to, products referred to as green-treated, brown-treated or creosote (treated wood disposal is regulated).
- Chemical containers such as storage tanks, drums, filters or other containers (possible sources of chemical contaminants).
- Old basements with intact floor tiles or insulation (could contain asbestos), sumps (could contain chemical waste), waste traps (could contain oily waste) or cesspools (could contain chemical or oily wastes)

L.1. Notification Requirements

In the event that unanticipated contaminated materials or debris are encountered during construction when the environmental consultant is not on Site, work in the area shall cease immediately, and the work area shall be secured. Work outside of the vicinity of the discovery area can continue if conditions remain safe to do so for project personnel and the surrounding community. The contractor shall immediately notify the owner and/or the owner's representative. At the owner's and/or owner's representative's request, the environmental consultant will mobilize to the Site in the event that contamination is encountered. At this time, the soils will be assessed in-situ as part of a preliminary reconnaissance for the presence of contamination using both visual and olfactory indications of contamination, as well as laboratory analysis.

L.2. Communications

Communications include notifying the Braun Intertec Project Manager, who will notify the MDA and MPCA project managers of the unanticipated condition, the preliminary assessment of the hazard, and the expected response. The response may include collecting samples of wastes, soil, or water for chemical analysis or performing containerization or isolation activities prior to arranging for disposal.

Minnesota Department of Agriculture	
Josh Leable	651-201-6632
Stuart Orlowski	651-201-6148
Minnesota Pollution Control Agency	
Andrew Nichols (VIC Program)	651-757-2612
Mark Koplitz (PB Program)	651-757-2283

L.3. First Response

The Field Representative will perform field sampling and air monitoring. Field equipment to be kept available on short notice will include a PID or equivalent, a portable dust meter, a combustible gas indicator, and containers and equipment for various air, water, and soil sampling which may be required. In addition, equipment and supplies as required for implementing the site-specific HASP will be available for use as needed.

L.4. Preliminary Reconnaissance

If contamination or regulated waste is unexpectedly encountered, the environmental consultant will mobilize to the Site to conduct a preliminary reconnaissance. During the preliminary reconnaissance, the environmental consultant will begin assessing the situation and obtaining air monitoring data with a PID, oxygen detector, or combustible gas indicator in accordance with procedures in the Site-specific HASP. If conditions are safe, samples will be collected for field screening by visual observation and for jar headspace screening with a PID. This field screening data will be used to assess the hazard and develop a plan for response.

Samples of the potentially impacted soil will be collected from any stockpiles or from the excavation base and sidewalls for headspace screening using a PID using MPCA recommended methodologies.
A minimum of one sample for headspace analysis will be collected for every 10 CY of material removed. Visual and indirect olfactory indications of contamination will be noted. Screening results will be documented, and Site photographs will be taken, as appropriate.

As part of the preliminary reconnaissance, any potentially contaminated soil that is stockpiled will be placed on polyethylene sheeting or other impervious surfaces and covered with polyethylene sheeting that is secured in place. Staging areas for potentially impacted soil or material will be clearly marked. The results of the preliminary reconnaissance will be provided to the owner and/or the owner's

representative. The contractor will not be allowed to continue to work in the area until the type(s) of contamination is identified and an appropriate response action is defined by the owner and/or the owner's environmental representative.

L.5. Isolation

Isolation includes placing small containers or small quantities of soil into 55-gallon drums for containment or backfilling the excavation if larger containers or large quantities of impacted materials are present. The anticipated response for large quantities of hazardous materials is the notification of an emergency response contractor to develop a plan to isolate and contain the hazardous materials until treatment or disposal options can be determined. At least five new 55-gallon drums will be available on Site to containerize hazardous materials if necessary. If buried debris such as concrete or wood is encountered; the material will be excavated and stockpiled. It is anticipated that buried debris that cannot be re-used on Site can be disposed of in a landfill for demolition debris or municipal solid waste.

L.6. Emergency Response Contractors

Arrangements with various emergency response contractors will be made prior to starting work at the site in order to allow immediate response to unanticipated conditions. The Contractor and/or excavation subcontractor will most likely perform excavation and trucking of materials on Site or off Site. The following contractors may be utilized for response to emergencies or other situations at the Site:

Name of Contractor	**Type of Service**
Stevens Drilling and Environmental 6240 Highway 12 West Maple Plain, MN 55359 763.479.1797	Emergency Response
Minnesota Petroleum 682 39th Ave NE Columbia Heights, MN 55421 763.780.5191	Vacuum Truck Containerization of Liquid or Oily Wastes
Pace Analytical Services 1700 Elm Street, Suite 200 Minneapolis, MN 55414 612.607.6455, Dan Nguyen	Analytical Services

Or

Legend Technical Services
88 Empire Drive
St. Paul, MN 55103
651.642.1150, Cory Campbell

Thein Well Service — Well Abandonment and Replacement
11355 Highway 71 Northeast
Spicer, MN 56288
320.847.3207

Grainger Supply — Over-Pack Container Supplier
201 E 78th Street
Bloomington, MN 55420
(952) 888-2502

Consolidated Container — 55-gallon Drum Supplier
109 NE 27th Ave,
Minneapolis, MN 55418
(612) 781-0923

The Field Representative will perform field sampling and air monitoring. Field equipment to be kept available on short notice will include a PID or equivalent, a portable dust meter, a combustible gas indicator, detector tubes (Draeger or Sensidyne) for field sampling for individual compounds, and containers and equipment for various air, water, and soil sampling which may be required. In addition, equipment and supplies as required for implementing the Site-specific HASP will be available for use as needed.

L.7. Potential Contingency Response Actions

In general, after conducting the preliminary reconnaissance and assessing the type of contamination, environmental monitoring will be conducted during excavation of potentially contaminated materials. The results of the environmental monitoring will be used to segregate and stockpile the potentially contaminated material.

If potential ACM is encountered that was not already identified, no excavation work will be conducted until the results of polarized light microscopy (PLM) testing are available. If ACM is detected, procedures established in Section H and L.7.b will be followed.

Response actions, listed by contaminant/waste type, to manage unidentified contamination that is encountered during construction are detailed below.

L.7.a. Petroleum-Contaminated Soils

If petroleum-contaminated soils are identified during construction, soils will be segregated and handled in accordance with MPCA Petroleum Remediation Guidance Document 3.01 "Excavation of Petroleum Contaminated soil and Tank Removal Sampling."

L.7.b. Debris and Asbestos-Containing Materials

In the event that debris suspected of containing asbestos is encountered during earthwork activities, it will be evaluated in-situ for the presence of asbestos by bulk sampling and analysis by PLM. If ACM is encountered, protocol outlined in the July 1999 MPCA *Asbestos Guidance on Excavation Projects* will be followed including implementation of an emissions control plan (ECP). An ECP will be prepared if needed, upon request. In addition, as the debris is excavated and removed, if encountered, it will be properly recycled or soil containing greater than 10% debris will be disposed. ACM will be properly disposed of off-Site; no soil containing ACM will be reused on Site.

L.7.c. Non-Petroleum-Impacted Soil

Soils that exhibit non-petroleum impacts will be segregated, stockpiled, and sampled. Field methods and procedures, analytical testing and decisions regarding soil disposition will be consistent with Braun Intertec Standard Operation Procedures (SOPs).

L.7.d. Storage Tanks or Drums

In the event that drums or other storage containers are encountered during earthwork activities, they will be removed and their condition evaluated by appropriately trained personnel. If the containers are determined to be in poor condition, the materials will be transferred to a new drum that is in good condition. The drums will be placed in a secure location. Containerized materials will be evaluated, tested, and properly disposed.

Soil from the area around the container will be screened for indications of contamination. Potentially impacted soil will be segregated and stockpiled. Soil samples will be collected from stockpiled materials for chemical analyses and confirmation soil samples will be collected from remaining in-place soil.

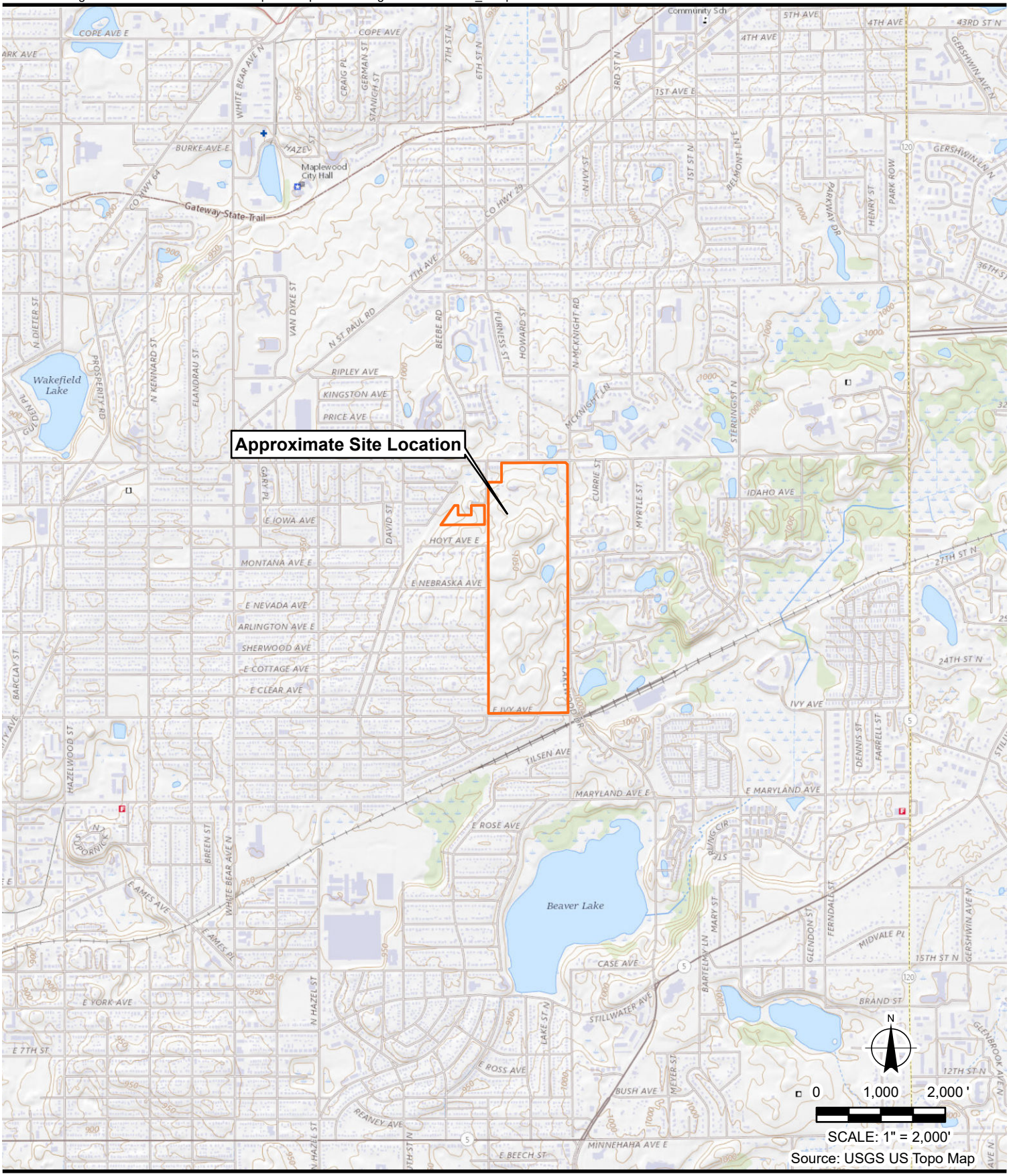
If a possible UST is indicated by a metal or concrete surface, is encountered during excavation activities, the area around the possible underground structure will be carefully excavated. The underground structure will be tested to evaluate the depth to bottom or the presence of liquid. If liquid is present, further testing will be conducted to evaluate its contents. Liquid will be removed by pumping prior to removal and disposal of the structure. All UST contents will be handled in accordance with MPCA and Occupational Safety & Health Administration (OSHA) requirements. The UST will be removed by a licensed UST removal contractor and will be completed in accordance with MPCA requirements. Soil surrounding the tank or structure will be monitored for possible impacts and sampled for chemical analyses in accordance with MPCA, Petroleum Remediation Program, Guidance Document #3-01.

L.7.e. On-Site Wells and Septic Systems

All unused wells must be sealed by a licensed well contractor in accordance with MDH regulations. Septic systems also should be properly abandoned in accordance with local and state code.

Figures

C:\Users\zseeger\OneDrive - Braun Intertec Corp\Desktop\Arc Loading Issue\B1903316_00.aprx



BRAUN INTERTEC
The Science You Build On.

11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Project No: B1903316_00

Drawing No: B1903316_00_Fig 1

Drawn By:	ZS
Date Drawn:	2/28/2022
Checked By:	MK
Last Modified:	6/28/2022

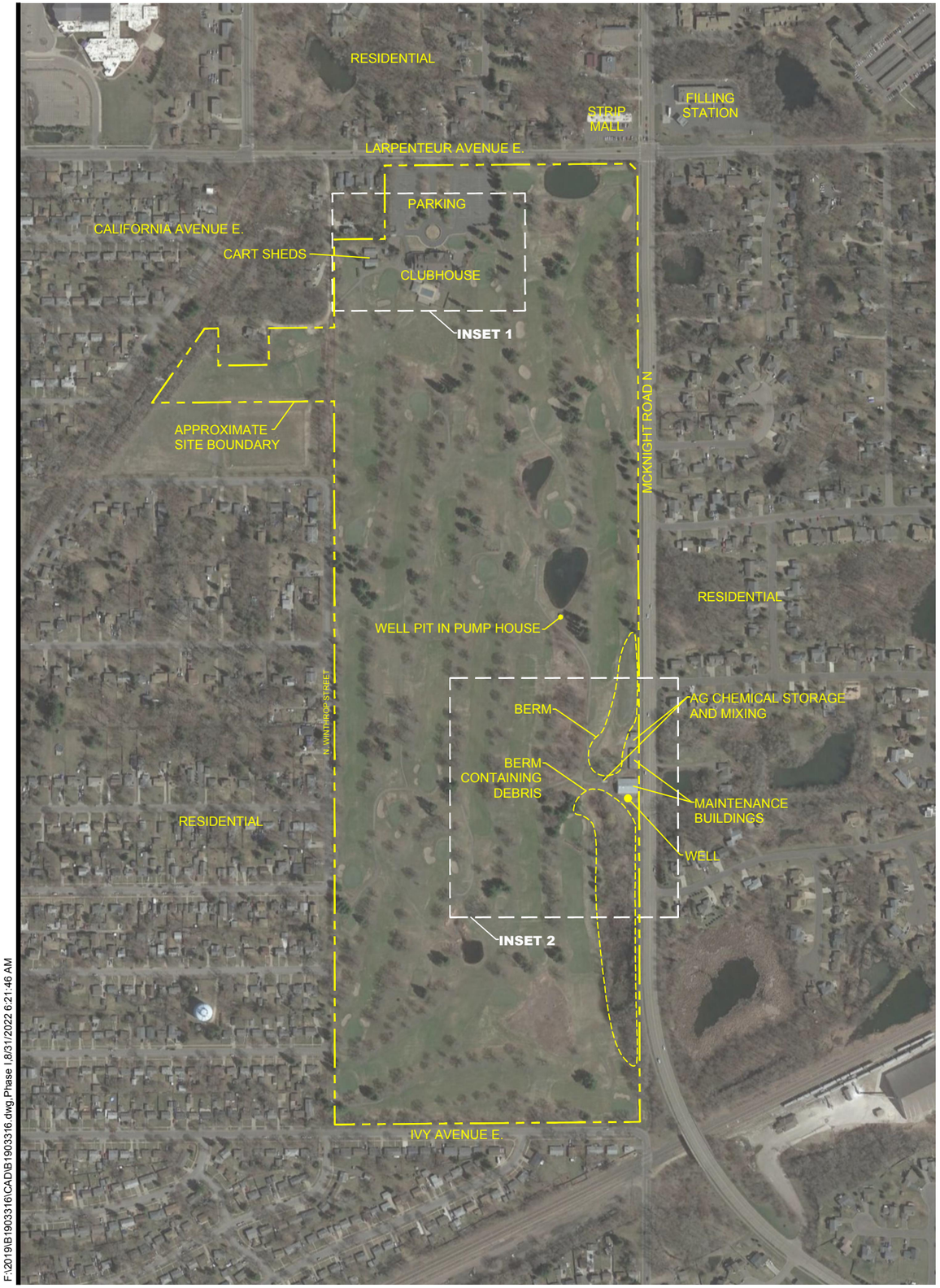
Hillcrest Redevelopment Site

McKnight Road N and Larpenteur Avenue E

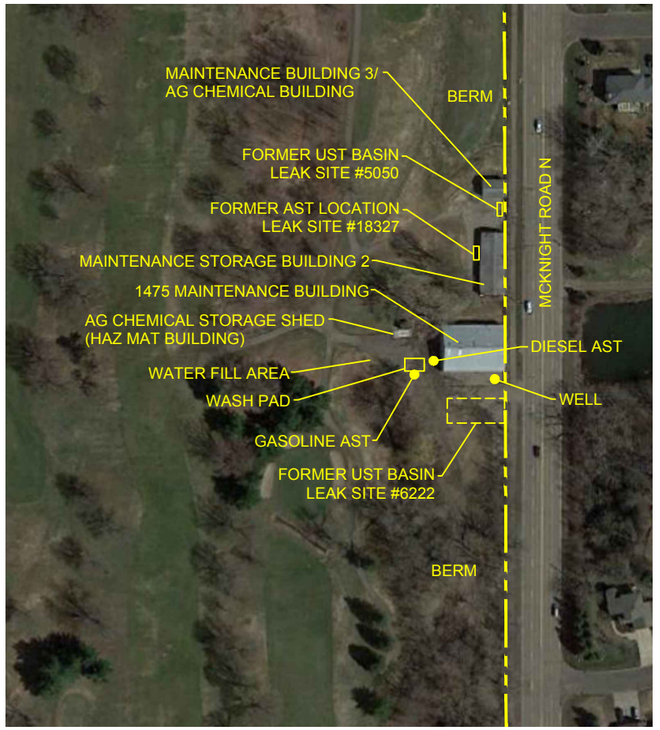
St. Paul, Minnesota

Site Location Map

Figure 1



INSET 1: CLUBHOUSE AREA
SCALE: 1" = 120'



INSET 2: MAINTENANCE FACILITY
SCALE: 1" = 200'

250' 0 500'
SCALE: 1"= 500'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No:	B1903316.00
Drawing No:	B1903316
Drawn By:	LAO
Date Drawn:	5/15/19
Checked By:	MPE
Last Modified:	8/31/22

Project Information

Hillcrest Redevelopment Site

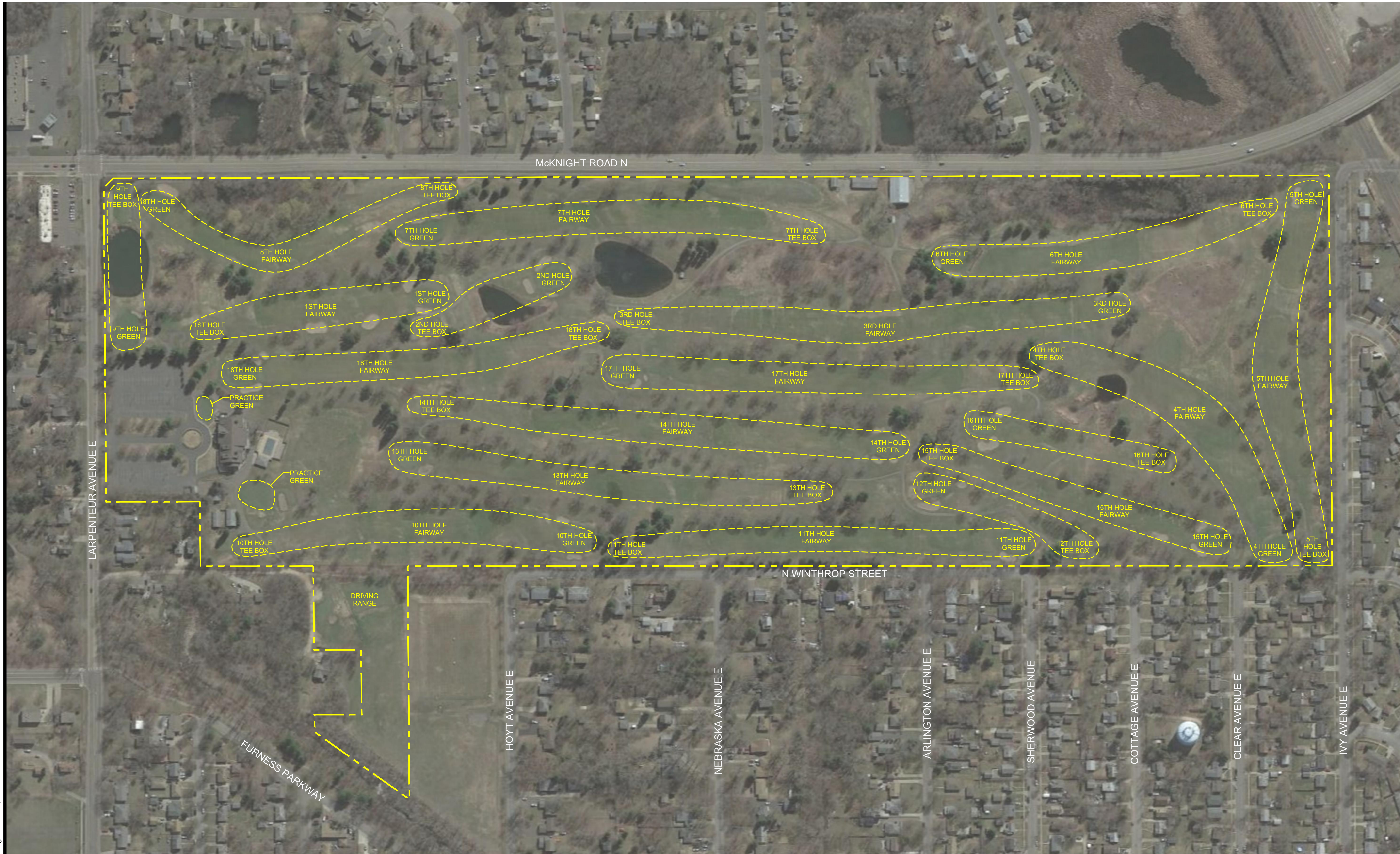
McKnight Road N and Larpenteur Avenue E

St. Paul, Minnesota

Current Site Conditions

Figure 2

F:\2019\B1903316\CAD\B1903316.dwg,Phase I,8/31/2022 6:21:46 AM



BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No:	B1903316
Drawing No:	B1903316A
Drawn By:	BJB
Date Drawn:	5/23/19
Checked By:	MK
Last Modified:	2/28/22

Project Information

Hillcrest Redevelopment Site

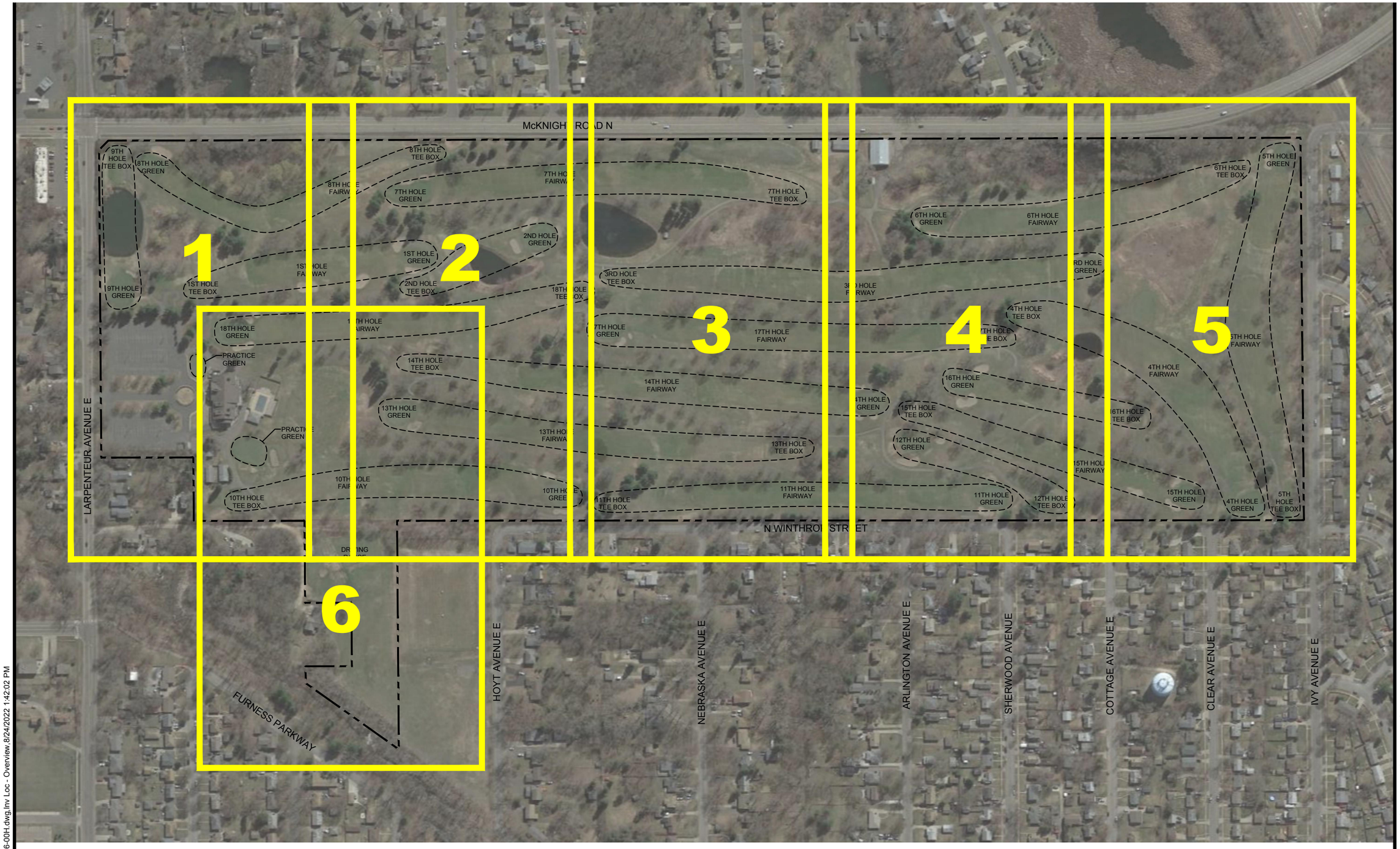
2200 Larpenteur Avenue E

Saint Paul, Minnesota

Former Golf Course Layout

Figure 3

F:\2019\B1903316\CAD\B1903316A.dwg,Overview,2/28/2022 10:54:34 AM



BRAUN INTERTEC
The Science You Build On.

11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No:	B1903316.00
Drawing No:	B1903316-00H
Drawn By:	BJB
Date Drawn:	5/23/19
Checked By:	MK
Last Modified:	8/24/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

Saint Paul, Minnesota

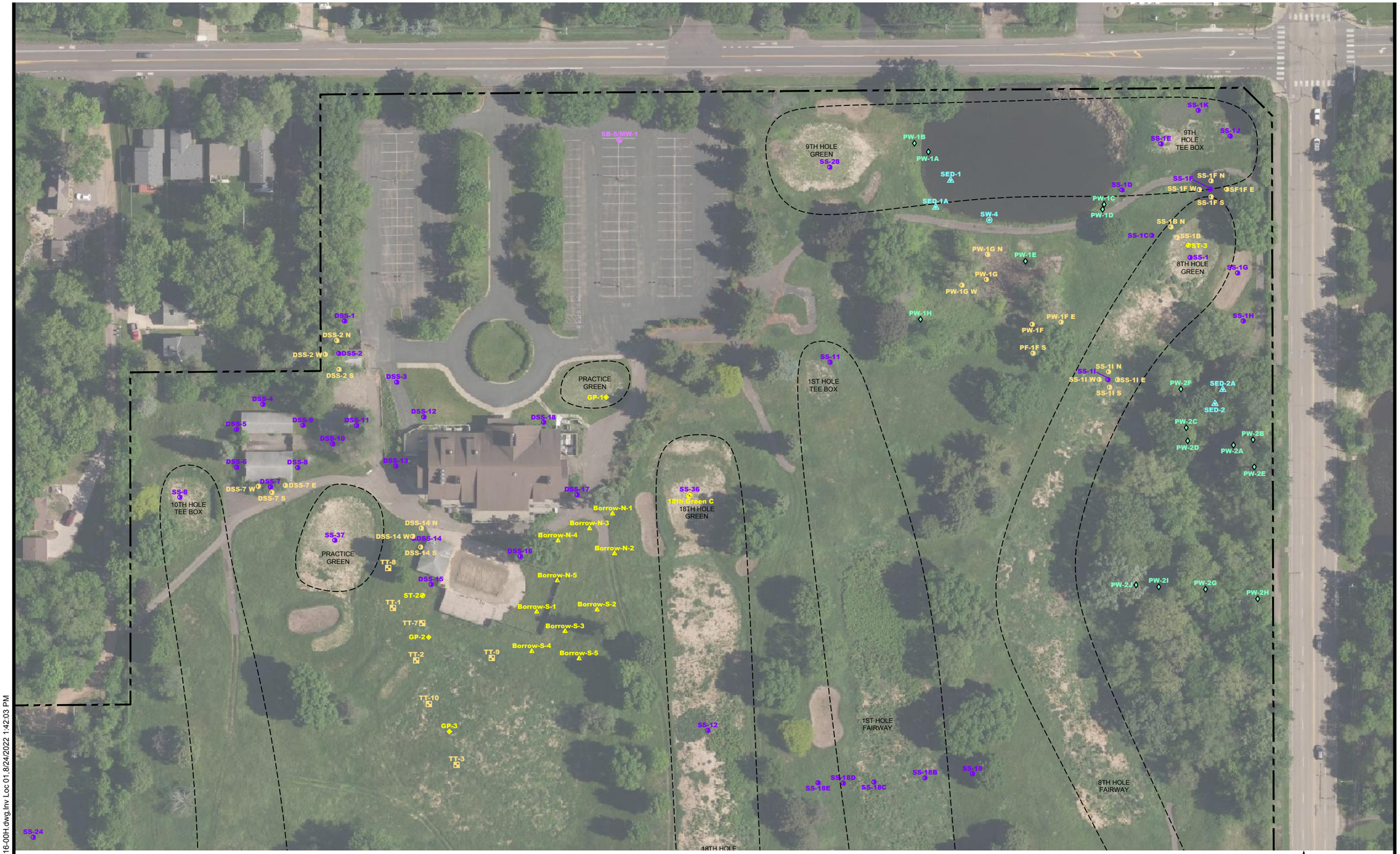
Investigation Locations Sheet Overview Map

Figure 4

150' 0 300'

SCALE: 1" = 300'

F:\2019\B1903316\CAD\B1903316-00H.dwg,Inv Loc - Overview,8/24/2022 1:42:02 PM



SOIL BORING LOCATION
SOIL BORING / TEMPORARY WELL LOCATION
SOIL BORING / PERMANENT WELL LOCATION
MONITORING WELL LOCATION
AGRICULTURAL CHEMICAL SOIL BORING LOCATION
TEST TRENCH LOCATION

SHALLOW HAND AUGER BORING LOCATION
WELL LOCATION
SURFACE WATER SAMPLE
SEDIMENT SAMPLE LOCATION
POTENTIAL WETLAND SAMPLE LOCATION
SURFACE WATER SAMPLE LOCATION

HOLLOW STEM AUGER BORING LOCATION
PUSH PROBE BORING LOCATION
COMPOSITE SOIL SAMPLE LOCATION
SHALLOW HAND AUGER BORING LOCATION (2021)
CONFIRMATION SAMPLE LOCATION

50' 0 100'

SCALE: 1" = 100'

F:\2019\B1903316\CAD\B1903316-00H.dwg,Inv Loc 01,8/24/2022 1:42:03 PM

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00
Drawing No: B1903316-00H
Drawn By: BJB
Date Drawn: 5/23/19
Checked By: MK
Last Modified: 8/24/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

Saint Paul, Minnesota

Investigation Locations

Sheet: 01 of 06
Fig: 4

SOIL BORING LOCATION
SOIL BORING / TEMPORARY WELL LOCATION
SOIL BORING / PERMANENT WELL LOCATION
MONITORING WELL LOCATION
AGRICULTURAL CHEMICAL SOIL BORING LOCATION
TEST TRENCH LOCATION

SHALLOW HAND AUGER BORING LOCATION
WELL LOCATION
SURFACE WATER SAMPLE
SEDIMENT SAMPLE LOCATION
POTENTIAL WETLAND SAMPLE LOCATION
SURFACE WATER SAMPLE LOCATION

HOLLOW STEM AUGER BORING LOCATION
PUSH PROBE BORING LOCATION
COMPOSITE SOIL SAMPLE LOCATION
SHALLOW HAND AUGER BORING LOCATION (2021)
CONFIRMATION SAMPLE LOCATION

N

50' 0 100'

SCALE: 1" = 100'

F:\2019\B1903316\CAD\B1903316-00H.dwg,Inv Loc 02,8/24/2022 1:42:04 PM

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00H

Drawn By:	BJB
Date Drawn:	5/23/19
Checked By:	MK
Last Modified:	8/24/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

Saint Paul, Minnesota

Investigation Locations

Sheet: 02 of 06

Fig: 4

SOIL BORING LOCATION
SOIL BORING / TEMPORARY WELL LOCATION
SOIL BORING / PERMANENT WELL LOCATION
MONITORING WELL LOCATION
AGRICULTURAL CHEMICAL SOIL BORING LOCATION
TEST TRENCH LOCATION
SHALLOW HAND AUGER BORING LOCATION
WELL LOCATION
SURFACE WATER SAMPLE
SEDIMENT SAMPLE LOCATION
POTENTIAL WETLAND SAMPLE LOCATION
SURFACE WATER SAMPLE LOCATION
HOLLOW STEM AUGER BORING LOCATION
PUSH PROBE BORING LOCATION
COMPOSITE SOIL SAMPLE LOCATION
SHALLOW HAND AUGER BORING LOCATION (2021)
CONFIRMATION SAMPLE LOCATION

50' 0 100'
SCALE: 1" = 100'

F:\2019\B1903316\CAD\B1903316-00H.dwg,Inv Loc 03,8/24/2022 1:42:05 PM

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No:	B1903316.00
Drawing No:	B1903316-00H
Drawn By:	BJB
Date Drawn:	5/23/19
Checked By:	MK
Last Modified:	8/24/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

Saint Paul, Minnesota

Investigation Locations

Sheet: 03 of 06
Fig: 4

- SOIL BORING LOCATION
- SOIL BORING / TEMPORARY WELL LOCATION
- SOIL BORING / PERMANENT WELL LOCATION
- MONITORING WELL LOCATION
- AGRICULTURAL CHEMICAL SOIL BORING LOCATION
- TEST TRENCH LOCATION
- SHALLOW HAND AUGER BORING LOCATION
- WELL LOCATION
- SURFACE WATER SAMPLE
- SEDIMENT SAMPLE LOCATION
- POTENTIAL WETLAND SAMPLE LOCATION
- SURFACE WATER SAMPLE LOCATION
- HOLLOW STEM AUGER BORING LOCATION
- PUSH PROBE BORING LOCATION
- COMPOSITE SOIL SAMPLE LOCATION
- SHALLOW HAND AUGER BORING LOCATION (2021)
- CONFIRMATION SAMPLE LOCATION

50' 0 100'

SCALE: 1" = 100'

F:\2019\B1903316\CAD\B1903316-00H.dwg,Inv Loc 04,8/24/2022 1:42:05 PM

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No:	B1903316.00
Drawing No:	B1903316-00H
Drawn By:	BJB
Date Drawn:	5/23/19
Checked By:	MK
Last Modified:	8/24/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

Saint Paul, Minnesota

Investigation Locations

Sheet: 04 of 06

Fig: 4

SOIL BORING LOCATION
SOIL BORING / TEMPORARY WELL LOCATION
SOIL BORING / PERMANENT WELL LOCATION
MONITORING WELL LOCATION
AGRICULTURAL CHEMICAL SOIL BORING LOCATION
TEST TRENCH LOCATION

SHALLOW HAND AUGER BORING LOCATION
WELL LOCATION
SURFACE WATER SAMPLE
SEDIMENT SAMPLE LOCATION
POTENTIAL WETLAND SAMPLE LOCATION
SURFACE WATER SAMPLE LOCATION

HOLLOW STEM AUGER BORING LOCATION
PUSH PROBE BORING LOCATION
COMPOSITE SOIL SAMPLE LOCATION
SHALLOW HAND AUGER BORING LOCATION (2021)
CONFIRMATION SAMPLE LOCATION

50' 0 100'
SCALE: 1" = 100'

F:\2019\B1903316\CAD\B1903316-00H dwg,Inv Loc 05,8/24/2022 1:42:06 PM

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00H

Drawn By:	BJB
Date Drawn:	5/23/19
Checked By:	MK
Last Modified:	8/24/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

Saint Paul, Minnesota

Investigation Locations

Sheet: 05 of 06

Fig: 4

SOIL BORING LOCATION
SOIL BORING / TEMPORARY WELL LOCATION
SOIL BORING / PERMANENT WELL LOCATION
MONITORING WELL LOCATION
AGRICULTURAL CHEMICAL SOIL BORING LOCATION
TEST TRENCH LOCATION
SHALLOW HAND AUGER BORING LOCATION
WELL LOCATION
SURFACE WATER SAMPLE
SEDIMENT SAMPLE LOCATION
POTENTIAL WETLAND SAMPLE LOCATION
SURFACE WATER SAMPLE LOCATION
HOLLOW STEM AUGER BORING LOCATION
PUSH PROBE BORING LOCATION
COMPOSITE SOIL SAMPLE LOCATION
SHALLOW HAND AUGER BORING LOCATION (2021)
CONFIRMATION SAMPLE LOCATION

N

50' 0 100'

SCALE: 1" = 100'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00H

Drawn By:	BJB
Date Drawn:	5/23/19
Checked By:	MK
Last Modified:	8/24/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

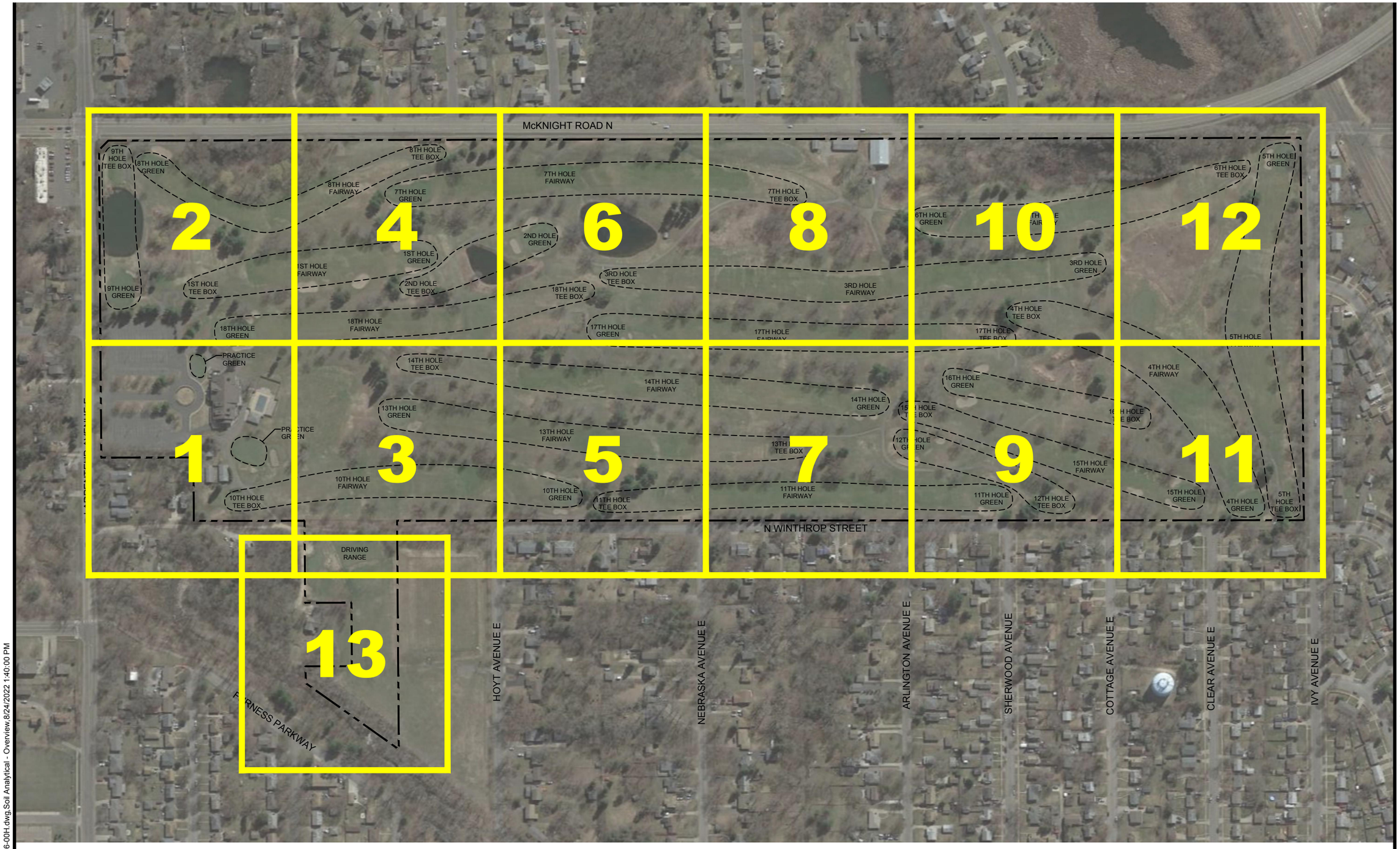
Saint Paul, Minnesota

Investigation Locations

Sheet: 06 of 06

Fig: 4

F:\2019\B1903316\CAD\B1903316-00H.dwg,Inv Loc 06,8/24/2022 1:42:07 PM



F:\2019\B1903316\CAD\B1903316-00H.dwg,Soil Analytical - Overview,8/24/2022 1:40:00 PM

BRAUN INTERTEC
The Science You Build On.

11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00H

Drawn By:	BJB
Date Drawn:	5/23/19
Checked By:	MK
Last Modified:	8/24/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

Saint Paul, Minnesota

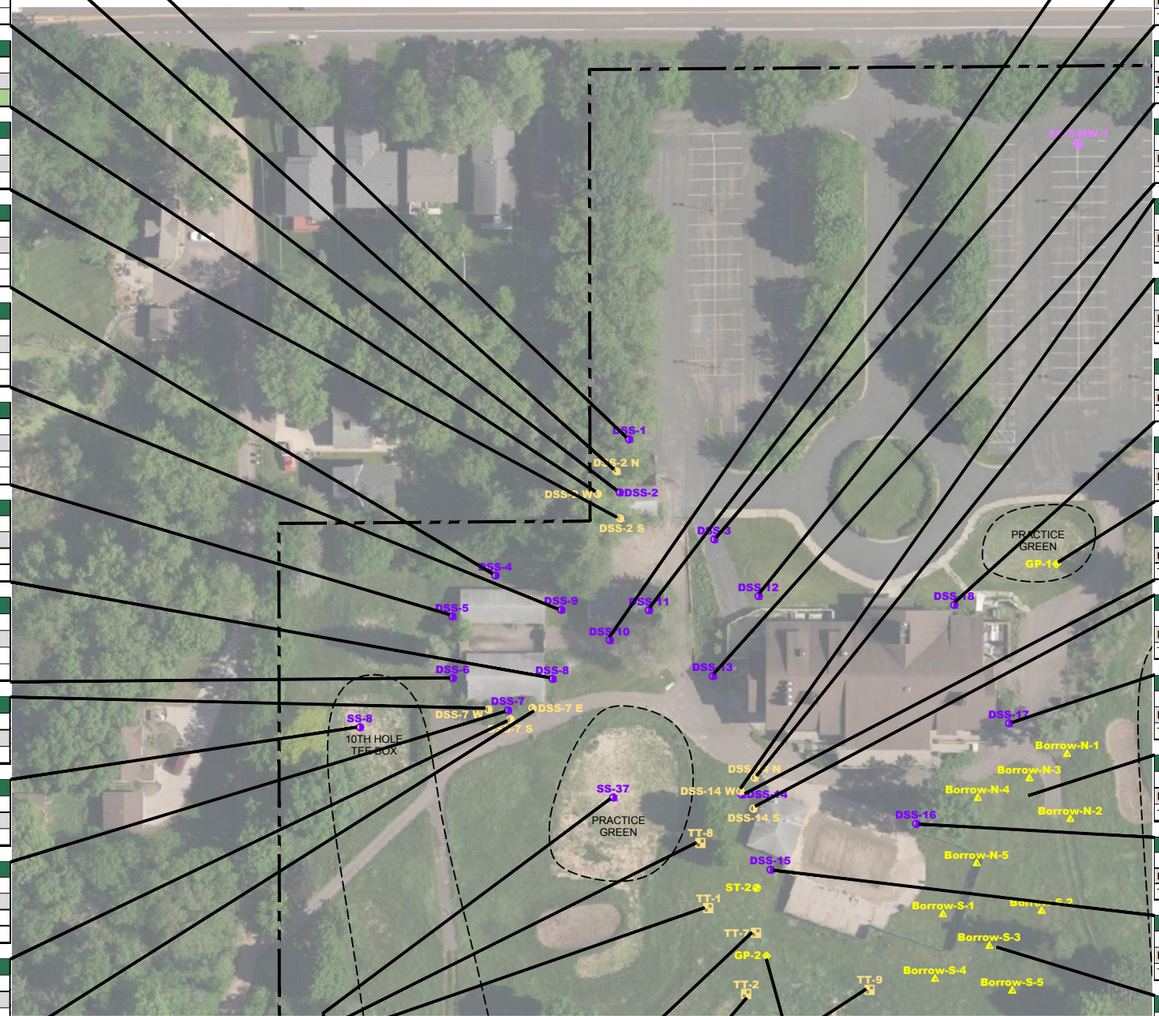
Soil Analytical Results Sheet Overview Map

Figure 5

N

150' 0 300'

SCALE: 1" = 300'



DSS-1		
date		
Depth	0-0.5	1-1.5
Total Mercury	0.37	0.38
No BAP Equivalent Exceedances		

DSS-2 N	
11/15/2021	
Depth	0-0.5
BaP Equivalent	1.1

DSS-2		
7/2/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.38	0.31
BaP Equivalent	3.0	1.3

DSS-2 W	
11/15/2021	
Depth	0-0.5
BaP Equivalent	2.1

DSS-2 S	
11/15/2021	
Depth	0-0.5
BaP Equivalent	0.6

DSS-4		
7/2/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.37	0.38
No BAP Equivalent Exceedances		

DSS-9		
7/2/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.52	0.099
No BAP Equivalent Exceedances		

DSS-5		
7/2/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.37	0.38
No BAP Equivalent Exceedances		

DSS-8			
7/2/2020			
Depth	0-0.5	1-1.5	(Dup)
Total Mercury	0.31	0.3	0.38
No BAP Equivalent Exceedances			

DSS-6		
7/2/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.37	0.38
No BAP Equivalent Exceedances		

DSS-7 W	
11/16/2021	
Depth	0-0.5
Total Mercury	0.084

SS-8		
6/11/2020		
Depth	0-0.5	1-1.5
Total Mercury	6.5	0.03

DSS-7		
7/2/2020		
Depth	0-0.5	1-1.5
Total Mercury	3.3	0.3
No BAP Equivalent Exceedances		

DSS-7 S	
11/16/2021	
Depth	0-0.5
Total Mercury	0.095

DSS-7 E	
11/16/2021	
Depth	0-0.5
Total Mercury	0.62

SS-37		
6/11/2020		
Depth	0-0.5	1-1.5
Total Mercury	2.0	0.089

TT-8	
6/25/2020	
Depth	0-6
No soil impacts observed, no sample collected	

TT-1			
6/24/2020			
Depth	2-4	2-4 (Hotspot)	6-7
Total Mercury	<0.019	0.064	0.45
GRO	<10.6	199.0	<10.9

TT-7		
6/24/2020		
Depth	3-5	
Total Mercury	0.059	

TT-2		
6/24/2020		
Depth	2-3	
Total Mercury	<0.022	

TT-9	
6/25/2020	
Depth	3-5
Total Mercury	0.059

GP-2		
5/7/2019		
Depth	0-1	4-5
Total Mercury	0.13	0.12

DSS-10	
7/2/2020	
Depth	0-0.5
Total Mercury	0.16
No BAP Equivalent Exceedances	

DSS-11		
7/2/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.29	0.089
No BAP Equivalent Exceedances		

DSS-3	
7/2/2020	
Depth	0-0.5
Total Mercury	0.11

DSS-12	
7/2/2020	
Depth	0-0.5
Total Mercury	0.042

DSS-13		
7/2/2020		
Depth	0-0.5	1-1.5
Total Mercury	2.0	1.7

DSS-14 W	
11/16/2021	
Depth	0-0.5
Total Mercury	0.71

DSS-14 N	
11/16/2021	
Depth	0-0.5
Total Mercury	0.19

DSS-18		
7/2/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.62	0.89

GP-1		
5/7/2019		
Depth	0-1	1-2
Total Mercury	<0.020	<0.019

DSS-14		
7/2/2020		
Depth	0-0.5	1-1.5
Total Mercury	4.1	0.91

DSS-14 S	
11/16/2021	
Depth	0-0.5
Total Mercury	0.8

DSS-17		
7/2/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.79	0.062

Borrow-N		
11/15/2021		
Depth	0-0.5	1-1.5
Total Mercury	1.2	1.0

DSS-16			
7/2/2020			
Depth	0-0.5	1-1.5	(Dup)
Total Mercury	1.6	0.11	1.1

DSS-15		
7/2/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.31	0.24

Borrow-S		
11/15/2021		
Depth	0-0.5	1-1.5
Total Mercury	0.51	0.11

NOTES

Minnesota Pollution Control Agency (MPCA) SRVs updated May 2021 and SLVs updated June 2013.

Analytical results are in milligrams per kilogram (mg/kg).

BaP Equivalent = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of carcinogenic PAHs.

< = Not detected at or above the laboratory reporting limit indicated.

SRV =Soil Reference Value

BaP Equivalent BTV = 2 mg/kg

Exceeds Residential/Recreational SRV = 2.7 mg/kg

Exceeds Commercial/Industrial SRV = 3.1 mg/kg

Exceeds 100 mg/kg for DRO/GRO[f] or 10 ppm for PID

- **SOIL BORING LOCATION**
- **SOIL BORING / TEMPORARY WELL LOCATION**
- **SOIL BORING / PERMANENT WELL LOCATION**
- **MONITORING WELL LOCATION**
- **AGRICULTURAL CHEMICAL SOIL BORING LOCATION**
- **TEST TRENCH LOCATION**
- **SHALLOW HAND AUGER BORING LOCATION**
- **WELL LOCATION**
- **SURFACE WATER SAMPLE**
- **SEDIMENT SAMPLE LOCATION**
- **POTENTIAL WETLAND SAMPLE LOCATION**
- **SURFACE WATER SAMPLE LOCATION**
- **HOLLOW STEM AUGER BORING LOCATION**
- **PUSH PROBE BORING LOCATION**
- **COMPOSITE SOIL SAMPLE LOCATION**
- **SHALLOW HAND AUGER BORING LOCATION (2021)**
- **CONFIRMATION SAMPLE LOCATION**

N

50' 0 100'

SCALE: 1" = 100'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00H

Drawn By:	BJB
Date Drawn:	5/23/19
Checked By:	MK
Last Modified:	8/24/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

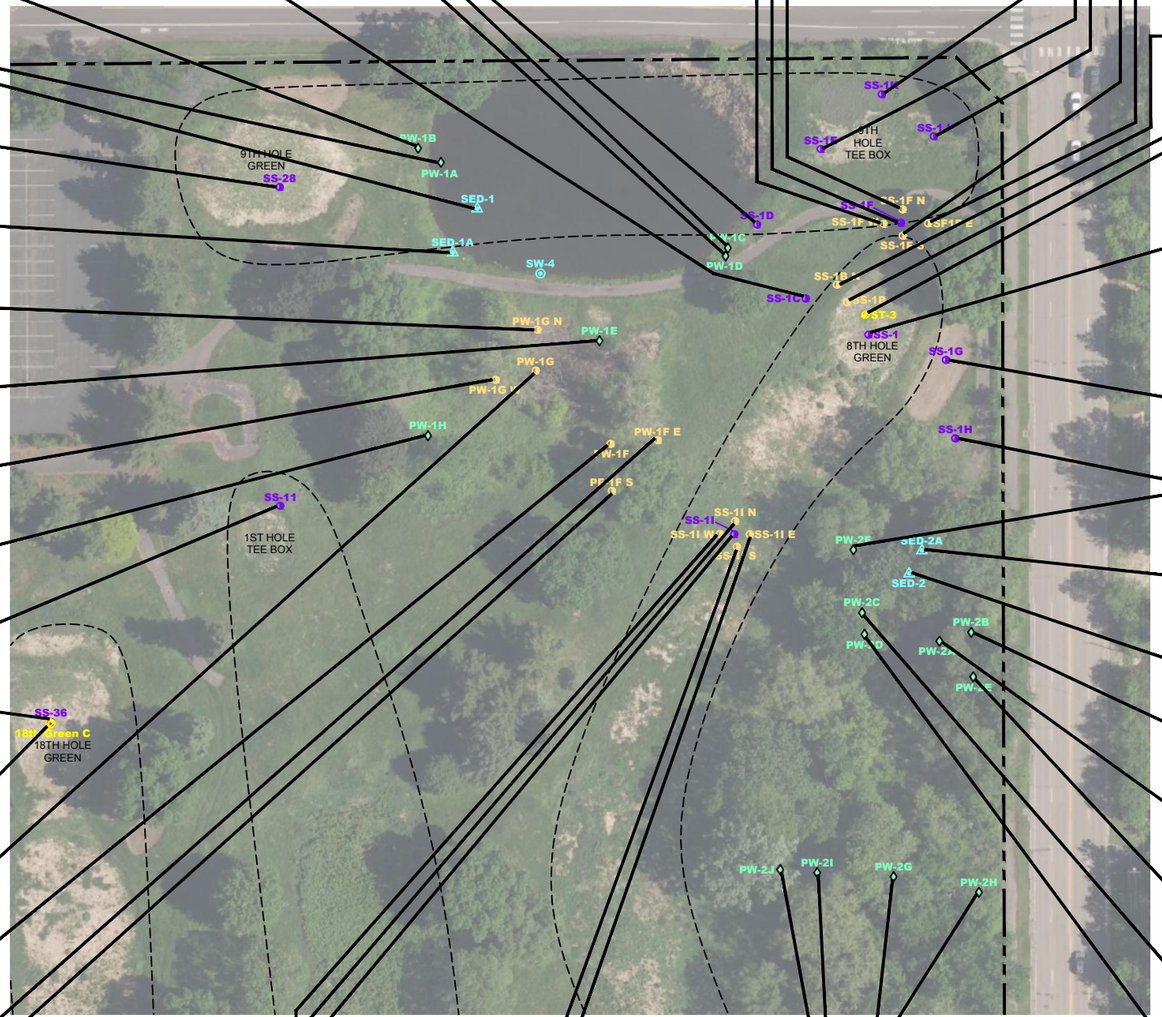
Saint Paul, Minnesota

Soil Analytical Results

Sheet: 01 of 13

Fig: 5

F:\2019\B1903316\CAD\B1903316-00H.dwg,01,8/24/2022 1:40:02 PM



SS-1D	
6/7/2020	
Depth	0-0.5 / 1-1.5
Total Mercury	0.039 / 0.028

SS-1C		
6/7/2020		
Depth	0-0.5	1-1.5
Total Arsenic	3.2	3.7
Total Mercury	0.08	0.057

PW-1C	
8/12/2020	
Depth	0-0.5
Total Mercury	0.31

PW-1D	
8/12/2020	
Depth	0-0.5
Total Mercury	0.54

SS-1F N	
11/16/2021	
Depth	0-0.5
Total Mercury	0.84

SS-1F		
6/7/2020		
Depth	0-0.5	1-1.5
Total Mercury	6.6	0.057

SS-1F W	
11/16/2021	
Depth	0-0.5
Total Mercury	16.1

SS-1J		
6/7/2020		
Depth	0-0.5	1-1.5
Total Mercury	5.1	0.087

SS-1E		
6/7/2020		
Depth	0-0.5	1-1.5
Total Mercury	3.9	0.11

SS-1K		
6/7/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.9	0.1

SS-1F S	
11/16/2021	
Depth	0-0.5
Total Mercury	0.026

SS-1F E	
11/16/2021	
Depth	0-0.5
Total Mercury	0.94

SS-1B N		
11/15/2021		
Depth	0-0.5	1-1.5
Total Mercury	4.7	3.6

SS-1B				
Date	6/7/2020			11/15/2021
Depth	0-0.5	1-1.5	2-2.5	2-2.5
Total Arsenic	117.0	29.1	2.5	--
Total Mercury	38.2	11.6	13.0	13.0

ST-3	
4/12-13/19	
Depth	0-2
Total Arsenic	15.7
Total Mercury	6.3

SS-1	
4/19/2019	
Depth	0-0.5
Total Mercury	18.6

SS-1G		
6/7/2020		
Depth	0-0.5'	1-1.5'
Total Mercury	<0.022	0.028

SS-1H		
6/7/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.13	<0.021

PW-2F		
8/12/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.28	0.22

SED-2A	
7/15/2020	
Depth	0-0.5
Total Mercury	0.59

SED-2	
7/2/2020	
Total Mercury	0.21

PW-2B	
8/12/2020	
Depth	0-0.5
Total Mercury	0.16

PW-2A	
8/12/2020	
Depth	0-0.5
Total Mercury	0.73

PW-2E	
8/12/2020	
Depth	0-0.5
Total Mercury	0.028

PW-2C	
8/12/2020	
Depth	0-0.5
Total Mercury	0.94

PW-2D	
8/12/2020	
Depth	0-0.5
Total Mercury	1.9

PW-1B	
8/12/2020	
Depth	0-0.5
Total Mercury	2.8

PW-1A	
8/12/2020	
Depth	0-0.5
Total Mercury	0.41

SED-1	
7/2/2020	
Total Mercury	0.73

SS-28		
6/7/2020		
Depth	0-0.5	1-1.5
Total Mercury	110.0	0.22

SED-1A	
7/15/2020	
Depth	0-0.5
Total Mercury	0.23

PW-1G N	
11/16/2021	
Depth	0-0.5
Total Mercury	1.0

PW-1E	
8/12/2020	
Depth	0-0.5
Total Mercury	0.94

PW-1G W	
11/16/2021	
Depth	0-0.5
Total Mercury	8.8

PW-1H	
8/12/2020	
Depth	0-0.5
Total Mercury	0.83

SS-11	
5/10/2019	
Depth	0-0.5
Total Mercury	5.2

SS-36		
6/15/2020		
Depth	0-0.5	1-1.5
Total Mercury	2.0	0.1

18th Green C	
11/18/2021	
Depth	0-0.5
Total Mercury	66.5

PW-1G		
Date	8/12/2020	11/16/2021
Depth	0-0.5	1-1.5
Total Mercury	16.5	0.076

PW-1F		
Date	8/12/2020	11/16/2021
Depth	0-0.5	1-1.5
Total Mercury	26.3	0.063

PW-1F E	
11/16/2021	
Depth	0-0.5
Total Mercury	0.7

PW-1F S	
11/16/2021	
Depth	0-0.5
Total Mercury	1.2

SS-1I W	
11/16/2021	
Depth	0-0.5
Total Mercury	4.4

SS-1I N	
11/16/2021	
Depth	0-0.5
Total Mercury	2.4

SS-1I		
6/7/2020		
Depth	0-0.5	1-1.5
Total Mercury	6.7	0.2

SS-1I S	
11/16/2021	
Depth	0-0.5
Total Mercury	4.6

SS-1I E	
11/16/2021	
Depth	0-0.5
Total Mercury	7.1

PW-2J	
8/12/2020	
Depth	0-0.5
Total Mercury	0.063

PW-2I	
8/12/2020	
Depth	0-0.5
Total Mercury	0.18

PW-2H	
8/12/2020	
Depth	0-0.5
Total Mercury	0.2

PW-2G	
8/12/2020	
Depth	0-0.5
Total Mercury	0.13

NOTES

Minnesota Pollution Control Agency (MPCA) SRVs updated May 2021 and SLVs updated June 2013.
Analytical results are in milligrams per kilogram (mg/kg).
BaP Equivalent = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of carcinogenic PAHs.
< = Not detected at or above the laboratory reporting limit indicated.
SRV =Soil Reference Value
BaP Equivalent BTV = 2 mg/kg

Exceeds Residential/Recreational SRV = 2.7 mg/kg
Exceeds Commercial/Industrial SRV = 3.1 mg/kg
Exceeds 100 mg/kg for DRO/GRO[f] or 10 ppm for PID

- SOIL BORING LOCATION
- SOIL BORING / TEMPORARY WELL LOCATION
- SOIL BORING / PERMANENT WELL LOCATION
- MONITORING WELL LOCATION
- AGRICULTURAL CHEMICAL SOIL BORING LOCATION
- TEST TRENCH LOCATION
- SHALLOW HAND AUGER BORING LOCATION
- WELL LOCATION
- SURFACE WATER SAMPLE
- SEDIMENT SAMPLE LOCATION
- POTENTIAL WETLAND SAMPLE LOCATION
- SURFACE WATER SAMPLE LOCATION
- HOLLOW STEM AUGER BORING LOCATION
- PUSH PROBE BORING LOCATION
- COMPOSITE SOIL SAMPLE LOCATION
- SHALLOW HAND AUGER BORING LOCATION (2021)
- CONFIRMATION SAMPLE LOCATION

50' 0 100'

SCALE: 1" = 100'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00
Drawing No: B1903316-00H
Drawn By: BJB
Date Drawn: 5/23/19
Checked By: MK
Last Modified: 8/24/22

Project Information

Hillcrest Redevelopment Site

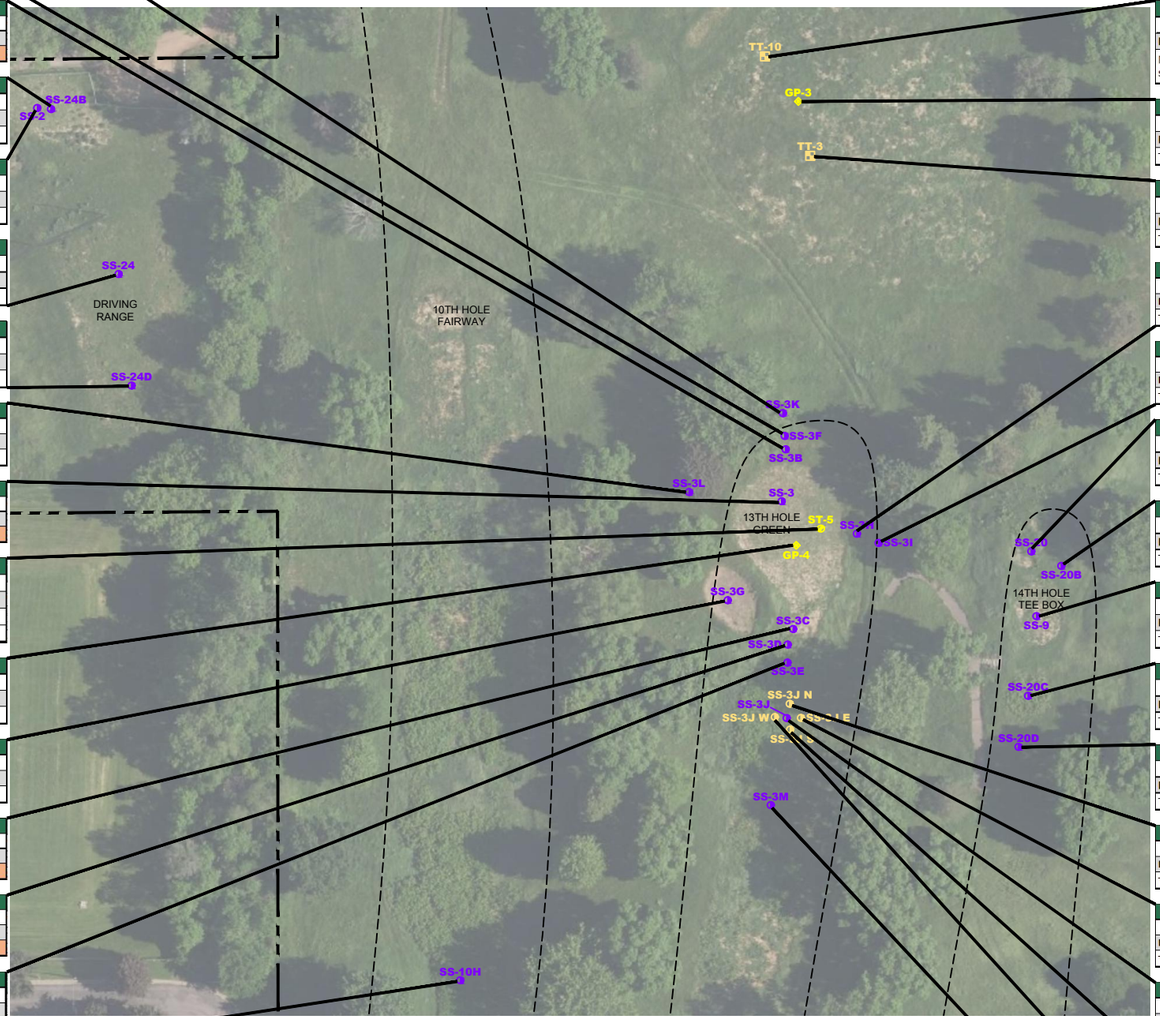
2200 Larpenteur Avenue E

Saint Paul, Minnesota

Soil Analytical Results

Sheet: 02 of 13
Fig: 5

F:\2019\B1903316\CAD\B1903316-00H.dwg,02.8/24/2022 1:40:03 PM



SS-3K		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.9	0.1

SS-3F	
5/10/2019	
Depth	0-0.5
Total Mercury	9.9

SS-3B	
5/1/2019	
Depth	0-0.5
Total Mercury	17.8

SS-24B		
6/12/2020		
Depth	0-0.5	1-1.5
Total Mercury	<0.021	<0.021

SS-2	
4/19/2019	
Depth	0-0.5
Total Mercury	0.089

SS-24		
6/12/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.23	<0.022

SS-24D		
6/12/2020		
Depth	0-0.5	1-1.5
Total Mercury	<0.022	<0.020

SS-3L		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	1.4	0.054

SS-3	
4/19/2019	
Depth	0-0.5
Total Mercury	43.4

ST-5	
4/12/2019	
Depth	1-3
Total Arsenic	<5.3
Total Mercury	0.044

GP-4		
5/7/2019		
Depth	1-2	2-3
Total Mercury	1.4	0.047

SS-3G		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.15	<0.022

SS-3C	
5/1/2019	
Depth	0-0.5
Total Mercury	144.0

SS-3D	
5/1/2019	
Depth	0-0.5
Total Mercury	113.0

SS-3E	
5/10/2019	
Depth	0-0.5
Total Mercury	15.1

SS-10H		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	3.5	<0.023

TT-10	
6/25/2020	
Depth	0-6
No soil impacts observed, no sample collected	

GP-3		
5/7/2019		
Depth	0-1	1-2
Total Mercury	0.068	0.026

TT-3	
6/24/2020	
Depth	1-2
Total Mercury	0.041

SS-3H		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	130.0	1.8

SS-3I		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.92	0.051

SS-20		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.021	0.07

SS-20B			
6/9/2020			
Depth	0-0.5	(Dup)	1-1.5
Total Mercury	0.33	0.26	0.11

SS-9	
5/1/2019	
Depth	0-0.5
Total Mercury	0.45

SS-20C		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	6.8	0.023

SS-20D		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	2.8	0.068

SS-3J N	
11/17/2021	
Depth	0-0.5
Total Mercury	2.5

SS-3J E	
11/17/2021	
Depth	0-0.5
Total Mercury	3.8

SS-3J		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	4.0	0.14

SS-3J S	
11/17/2021	
Depth	0-0.5
Total Mercury	3.9

SS-3J W	
11/17/2021	
Depth	0-0.5
Total Mercury	3.7

SS-3M			
date			
Depth	0-0.5	(Dup)	1-1.5
Total Mercury	1.5	1.2	0.043

NOTES

Minnesota Pollution Control Agency (MPCA) SRVs updated May 2021 and SLVs updated June 2013.

Analytical results are in milligrams per kilogram (mg/kg).

BaP Equivalent = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of carcinogenic PAHs.

< = Not detected at or above the laboratory reporting limit indicated.

SRV =Soil Reference Value

BaP Equivalent BTV = 2 mg/kg

Exceeds Residential/Recreational SRV = 2.7 mg/kg

Exceeds Commercial/Industrial SRV = 3.1 mg/kg

Exceeds 100 mg/kg for DRO/GRO[f] or 10 ppm for PID

- SOIL BORING LOCATION
- SOIL BORING / TEMPORARY WELL LOCATION
- SOIL BORING / PERMANENT WELL LOCATION
- MONITORING WELL LOCATION
- AGRICULTURAL CHEMICAL SOIL BORING LOCATION
- TEST TRENCH LOCATION
- SHALLOW HAND AUGER BORING LOCATION
- WELL LOCATION
- SURFACE WATER SAMPLE
- SEDIMENT SAMPLE LOCATION
- POTENTIAL WETLAND SAMPLE LOCATION
- SURFACE WATER SAMPLE LOCATION
- HOLLOW STEM AUGER BORING LOCATION
- PUSH PROBE BORING LOCATION
- COMPOSITE SOIL SAMPLE LOCATION
- SHALLOW HAND AUGER BORING LOCATION (2021)
- CONFIRMATION SAMPLE LOCATION

SCALE: 1" = 100'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00H

Drawn By:	BJB
Date Drawn:	5/23/19
Checked By:	MK
Last Modified:	8/24/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

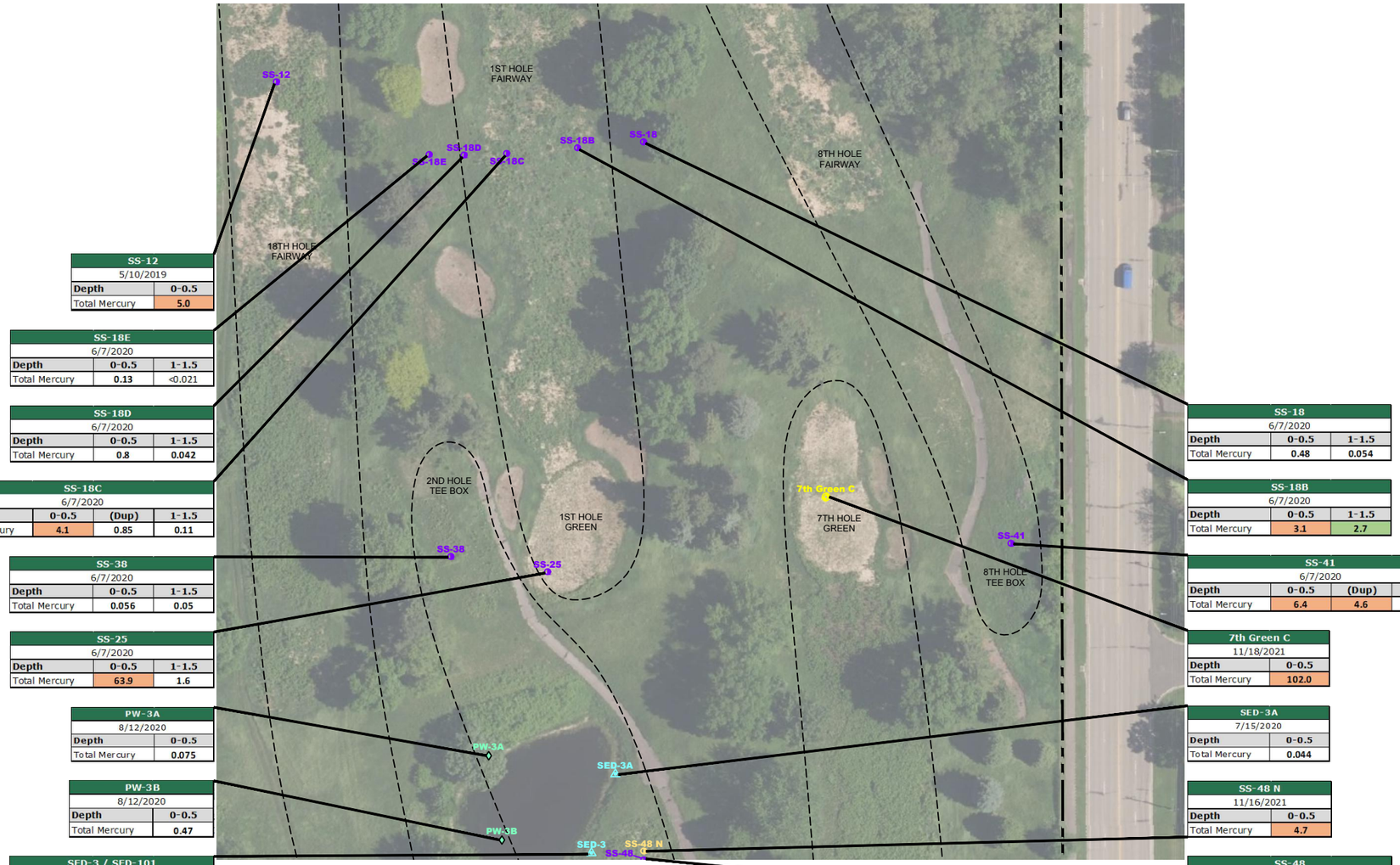
Saint Paul, Minnesota

Soil Analytical Results

Sheet: 03 of 13

Fig: 5

F:\2019\B1903316\CAD\B1903316-00H.dwg,03,8/24/2022 1:40:04 PM



SS-12	
5/10/2019	
Depth	0-0.5
Total Mercury	5.0

SS-18E		
6/7/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.13	<0.021

SS-18D		
6/7/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.8	0.042

SS-18C			
6/7/2020			
Depth	0-0.5	(Dup)	1-1.5
Total Mercury	4.1	0.85	0.11

SS-38		
6/7/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.056	0.05

SS-25		
6/7/2020		
Depth	0-0.5	1-1.5
Total Mercury	63.9	1.6

PW-3A	
8/12/2020	
Depth	0-0.5
Total Mercury	0.075

PW-3B	
8/12/2020	
Depth	0-0.5
Total Mercury	0.47

SED-3 / SED-101		
7/2/2020		
Total Mercury	0.56	0.3

SS-18		
6/7/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.48	0.054

SS-18B		
6/7/2020		
Depth	0-0.5	1-1.5
Total Mercury	3.1	2.7

SS-41			
6/7/2020			
Depth	0-0.5	(Dup)	1-1.5
Total Mercury	6.4	4.6	1.6

7th Green C	
11/18/2021	
Depth	0-0.5
Total Mercury	102.0

SED-3A	
7/15/2020	
Depth	0-0.5
Total Mercury	0.044

SS-48 N	
11/16/2021	
Depth	0-0.5
Total Mercury	4.7

SS-48		
6/7/2020		
Depth	0-0.5	1-1.5
Total Mercury	8.2	0.073

NOTES

Minnesota Pollution Control Agency (MPCA) SRVs updated May 2021 and SLVs updated June 2013.

Analytical results are in milligrams per kilogram (mg/kg).

BaP Equivalent = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of carcinogenic PAHs.

< = Not detected at or above the laboratory reporting limit indicated.

SRV =Soil Reference Value

BaP Equivalent BTV = 2 mg/kg

Exceeds Residential/Recreational SRV = 2.7 mg/kg

Exceeds Commercial/Industrial SRV = 3.1 mg/kg

Exceeds 100 mg/kg for DRO/GRO[f] or 10 ppm for PID

- SOIL BORING LOCATION
- SOIL BORING / TEMPORARY WELL LOCATION
- SOIL BORING / PERMANENT WELL LOCATION
- MONITORING WELL LOCATION
- AGRICULTURAL CHEMICAL SOIL BORING LOCATION
- TEST TRENCH LOCATION
- SHALLOW HAND AUGER BORING LOCATION
- WELL LOCATION
- SURFACE WATER SAMPLE
- SEDIMENT SAMPLE LOCATION
- POTENTIAL WETLAND SAMPLE LOCATION
- SURFACE WATER SAMPLE LOCATION
- HOLLOW STEM AUGER BORING LOCATION
- PUSH PROBE BORING LOCATION
- COMPOSITE SOIL SAMPLE LOCATION
- SHALLOW HAND AUGER BORING LOCATION (2021)
- CONFIRMATION SAMPLE LOCATION

SCALE: 1" = 100'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00H

Drawn By:	BJB
Date Drawn:	5/23/19
Checked By:	MK
Last Modified:	8/24/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

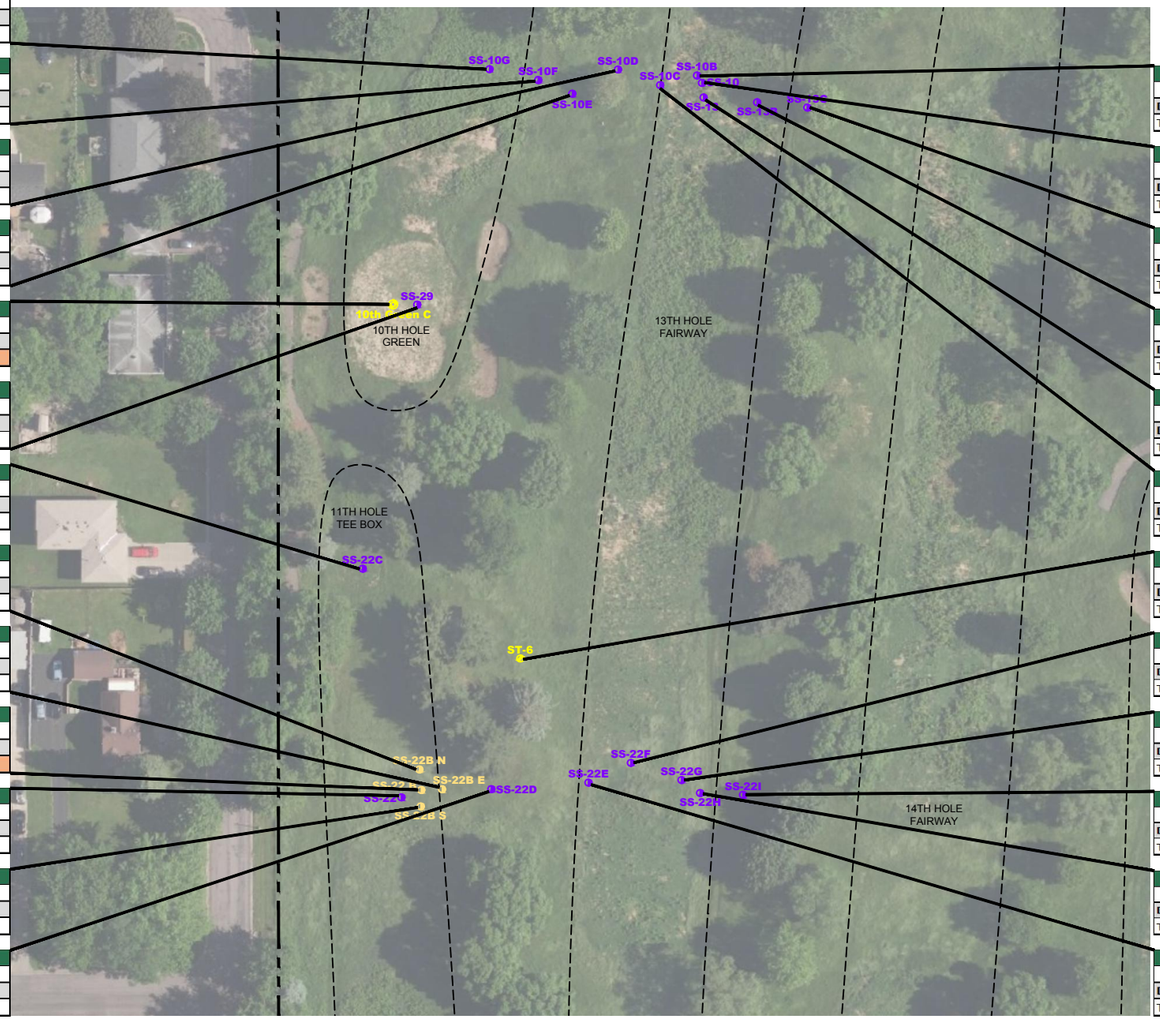
Saint Paul, Minnesota

Soil Analytical Results

Sheet: 04 of 13

Fig: 5

F:\2019\B1903316\CAD\B1903316-00H.dwg,04,8/24/2022 1:40:05 PM



SS-10G		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	2.8	0.57

SS-10F			
6/9/2020			
Depth	0-0.5	1-1.5	(Dup)
Total Mercury	2.3	0.22	0.61

SS-10D		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.87	0.071

SS-10E		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.22	<0.022

10th Green C	
11/18/2021	
Depth	0-0.5
Total Mercury	79.0

SS-29		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	79.8	0.33

SS-22C		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	4.5	0.22

SS-22B N			
11/17/2021			
Depth	0-0.5	1-1.5	2-2.5
Total Mercury	0.19	0.028	0.028

SS-22B E	
11/17/2021	
Depth	0-0.5
Total Mercury	0.37

SS-22B			
6/9/2020			
Depth	0-0.5	(Dup)	1-1.5
Total Mercury	16.9	25.0	109.0

SS-22		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	1.4	0.038

SS-22B S	
11/17/2021	
Depth	0-0.5
Total Mercury	2.2

SS-22D		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.077	0.023

SS-10B		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	3.7	0.04

SS-10	
5/1/2019	
Depth	0-0.5
Total Mercury	4.7

SS-13C		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	<0.023	0.087

SS-13B		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	3.0	0.08

SS-13	
5/10/2019	
Depth	0-0.5
Total Mercury	5.1

SS-10C		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	1.7	<0.023

ST-6	
4/12/2019	
Depth	2-4
Total Mercury	<0.020

SS-22F		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	3.0	0.072

SS-22G		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	4.7	0.073

SS-22I		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.066	<0.023

SS-22H		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	1.8	0.08

SS-22E		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	2.2	0.15

NOTES

Minnesota Pollution Control Agency (MPCA) SRVs updated May 2021 and SLVs updated June 2013.

Analytical results are in milligrams per kilogram (mg/kg).

BaP Equivalent = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of carcinogenic PAHs.

< = Not detected at or above the laboratory reporting limit indicated.

SRV =Soil Reference Value

BaP Equivalent BTV = 2 mg/kg

Exceeds Residential/Recreational SRV = 2.7 mg/kg

Exceeds Commercial/Industrial SRV = 3.1 mg/kg

Exceeds 100 mg/kg for DRO/GRO[f] or 10 ppm for PID

- SOIL BORING LOCATION
- SOIL BORING / TEMPORARY WELL LOCATION
- SOIL BORING / PERMANENT WELL LOCATION
- MONITORING WELL LOCATION
- AGRICULTURAL CHEMICAL SOIL BORING LOCATION
- TEST TRENCH LOCATION
- SHALLOW HAND AUGER BORING LOCATION
- WELL LOCATION
- SURFACE WATER SAMPLE
- SEDIMENT SAMPLE LOCATION
- POTENTIAL WETLAND SAMPLE LOCATION
- SURFACE WATER SAMPLE LOCATION
- HOLLOW STEM AUGER BORING LOCATION
- PUSH PROBE BORING LOCATION
- COMPOSITE SOIL SAMPLE LOCATION
- SHALLOW HAND AUGER BORING LOCATION (2021)
- CONFIRMATION SAMPLE LOCATION

SCALE: 1" = 100'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00H

Drawn By:	BJB
Date Drawn:	5/23/19
Checked By:	MK
Last Modified:	8/24/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

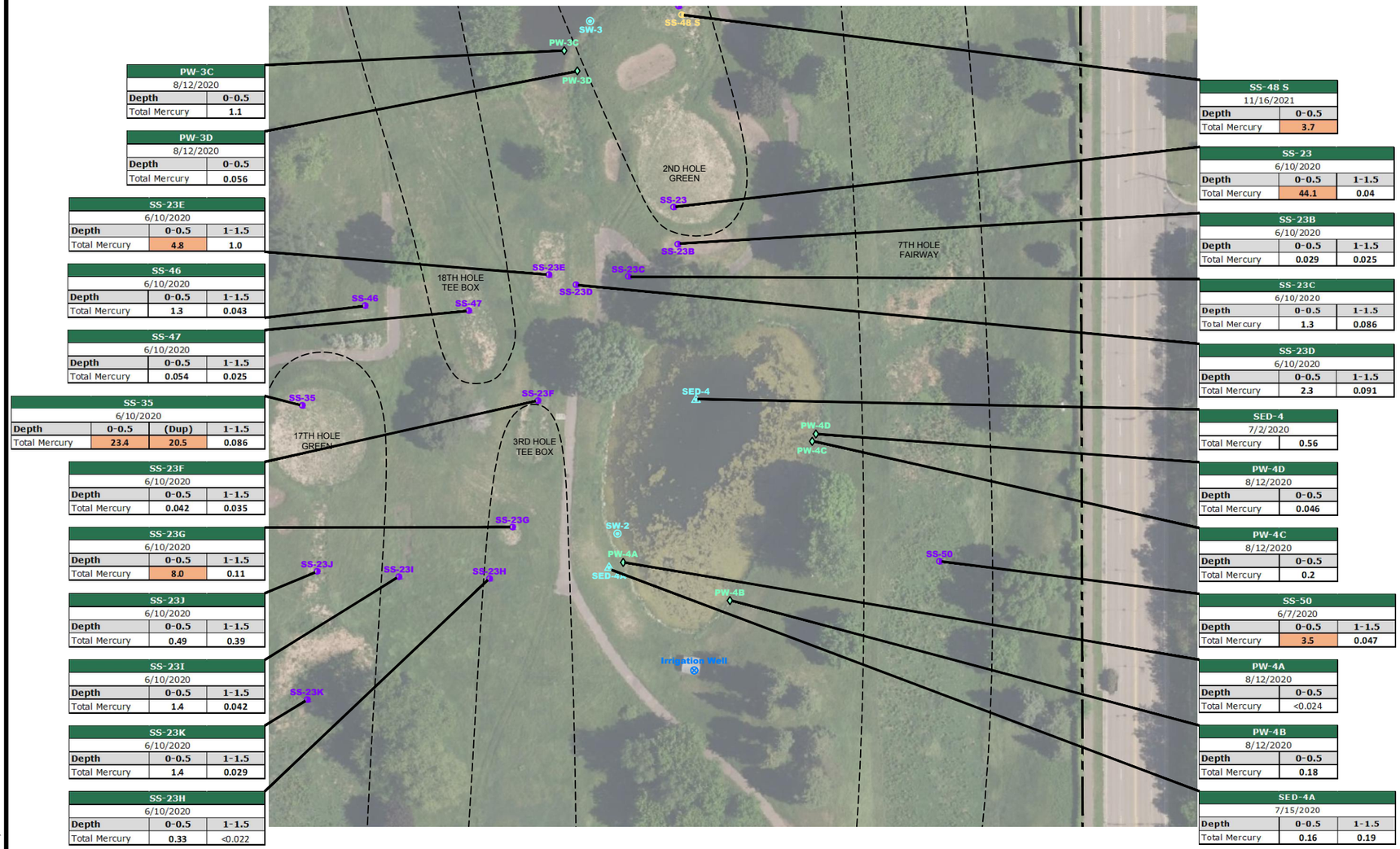
Saint Paul, Minnesota

Soil Analytical Results

Sheet: 05 of 13

Fig: 5

F:\2019\B1903316\CAD\B1903316-00H.dwg,05.8/24/2022 1:40:06 PM



PW-3C	
8/12/2020	
Depth	**0-0.5**
Total Mercury	**1.1**

PW-3D	
8/12/2020	
Depth	**0-0.5**
Total Mercury	**0.056**

SS-23E		
6/10/2020		
Depth	**0-0.5**	**1-1.5**
Total Mercury	**4.8**	**1.0**

SS-46		
6/10/2020		
Depth	**0-0.5**	**1-1.5**
Total Mercury	**1.3**	**0.043**

SS-47		
6/10/2020		
Depth	**0-0.5**	**1-1.5**
Total Mercury	**0.054**	**0.025**

SS-35			
6/10/2020			
Depth	**0-0.5**	**(Dup)**	**1-1.5**
Total Mercury	**23.4**	**20.5**	**0.086**

SS-23F		
6/10/2020		
Depth	**0-0.5**	**1-1.5**
Total Mercury	**0.042**	**0.035**

SS-23G		
6/10/2020		
Depth	**0-0.5**	**1-1.5**
Total Mercury	**8.0**	**0.11**

SS-23J		
6/10/2020		
Depth	**0-0.5**	**1-1.5**
Total Mercury	**0.49**	**0.39**

SS-23I		
6/10/2020		
Depth	**0-0.5**	**1-1.5**
Total Mercury	**1.4**	**0.042**

SS-23K		
6/10/2020		
Depth	**0-0.5**	**1-1.5**
Total Mercury	**1.4**	**0.029**

SS-23H		
6/10/2020		
Depth	**0-0.5**	**1-1.5**
Total Mercury	**0.33**	<0.022

SS-48 S		
11/16/2021		
Depth	**0-0.5**	
Total Mercury	**3.7**	

SS-23		
6/10/2020		
Depth	**0-0.5**	**1-1.5**
Total Mercury	**44.1**	**0.04**

SS-23B		
6/10/2020		
Depth	**0-0.5**	**1-1.5**
Total Mercury	**0.029**	**0.025**

SS-23C		
6/10/2020		
Depth	**0-0.5**	**1-1.5**
Total Mercury	**1.3**	**0.086**

SS-23D		
6/10/2020		
Depth	**0-0.5**	**1-1.5**
Total Mercury	**2.3**	**0.091**

SED-4	
7/2/2020	
Total Mercury	**0.56**

PW-4D	
8/12/2020	
Depth	**0-0.5**
Total Mercury	**0.046**

PW-4C	
8/12/2020	
Depth	**0-0.5**
Total Mercury	**0.2**

SS-50		
6/7/2020		
Depth	**0-0.5**	**1-1.5**
Total Mercury	**3.5**	**0.047**

PW-4A	
8/12/2020	
Depth	**0-0.5**
Total Mercury	<0.024

PW-4B	
8/12/2020	
Depth	**0-0.5**
Total Mercury	**0.18**

SED-4A		
7/15/2020		
Depth	**0-0.5**	**1-1.5**
Total Mercury	**0.16**	**0.19**

NOTES

Minnesota Pollution Control Agency (MPCA) SRVs updated May 2021 and SLVs updated June 2013.

Analytical results are in milligrams per kilogram (mg/kg).

BaP Equivalent = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of carcinogenic PAHs.

< = Not detected at or above the laboratory reporting limit indicated.

SRV =Soil Reference Value

BaP Equivalent BTV = 2 mg/kg

Exceeds Residential/Recreational SRV = 2.7 mg/kg

Exceeds Commercial/Industrial SRV = 3.1 mg/kg

Exceeds 100 mg/kg for DRO/GRO[f] or 10 ppm for PID

- **SOIL BORING LOCATION**
- **SOIL BORING / TEMPORARY WELL LOCATION**
- **SOIL BORING / PERMANENT WELL LOCATION**
- **MONITORING WELL LOCATION**
- **AGRICULTURAL CHEMICAL SOIL BORING LOCATION**
- **TEST TRENCH LOCATION**
- **SHALLOW HAND AUGER BORING LOCATION**
- **WELL LOCATION**
- **SURFACE WATER SAMPLE**
- **SEDIMENT SAMPLE LOCATION**
- **POTENTIAL WETLAND SAMPLE LOCATION**
- **SURFACE WATER SAMPLE LOCATION**
- **HOLLOW STEM AUGER BORING LOCATION**
- **PUSH PROBE BORING LOCATION**
- **COMPOSITE SOIL SAMPLE LOCATION**
- **SHALLOW HAND AUGER BORING LOCATION (2021)**
- **CONFIRMATION SAMPLE LOCATION**

50' 0 100'

SCALE: 1" = 100'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00H

Drawn By: BJB
Date Drawn: 5/23/19
Checked By: MK
Last Modified: 8/24/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

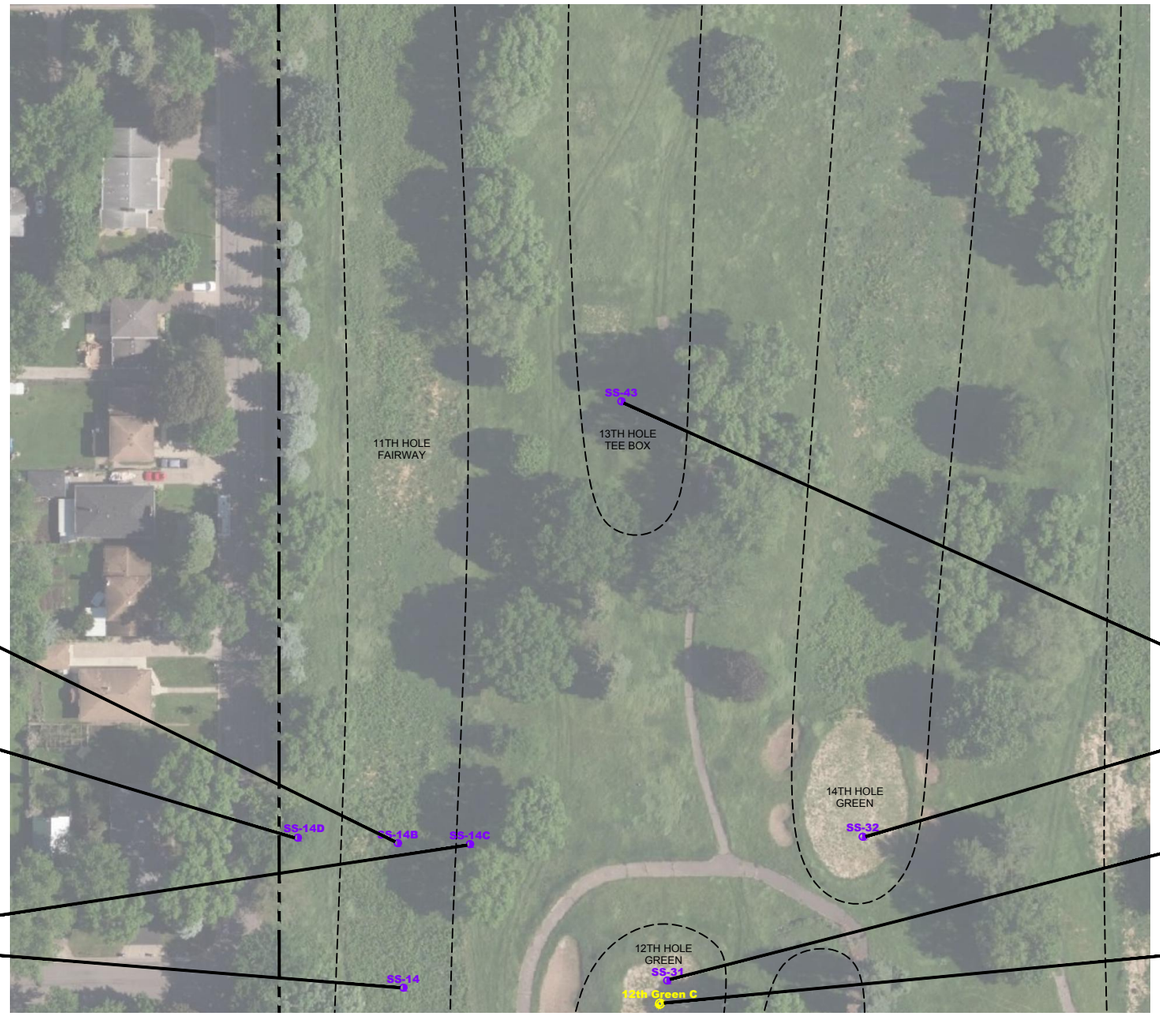
Saint Paul, Minnesota

Soil Analytical Results

Sheet: 06 of 13

Fig: 5

F:\2019\B1903316\CAD\B1903316-00H dwg,06,8/24/2022 1:40:07 PM



SS-14B		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	4.0	0.14

SS-14D		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.093	<0.024

SS-14C		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	1.7	0.2

SS-14	
5/10/2019	
Depth	0-0.5
Total Mercury	4.4

SS-43		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	2.7	0.16

SS-32		
6/9/2020		
Depth	0-0.5	1-1.5
Total Mercury	40.9	<0.022

SS-31		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	1.4	1.6

12th Green C	
11/18/2021	
Depth	0-0.5
Total Mercury	59.8

NOTES

Minnesota Pollution Control Agency (MPCA) SRVs updated May 2021 and SLVs updated June 2013.

Analytical results are in milligrams per kilogram (mg/kg).

BaP Equivalent = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of carcinogenic PAHs.

< = Not detected at or above the laboratory reporting limit indicated.

SRV =Soil Reference Value

BaP Equivalent BTV = 2 mg/kg

Exceeds Residential/Recreational SRV = 2.7 mg/kg

Exceeds Commercial/Industrial SRV = 3.1 mg/kg

Exceeds 100 mg/kg for DRO/GRO[f] or 10 ppm for PID

- SOIL BORING LOCATION
- SOIL BORING / TEMPORARY WELL LOCATION
- SOIL BORING / PERMANENT WELL LOCATION
- MONITORING WELL LOCATION
- AGRICULTURAL CHEMICAL SOIL BORING LOCATION
- TEST TRENCH LOCATION
- SHALLOW HAND AUGER BORING LOCATION
- WELL LOCATION
- SURFACE WATER SAMPLE
- SEDIMENT SAMPLE LOCATION
- POTENTIAL WETLAND SAMPLE LOCATION
- SURFACE WATER SAMPLE LOCATION
- HOLLOW STEM AUGER BORING LOCATION
- PUSH PROBE BORING LOCATION
- COMPOSITE SOIL SAMPLE LOCATION
- SHALLOW HAND AUGER BORING LOCATION (2021)
- CONFIRMATION SAMPLE LOCATION

50' 0 100'

SCALE: 1" = 100'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00H

Drawn By:	BJB
Date Drawn:	5/23/19
Checked By:	MK
Last Modified:	8/24/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

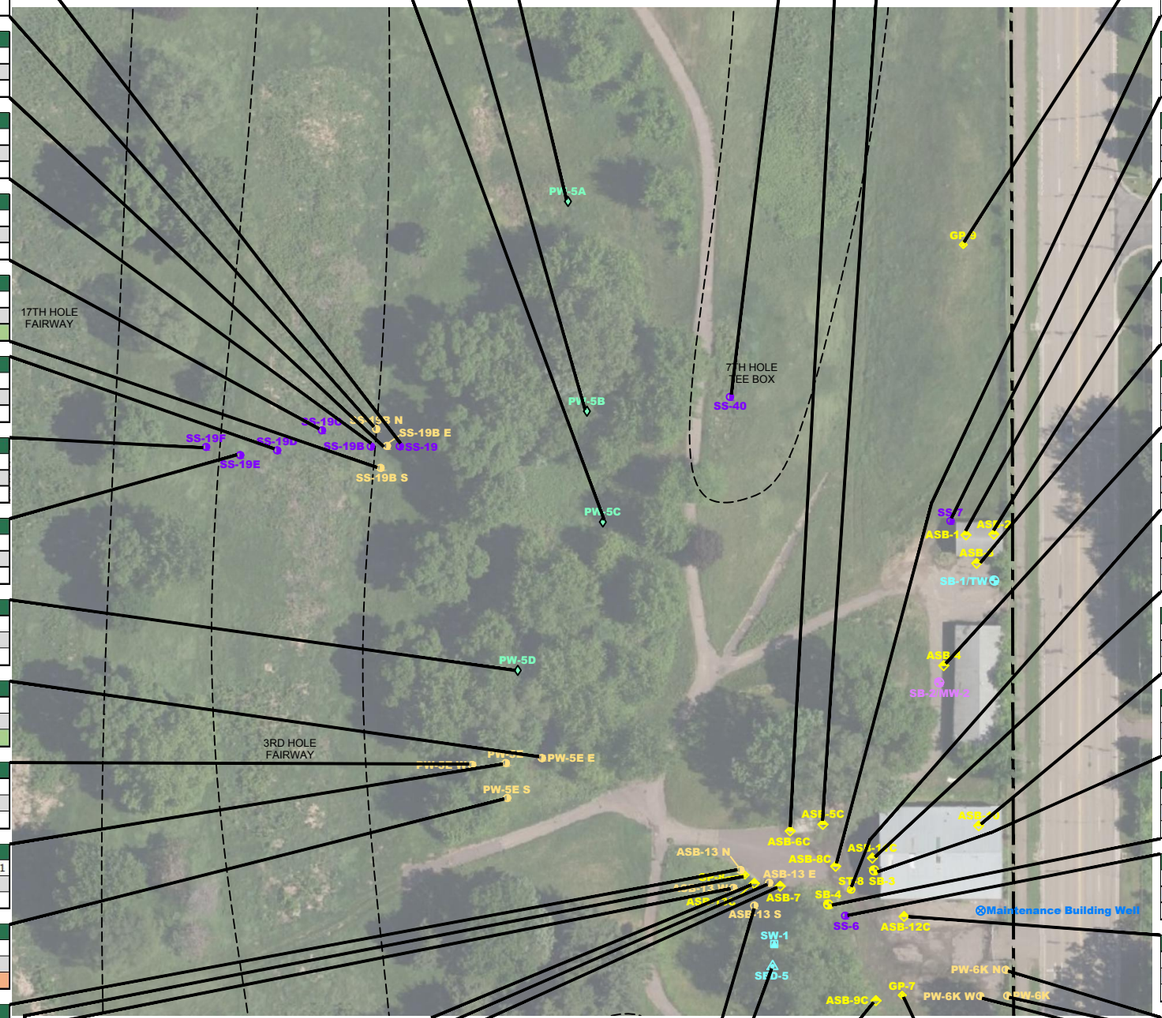
Saint Paul, Minnesota

Soil Analytical Results

Sheet: 07 of 13

Fig: 5

F:\2019\B1903316\CAD\B1903316-00H.dwg,07.8/24/2022 1:40:08 PM



PW-5A	
8/12/2020	
Depth	0-0.5
Total Mercury	0.14

PW-5B	
8/12/2020	
Depth	0-0.5
Total Mercury	0.098

PW-5C	
8/12/2020	
Depth	0-0.5
Total Mercury	0.084

SS-40		
6/11/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.4	0.036

ASB-6C			
6/22/2020			
Depth	0-0.5	2-2.5	(Dup)
Total Mercury	0.21	<0.021	<0.024

ASB-5C		
6/23/2020		
Depth	0-0.5	2-2.5
Total Mercury	<0.023	<0.024

GP-9		
date		
Depth	0-1	5-6
Total Mercury	0.23	0.033

ASB-8C				
6/22/2020				
Depth	0-0.5	2-2.5	(Dup)	4-4.5
Total Mercury	1.1	0.58	0.14	0.037

SS-19		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	1.1	0.12

SS-19B N	
11/16/2021	
Depth	0-0.5
Total Mercury	2.9

SS-19B E	
11/16/2021	
Depth	0-0.5
Total Mercury	2.3

SS-19B		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	3.1	0.65

SS-19C		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	3.0	0.3

SS-19B S	
11/16/2021	
Depth	0-0.5
Total Mercury	2.8

SS-19D		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	2.0	0.092

SS-19F			
6/10/2020			
Depth	0-0.5	(Dup)	1-1.5
Total Mercury	0.35	0.35	0.047

SS-19E		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.67	<0.021

PW-5D	
8/12/2020	
Depth	0-0.5
Total Mercury	0.28

PW-5E E	
11/16/2021	
Depth	0-0.5
Total Mercury	2.9

PW-5E W	
11/16/2021	
Depth	0-0.5
Total Mercury	0.27

PW-5E		
Date	8/12/2020	11/16/2021
Depth	0-0.5	1-1.5
Total Mercury	8.0	0.071

PW-5E S	
11/16/2021	
Depth	0-0.5
Total Mercury	41.9

ASB-13 N		
11/18/2021		
Depth	0-0.5	1-1.5
Total Mercury	3.3	2.4

GP-8		
5/7/2019		
Depth	1-2	3-4
Total Mercury	2.3	0.74

ASB-13 W		
11/18/2021		
Depth	0-0.5	1-1.5
Total Mercury	3.3	3.6

ASB-13C				
6/22/2020				
Depth	0-0.5	2-2.5	2-2.5 DUP	4-4.5
Total Mercury	14.6	1.3	4.2	0.16

ASB-13 E		
11/18/2021		
Depth	0-0.5	1-1.5
Total Mercury	2.4	3.5

ASB-7		
6/22/2020		
Depth	0-0.5	2-2.5
Total Mercury	0.036	0.048

ASB-13 S		
11/18/2021		
Depth	0-0.5	1-1.5
Total Mercury	2.4	4.2

SED-5	
7/2/2020	
Total Mercury	0.1

ASB-9C			
6/23/2020			
Depth	0-0.5	2-2.5	4-4.5
Total Mercury	0.61	0.78	--

GP-7		
5/7/2019		
Depth	3-4	
Total Mercury	0.041	

SS-7	
4/19/2019	
Depth	0-1
Total Mercury	0.25

ASB-1		
6/22/2020		
Depth	0-0.5	2-2.5
Total Mercury	0.042	<0.022

ASB-2		
6/22/2020		
Depth	0-0.5	2-2.5
Total Mercury	0.024	<0.022

ASB-3			
6/22/2020			
Depth	0-0.5	2-2.5	4-4.5
Total Mercury	0.15	0.048	--

ASB-4		
6/22/2020		
Depth	0-0.5	2-2.5
Total Mercury	<0.018	<0.022

ST-8	
4/13/2019	
Depth	5-7
Total Mercury	0.028

ASB-11C		
6/23/2020		
Depth	0-0.5	2-2.5
Total Mercury	--	--

ASB-10		
6/22/2020		
Depth	2-2.5	
Total Mercury	<0.022	

SB-3		
6/24/2020		
Depth	6.5-7	
DRO	<9.5	

SB-4		
6/24/2020		
Depth	4-10 in	
DRO	605.0	

SS-6	
date	
Depth	1-2
Total Mercury	2.8

ASB-12C		
6/23/2020		
Depth	0-0.5	2-2.5
Total Mercury	--	--

PW-6K N	
11/18/2021	
Depth	0-0.5
Total Mercury	0.27

PW-6K		
Date	8/12/2020	11/18/2021
Depth	0-0.5	1-1.5
Total Mercury	3.4	2.3

PW-6K W	
11/18/2021	
Depth	0-0.5
Total Mercury	1.4

NOTES

Minnesota Pollution Control Agency (MPCA) SRVs updated May 2021 and SLVs updated June 2013.
Analytical results are in milligrams per kilogram (mg/kg).
BaP Equivalent = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of carcinogenic PAHs.
< = Not detected at or above the laboratory reporting limit indicated.
SRV =Soil Reference Value
BaP Equivalent BTV = 2 mg/kg

Exceeds Residential/Recreational SRV = 2.7 mg/kg
Exceeds Commercial/Industrial SRV = 3.1 mg/kg
Exceeds 100 mg/kg for DRO/GRO[f] or 10 ppm for PID

- SOIL BORING LOCATION
- SOIL BORING / TEMPORARY WELL LOCATION
- SOIL BORING / PERMANENT WELL LOCATION
- MONITORING WELL LOCATION
- AGRICULTURAL CHEMICAL SOIL BORING LOCATION
- TEST TRENCH LOCATION
- SHALLOW HAND AUGER BORING LOCATION
- WELL LOCATION
- SURFACE WATER SAMPLE
- SEDIMENT SAMPLE LOCATION
- POTENTIAL WETLAND SAMPLE LOCATION
- SURFACE WATER SAMPLE LOCATION
- HOLLOW STEM AUGER BORING LOCATION
- PUSH PROBE BORING LOCATION
- COMPOSITE SOIL SAMPLE LOCATION
- SHALLOW HAND AUGER BORING LOCATION (2021)
- CONFIRMATION SAMPLE LOCATION

50' 0 100'

SCALE: 1" = 100'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00H

Drawn By: BJB
Date Drawn: 5/23/19
Checked By: MK
Last Modified: 8/24/22

Project Information

Hillcrest Redevelopment Site

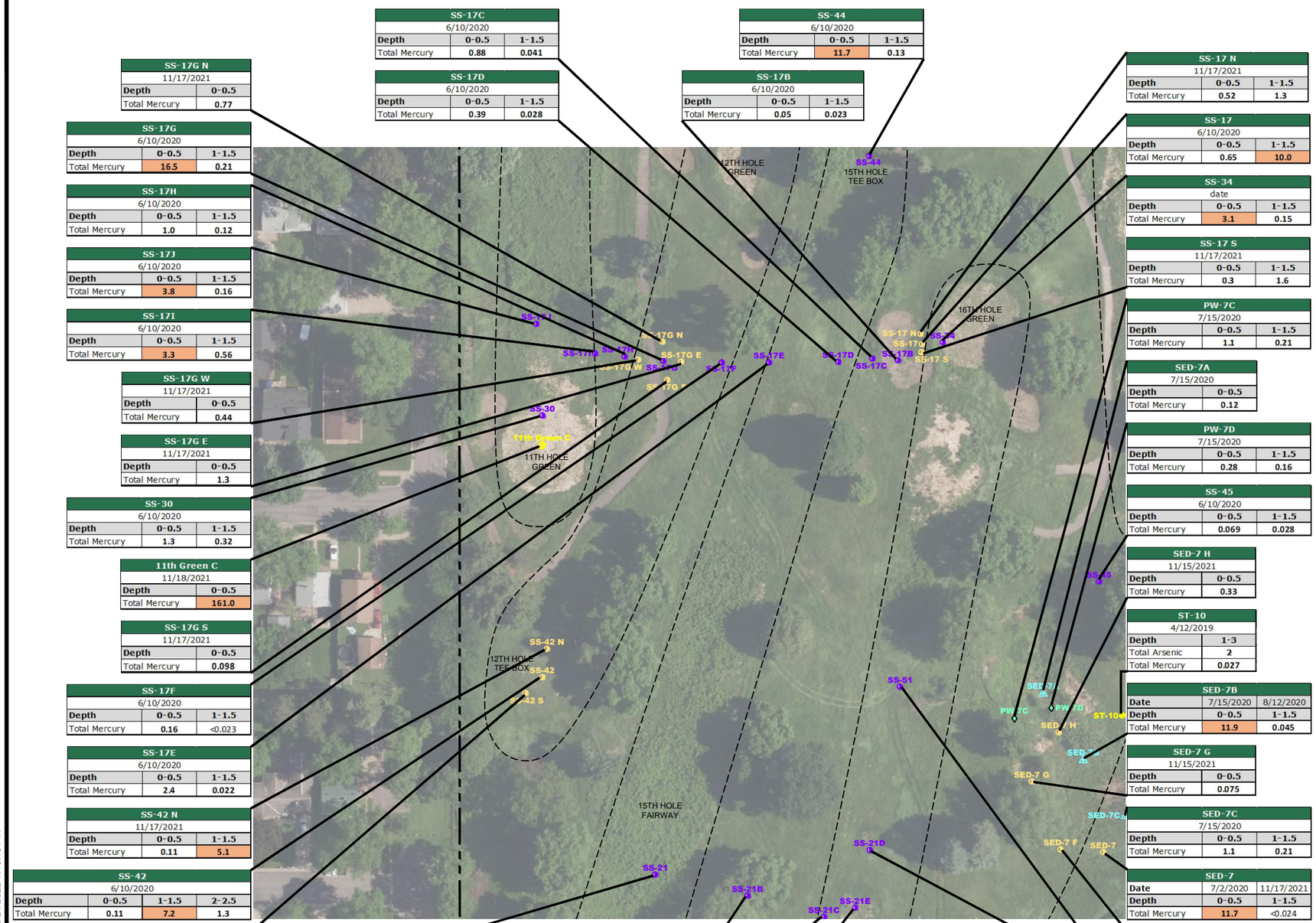
2200 Larpenteur Avenue E

Saint Paul, Minnesota

Soil Analytical Results

Sheet: 08 of 13

Fig: 5



SS-17G N	
11/17/2021	
Depth	0-0.5
Total Mercury	0.77

SS-17G		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	16.5	0.21

SS-17H		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	1.0	0.12

SS-17J		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	3.8	0.16

SS-17I		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	3.3	0.56

SS-17G W	
11/17/2021	
Depth	0-0.5
Total Mercury	0.44

SS-17G E	
11/17/2021	
Depth	0-0.5
Total Mercury	1.3

SS-30		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	1.3	0.32

11th Green C	
11/18/2021	
Depth	0-0.5
Total Mercury	161.0

SS-17G S	
11/17/2021	
Depth	0-0.5
Total Mercury	0.098

SS-17F		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.16	<0.023

SS-17E		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	2.4	0.022

SS-42 N		
11/17/2021		
Depth	0-0.5	1-1.5
Total Mercury	0.11	5.1

SS-42			
6/10/2020			
Depth	0-0.5	1-1.5	2-2.5
Total Mercury	0.11	7.2	1.3

SS-42 S		
date		
Depth	0-0.5	1-1.5
Total Mercury	0.37	0.66

SS-21		
6/11/2020		
Depth	0-0.5	1-1.5
Total Mercury	4.5	0.1

SS-21B		
6/11/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.1	<0.023

SS-21C		
6/11/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.6	0.062

SS-21E		
6/11/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.47	<0.022

SS-21D			
6/11/2020			
Depth	0-0.5	(Dup)	1-1.5
Total Mercury	0.53	0.54	0.19

SS-17C		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.88	0.041

SS-17D		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.39	0.028

SS-44		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	11.7	0.13

SS-17B		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.05	0.023

SS-17 N		
11/17/2021		
Depth	0-0.5	1-1.5
Total Mercury	0.52	1.3

SS-17		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.65	10.0

SS-34		
date		
Depth	0-0.5	1-1.5
Total Mercury	3.1	0.15

SS-17 S		
11/17/2021		
Depth	0-0.5	1-1.5
Total Mercury	0.3	1.6

PW-7C		
7/15/2020		
Depth	0-0.5	1-1.5
Total Mercury	1.1	0.21

SED-7A		
7/15/2020		
Depth	0-0.5	
Total Mercury	0.12	

PW-7D		
7/15/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.28	0.16

SS-45		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.069	0.028

SED-7 H	
11/15/2021	
Depth	0-0.5
Total Mercury	0.33

ST-10		
4/12/2019		
Depth	1-3	
Total Arsenic	2	
Total Mercury	0.027	

SED-7B		
Date	7/15/2020	8/12/2020
Depth	0-0.5	1-1.5
Total Mercury	11.9	0.045

SED-7 G	
11/15/2021	
Depth	0-0.5
Total Mercury	0.075

SED-7C		
7/15/2020		
Depth	0-0.5	1-1.5
Total Mercury	1.1	0.21

SED-7			
Date	7/2/2020	11/17/2021	
Depth	0-0.5	1-1.5	
Total Mercury	11.7	<0.024	

SED-7 F	
11/15/2021	
Depth	0-0.5
Total Mercury	0.24

SS-51		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	2.8	0.21

NOTES

Minnesota Pollution Control Agency (MPCA) SRVs updated May 2021 and SLVs updated June 2013.

Analytical results are in milligrams per kilogram (mg/kg).

BaP Equivalent = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of carcinogenic PAHs.

< = Not detected at or above the laboratory reporting limit indicated.

SRV =Soil Reference Value

BaP Equivalent BTV = 2 mg/kg

Exceeds Residential/Recreational SRV = 2.7 mg/kg

Exceeds Commercial/Industrial SRV = 3.1 mg/kg

Exceeds 100 mg/kg for DRO/GRO[f] or 10 ppm for PID

- SOIL BORING LOCATION
- SOIL BORING / TEMPORARY WELL LOCATION
- SOIL BORING / PERMANENT WELL LOCATION
- MONITORING WELL LOCATION
- AGRICULTURAL CHEMICAL SOIL BORING LOCATION
- TEST TRENCH LOCATION
- SHALLOW HAND AUGER BORING LOCATION
- WELL LOCATION
- SURFACE WATER SAMPLE
- SEDIMENT SAMPLE LOCATION
- POTENTIAL WETLAND SAMPLE LOCATION
- SURFACE WATER SAMPLE LOCATION
- HOLLOW STEM AUGER BORING LOCATION
- PUSH PROBE BORING LOCATION
- COMPOSITE SOIL SAMPLE LOCATION
- SHALLOW HAND AUGER BORING LOCATION (2021)
- CONFIRMATION SAMPLE LOCATION

50' 0 100'

SCALE: 1" = 100'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00H

Drawn By: BJB
Date Drawn: 5/23/19
Checked By: MK
Last Modified: 8/24/22

Project Information

Hillcrest Redevelopment Site

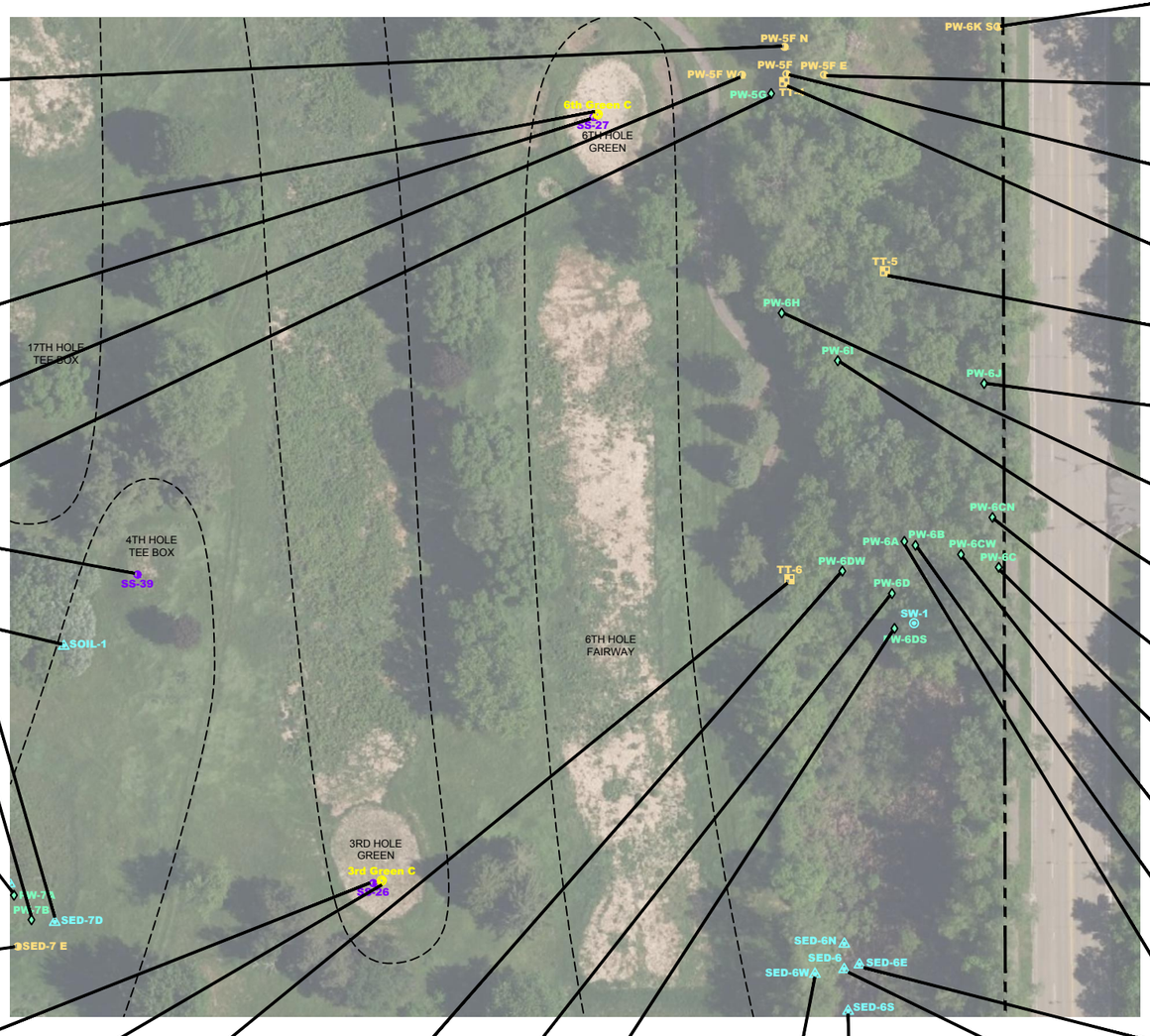
2200 Larpenteur Avenue E

Saint Paul, Minnesota

Soil Analytical Results

Sheet: 09 of 13

Fig: 5



PW-5F N	
11/18/2021	
Depth	0-0.5
Total Mercury	0.29

6th Green C	
11/18/2021	
Depth	0-0.5
Total Mercury	18.6

SS-27		
6/11/2020		
Depth	0-0.5	1-1.5
Total Mercury	3.0	1.8

PW-5F W	
11/18/2021	
Depth	0-0.5
Total Mercury	0.66

PW-5G	
8/12/2020	
Depth	0-0.5
Total Mercury	2.5

SS-39		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	4.4	<0.023

SOIL-1		
7/15/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.1	0.034

SED-7D		
7/15/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.28	0.16

PW-7A	
7/15/2020	
Depth	0-0.5
Total Mercury	0.12

PW-7B		
7/15/2020		
Depth	0-0.5	1-1.5
Total Mercury	11.9	0.045

SED-7 E		
11/15/2021		
Depth	0-0.5	1-1.5
Total Mercury	0.13	0.055

SS-26		
6/10/2020		
Depth	0-0.5	1-1.5
Total Mercury	1.7	0.64

3rd Green C	
11/18/2021	
Depth	0-0.5
Total Mercury	89.2

TT-6		
6/23/2020		
Depth	8-9	8-9 DUP
Total Mercury	4.6	7.2

PW-6D			
8/12/2020		7/13/2022	
Depth	0-0.5	Depth	1-1.5
Total Mercury	9.3	Total Mercury	0.68

PW-6D W	
7/13/2022	
Depth	0-0.5
Total Mercury	0.24

PW-6D S	
7/13/2022	
Depth	0-0.5
Total Mercury	2.5

SED-6 W	
7/13/2022	
Depth	0-0.5'
Total Mercury	0.56

SED-6 S	
7/13/2022	
Depth	0-0.5
Total Mercury	1.6

PW-6K S	
11/18/2021	
Depth	0-0.5
Total Mercury	0.11

PW-5F E	
11/18/2021	
Depth	0-0.5
Total Mercury	2.2

PW-5F		
11/18/2021		
Depth	0-0.5	1-1.5
Total Mercury	3.7	6.8

TT-4	
6/23/2020	
Depth	7-8
Total Mercury	1.2

TT-5	
6/23/2020	
Depth	2-3
Total Mercury	1.2

PW-6J	
8/12/2020	
Depth	0-0.5
Total Mercury	0.91

PW-6H	
8/12/2020	
Depth	0-0.5
Total Mercury	0.28

PW-6I	
8/12/2020	
Depth	0-0.5
Total Mercury	0.5

PW-6C N	
7/13/2022	
Depth	0-0.5
Total Mercury	4.0

PW-6C			
8/12/2020		7/13/2022	
Depth	0-0.5'	Depth	1-1.5
Total Mercury	6.4	Total Mercury	2.9

PW-6C W	
7/13/2022	
Depth	0-0.5
Total Mercury	2.4

PW-6B	
8/12/2020	
Depth	0-0.5
Total Mercury	2.5

PW-6A	
8/12/2020	
Depth	0-0.5
Total Mercury	1.9

SED-6 E	
7/13/2022	
Depth	0-0.5
Total Mercury	0.069

SED-6			
7/6/2020		7/13/2022	
		Depth	0-0.5
		Total Mercury	0.29
Depth	1-1.5	Depth	1-1.5
Total Mercury	12.9	Total Mercury	<0.027

NOTES

Minnesota Pollution Control Agency (MPCA) SRVs updated May 2021 and SLVs updated June 2013.

Analytical results are in milligrams per kilogram (mg/kg).

BaP Equivalent = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of carcinogenic PAHs.

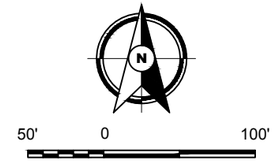
< = Not detected at or above the laboratory reporting limit indicated.

SRV =Soil Reference Value

BaP Equivalent BTV = 2 mg/kg

Exceeds Residential/Recreational SRV = 2.7 mg/kg
Exceeds Commercial/Industrial SRV = 3.1 mg/kg
Exceeds 100 mg/kg for DRO/GRO[f] or 10 ppm for PID

- SOIL BORING LOCATION
- SOIL BORING / TEMPORARY WELL LOCATION
- SOIL BORING / PERMANENT WELL LOCATION
- MONITORING WELL LOCATION
- AGRICULTURAL CHEMICAL SOIL BORING LOCATION
- TEST TRENCH LOCATION
- SHALLOW HAND AUGER BORING LOCATION
- WELL LOCATION
- SURFACE WATER SAMPLE
- SEDIMENT SAMPLE LOCATION
- POTENTIAL WETLAND SAMPLE LOCATION
- SURFACE WATER SAMPLE LOCATION
- HOLLOW STEM AUGER BORING LOCATION
- PUSH PROBE BORING LOCATION
- COMPOSITE SOIL SAMPLE LOCATION
- SHALLOW HAND AUGER BORING LOCATION (2021)
- CONFIRMATION SAMPLE LOCATION



SCALE: 1" = 100'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00H

Drawn By:	BJB
Date Drawn:	5/23/19
Checked By:	MK
Last Modified:	8/24/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

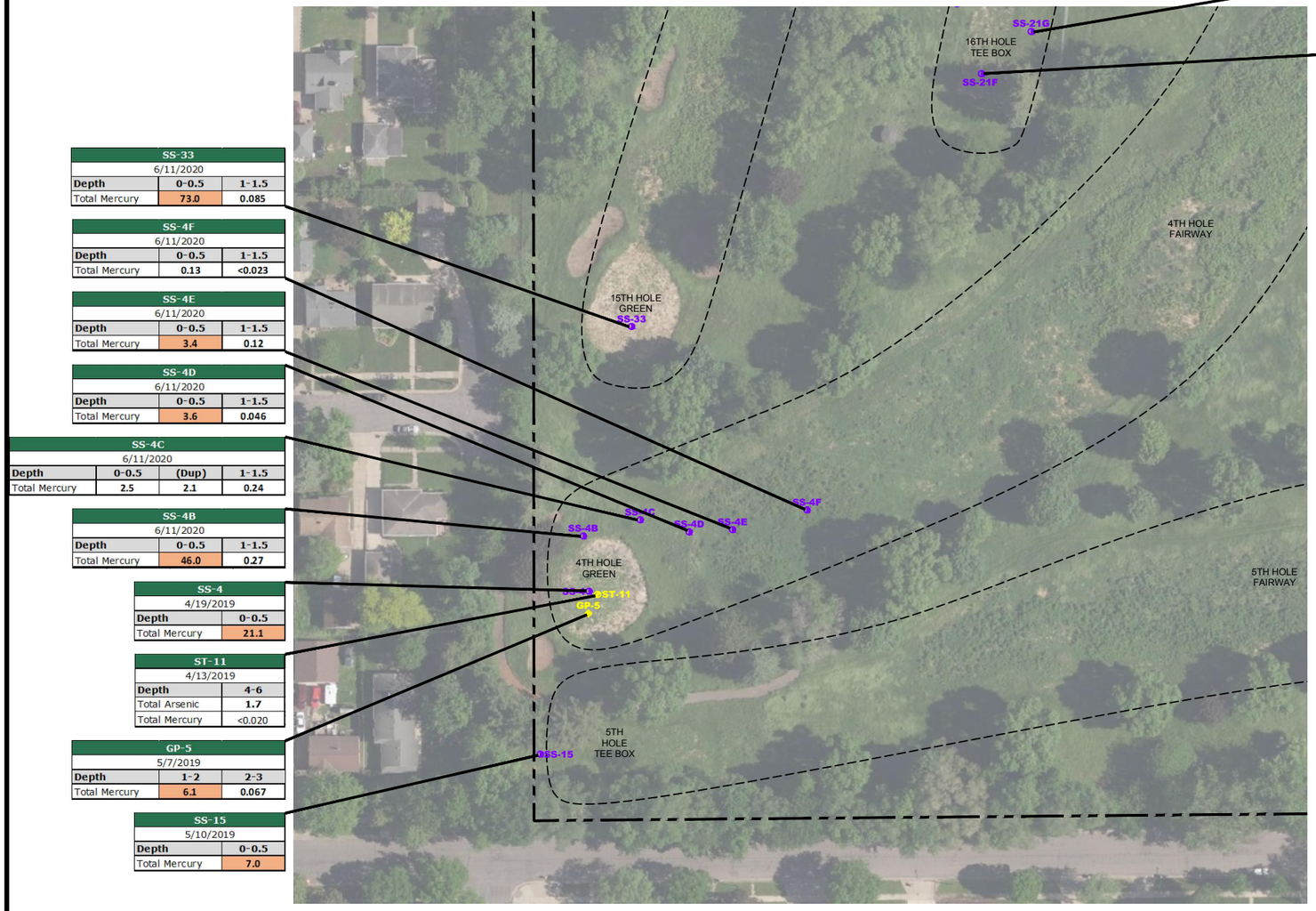
Saint Paul, Minnesota

Soil Analytical Results

Sheet: 10 of 13

Fig: 5

F:\2019\B1903316\CAD\B1903316-00H.dwg,10.8/24/2022 1:40:12 PM



SS-21G		
6/11/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.56	0.051

SS-21F		
6/11/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.82	0.25

SS-33		
6/11/2020		
Depth	0-0.5	1-1.5
Total Mercury	73.0	0.085

SS-4F		
6/11/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.13	<0.023

SS-4E		
6/11/2020		
Depth	0-0.5	1-1.5
Total Mercury	3.4	0.12

SS-4D		
6/11/2020		
Depth	0-0.5	1-1.5
Total Mercury	3.6	0.046

SS-4C			
6/11/2020			
Depth	0-0.5	(Dup)	1-1.5
Total Mercury	2.5	2.1	0.24

SS-4B		
6/11/2020		
Depth	0-0.5	1-1.5
Total Mercury	46.0	0.27

SS-4	
4/19/2019	
Depth	0-0.5
Total Mercury	21.1

ST-11	
4/13/2019	
Depth	4-6
Total Arsenic	1.7
Total Mercury	<0.020

GP-5		
5/7/2019		
Depth	1-2	2-3
Total Mercury	6.1	0.067

SS-15	
5/10/2019	
Depth	0-0.5
Total Mercury	7.0

NOTES

Minnesota Pollution Control Agency (MPCA) SRVs updated May 2021 and SLVs updated June 2013.

Analytical results are in milligrams per kilogram (mg/kg).

BaP Equivalent = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of carcinogenic PAHs.

< = Not detected at or above the laboratory reporting limit indicated.

SRV =Soil Reference Value

BaP Equivalent BTV = 2 mg/kg

Exceeds Residential/Recreational SRV = 2.7 mg/kg

Exceeds Commercial/Industrial SRV = 3.1 mg/kg

Exceeds 100 mg/kg for DRO/GRO[f] or 10 ppm for PID

- **SOIL BORING LOCATION**
- **SOIL BORING / TEMPORARY WELL LOCATION**
- **SOIL BORING / PERMANENT WELL LOCATION**
- **MONITORING WELL LOCATION**
- **AGRICULTURAL CHEMICAL SOIL BORING LOCATION**
- **TEST TRENCH LOCATION**
- **SHALLOW HAND AUGER BORING LOCATION**
- **WELL LOCATION**
- **SURFACE WATER SAMPLE**
- **SEDIMENT SAMPLE LOCATION**
- **POTENTIAL WETLAND SAMPLE LOCATION**
- **SURFACE WATER SAMPLE LOCATION**
- **HOLLOW STEM AUGER BORING LOCATION**
- **PUSH PROBE BORING LOCATION**
- **COMPOSITE SOIL SAMPLE LOCATION**
- **SHALLOW HAND AUGER BORING LOCATION (2021)**
- **CONFIRMATION SAMPLE LOCATION**

50' 0 100'

SCALE: 1" = 100'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00H

Drawn By: BJB
Date Drawn: 5/23/19
Checked By: MK
Last Modified: 8/24/22

Project Information

Hillcrest Redevelopment Site

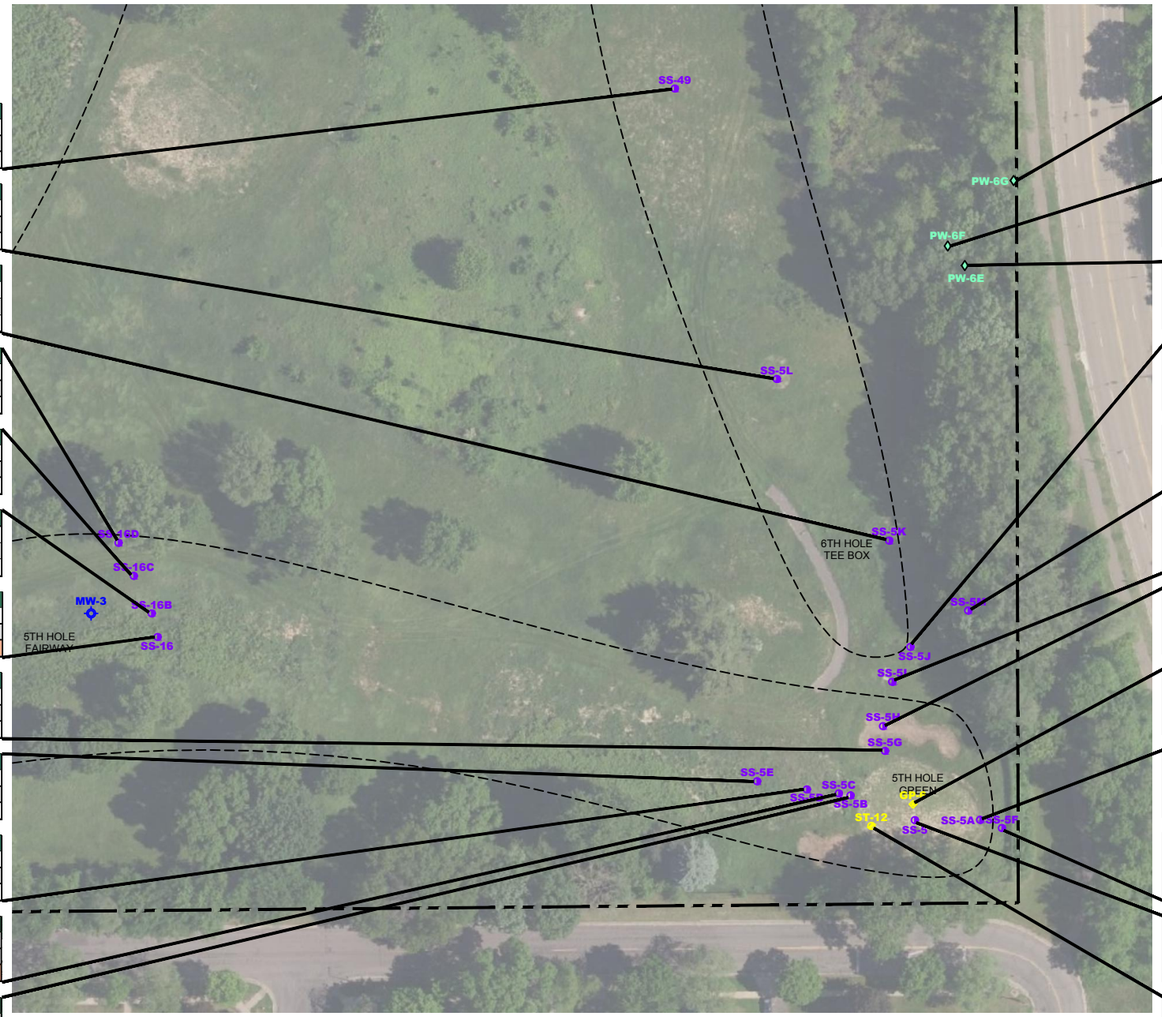
2200 Larpenteur Avenue E

Saint Paul, Minnesota

Soil Analytical Results

Sheet: 11 of 13

Fig: 5



SS-49		
6/15/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.96	<0.022

SS-5L		
6/12/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.16	<0.022

SS-5K			
6/12/2020			
Depth	0-0.5	(Dup)	1-1.5
Total Mercury	0.055	0.053	0.24

SS-16D		
6/11/2020		
Depth	0-0.5	1-1.5
Total Mercury	1.2	0.13

SS-16C		
6/11/2020		
Depth	0-0.5	1-1.5
Total Mercury	1.2	<0.023

SS-16B		
6/11/2020		
Depth	0-0.5	1-1.5
Total Mercury	1.1	0.2

SS-16	
5/10/2019	
Depth	0-0.5
Total Mercury	4.5

SS-5G		
6/12/2020		
Depth	0-0.5	1-1.5
Total Mercury	33.5	0.066

SS-5E		
6/12/2020		
Depth	0-0.5	1-1.5
Total Mercury	2.3	0.53

SS-5D		
6/12/2020		
Depth	0-0.5	1-1.5
Total Mercury	5.6	0.035

SS-5C	
5/10/2019	
Depth	0-0.5
Total Mercury	8.2

SS-5B	
5/10/2019	
Depth	0-0.5
Total Mercury	46.3

PW-6G	
8/12/2020	
Depth	0-0.5
Total Mercury	0.025

PW-6F	
8/12/2020	
Depth	0-0.5
Total Mercury	0.26

PW-6E	
8/12/2020	
Depth	0-0.5
Total Mercury	1.3

SS-5J		
6/12/2020		
Depth	0-0.5	1-1.5
Total Mercury	5.5	2.8

SS-5M		
6/12/2020		
Depth	0-0.5	1-1.5
Total Mercury	0.13	0.3

SS-5I		
6/12/2020		
Depth	0-0.5	1-1.5
Total Mercury	1.3	0.11

SS-5H		
6/12/2020		
Depth	0-0.5	1-1.5
Total Mercury	<0.021	0.025

GP-6	
5/7/2019	
Depth	1-2
Total Mercury	0.099

SS-5A	
5/10/2019	
Depth	0-0.5
Total Mercury	6.5

SS-5F			
6/12/2020			
Depth	0-0.5	(Dup)	1-1.5
Total Mercury	1.9	2.0	<0.019

SS-5	
4/19/2018	
Depth	0-0.5
Total Mercury	45.6

ST-12	
4/13/2019	
Depth	2-4
Total Arsenic	6.4

NOTES

Minnesota Pollution Control Agency (MPCA) SRVs updated May 2021 and SLVs updated June 2013.

Analytical results are in milligrams per kilogram (mg/kg).

BaP Equivalent = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of carcinogenic PAHs.

< = Not detected at or above the laboratory reporting limit indicated.

SRV =Soil Reference Value

BaP Equivalent BTV = 2 mg/kg

Exceeds Residential/Recreational SRV = 2.7 mg/kg

Exceeds Commercial/Industrial SRV = 3.1 mg/kg

Exceeds 100 mg/kg for DRO/GRO[f] or 10 ppm for PID

- SOIL BORING LOCATION
- SOIL BORING / TEMPORARY WELL LOCATION
- SOIL BORING / PERMANENT WELL LOCATION
- MONITORING WELL LOCATION
- AGRICULTURAL CHEMICAL SOIL BORING LOCATION
- TEST TRENCH LOCATION
- SHALLOW HAND AUGER BORING LOCATION
- WELL LOCATION
- SURFACE WATER SAMPLE
- SEDIMENT SAMPLE LOCATION
- POTENTIAL WETLAND SAMPLE LOCATION
- SURFACE WATER SAMPLE LOCATION
- HOLLOW STEM AUGER BORING LOCATION
- PUSH PROBE BORING LOCATION
- COMPOSITE SOIL SAMPLE LOCATION
- SHALLOW HAND AUGER BORING LOCATION (2021)
- CONFIRMATION SAMPLE LOCATION

SCALE: 1" = 100'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00H

Drawn By: BJB
Date Drawn: 5/23/19
Checked By: MK
Last Modified: 8/24/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

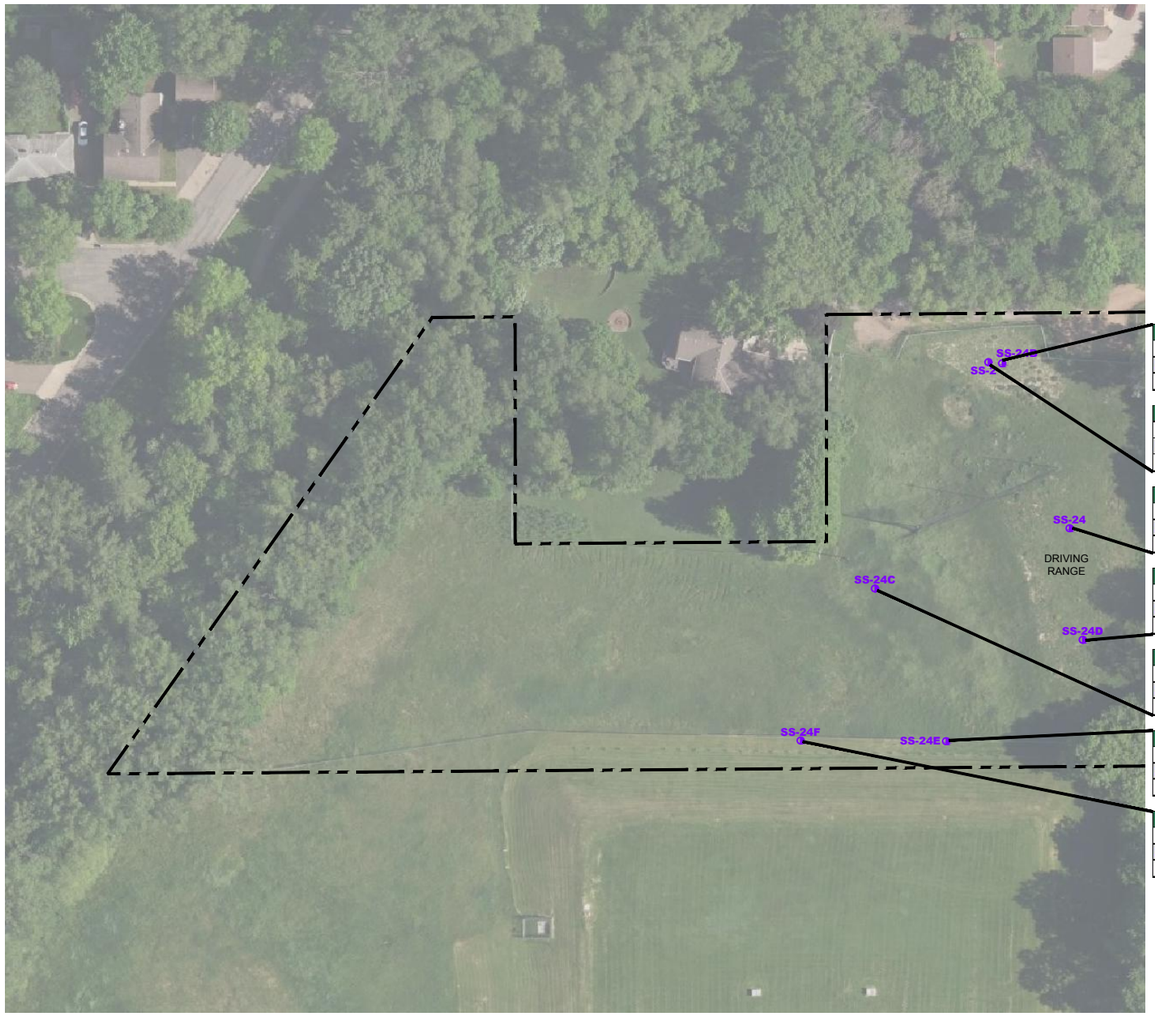
Saint Paul, Minnesota

Soil Analytical Results

Sheet: 12 of 13

Fig: 5

F:\2019\B1903316\CAD\B1903316-00H.dwg,12.8/24/2022 1:40:13 PM



SS-24B		
6/12/2020		
Depth	**0-0.5**	**1-1.5**
Total Mercury	<0.021	<0.021

SS-2	
4/19/2019	
Depth	**0-0.5**
Total Mercury	**0.089**

SS-24		
6/12/2020		
Depth	**0-0.5**	**1-1.5**
Total Mercury	**0.23**	<0.022

SS-24D		
6/12/2020		
Depth	**0-0.5**	**1-1.5**
Total Mercury	<0.022	<0.020

SS-24C		
6/12/2020		
Depth	**0-0.5**	**1-1.5**
Total Mercury	**0.033**	<0.020

SS-24E		
6/12/2020		
Depth	**0-0.5**	**1-1.5**
Total Mercury	**0.25**	<0.021

SS-24F			
6/12/2020			
Depth	**0-0.5**	**(Dup)**	**1-1.5**
Total Mercury	**0.025**	<0.023	<0.021

NOTES

Minnesota Pollution Control Agency (MPCA) SRVs updated May 2021 and SLVs updated June 2013.

Analytical results are in milligrams per kilogram (mg/kg).

BaP Equivalent = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of carcinogenic PAHs.

< = Not detected at or above the laboratory reporting limit indicated.

SRV =Soil Reference Value

BaP Equivalent BTV = 2 mg/kg

Exceeds Residential/Recreational SRV = 2.7 mg/kg

Exceeds Commercial/Industrial SRV = 3.1 mg/kg

Exceeds 100 mg/kg for DRO/GRO[f] or 10 ppm for PID

- **SOIL BORING LOCATION**
- **SOIL BORING / TEMPORARY WELL LOCATION**
- **SOIL BORING / PERMANENT WELL LOCATION**
- **MONITORING WELL LOCATION**
- **AGRICULTURAL CHEMICAL SOIL BORING LOCATION**
- **TEST TRENCH LOCATION**
- **SHALLOW HAND AUGER BORING LOCATION**
- **WELL LOCATION**
- **SURFACE WATER SAMPLE**
- **SEDIMENT SAMPLE LOCATION**
- **POTENTIAL WETLAND SAMPLE LOCATION**
- **SURFACE WATER SAMPLE LOCATION**
- **HOLLOW STEM AUGER BORING LOCATION**
- **PUSH PROBE BORING LOCATION**
- **COMPOSITE SOIL SAMPLE LOCATION**
- **SHALLOW HAND AUGER BORING LOCATION (2021)**
- **CONFIRMATION SAMPLE LOCATION**

SCALE: 1" = 100'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00H

Drawn By:	BJB
Date Drawn:	5/23/19
Checked By:	MK
Last Modified:	8/24/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

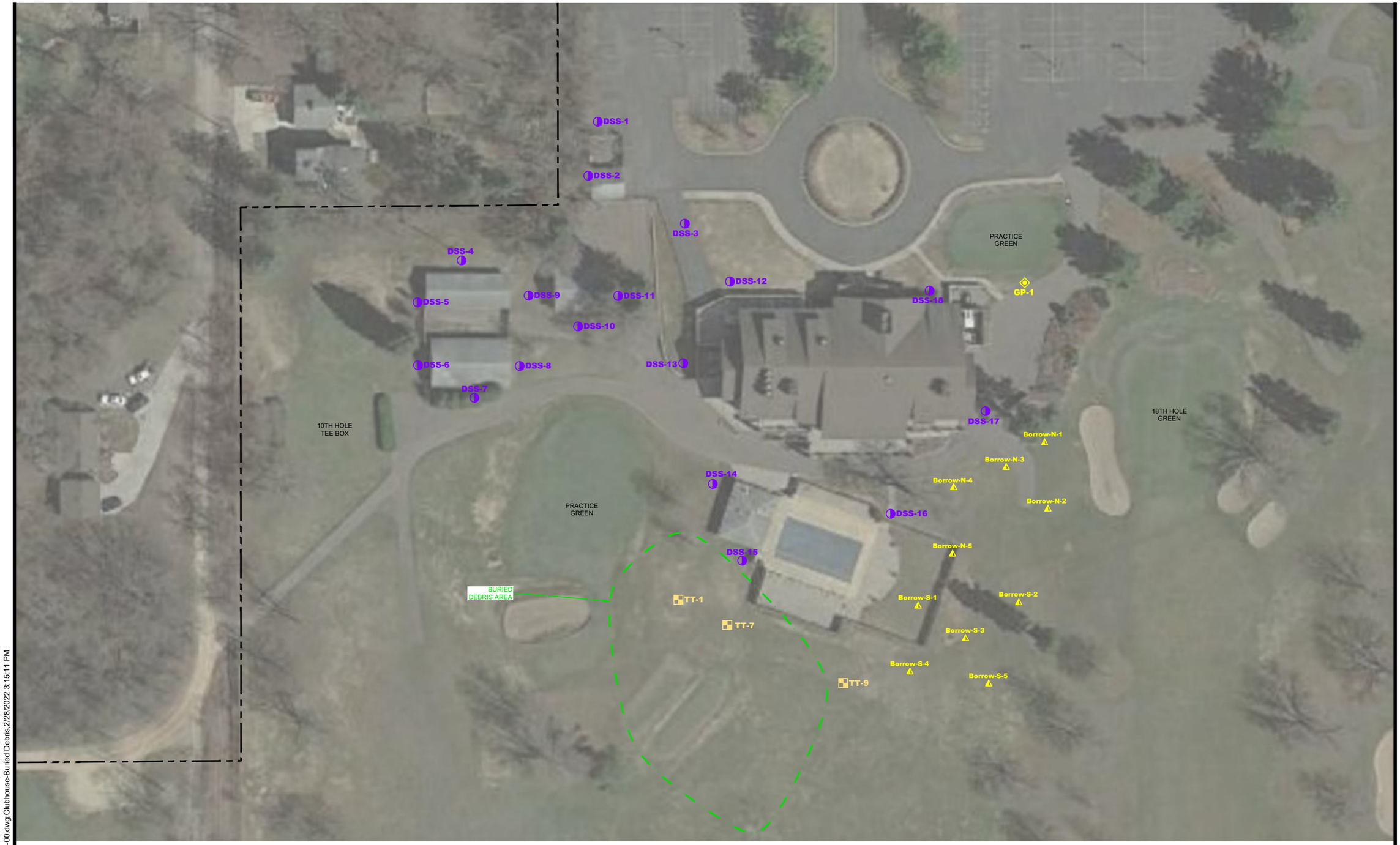
Saint Paul, Minnesota

Soil Analytical Results

Sheet: 13 of 13

Fig: 5

F:\2019\B1903316\CAD\B1903316-00H.dwg,13.8/24/2022 1:40:14 PM



TEST TRENCH LOCATION

SHALLOW HAND AUGER BORING LOCATION

PUSH PROBE BORING LOCATION

CONFIRMATION SAMPLE LOCATION

30' 0 60'

SCALE: 1" = 60'

BRAUN INTERTEC
The Science You Build On.

11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No:	B1903316.00
Drawing No:	B1903316-00
Drawn By:	BJB
Date Drawn:	2/6/20
Checked By:	MK
Last Modified:	2/28/22

Project Information

Hillcrest Redevelopment Site

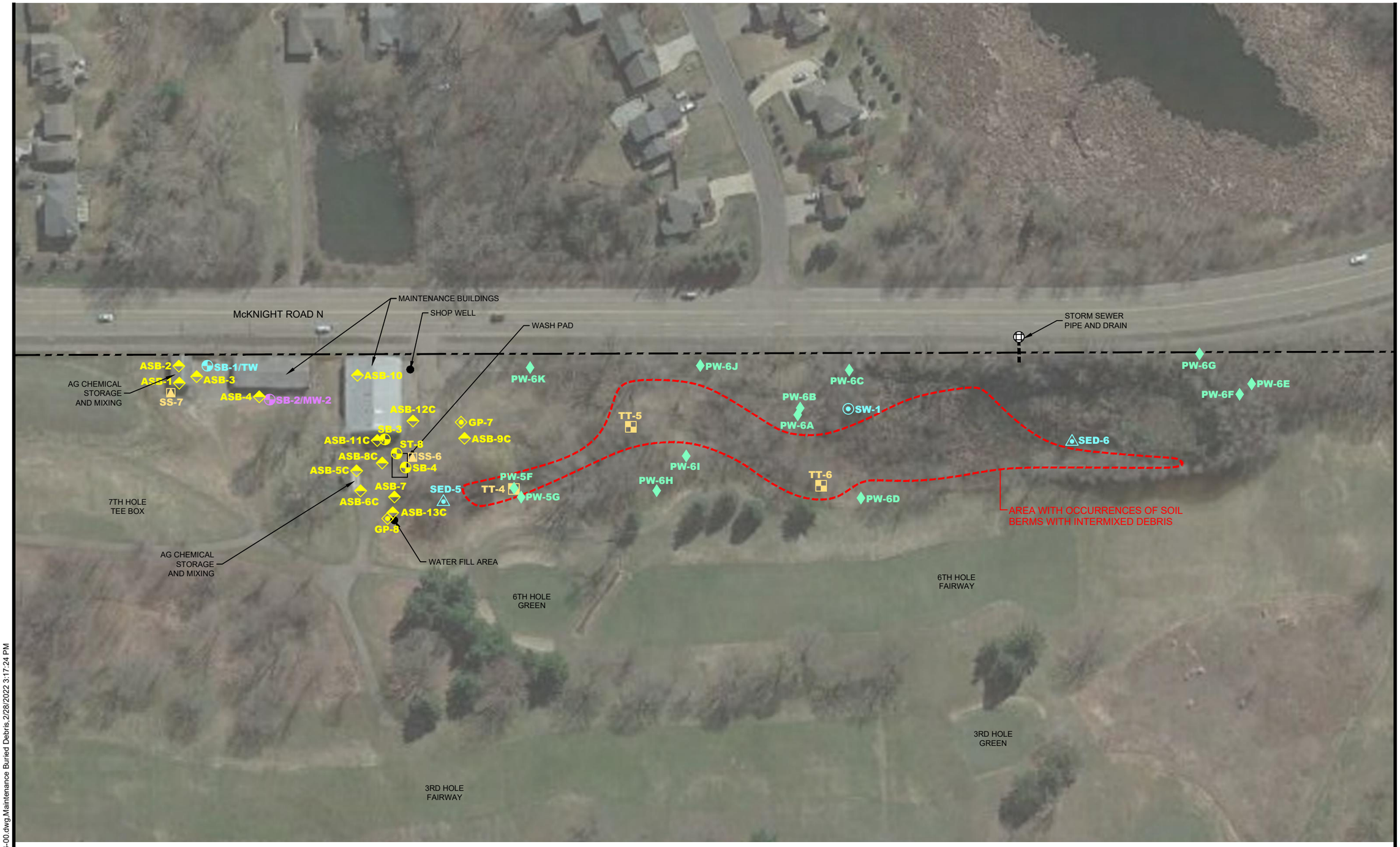
2200 Larpenteur Avenue E

Saint Paul, Minnesota

Clubhouse Buried Debris Area

Figure 6

F:\2019\B1903316\CAD\B1903316-00.dwg,Clubhouse-Buried Debris,2/28/2022 3:15:11 PM



SOIL BORING LOCATION
SOIL BORING / TEMPORARY WELL LOCATION
SOIL BORING / PERMANENT WELL LOCATION
AGRICULTURAL CHEMICAL SOIL BORING LOCATION
TEST TRENCH LOCATION
SEDIMENT SAMPLE LOCATION
POTENTIAL WETLAND SAMPLE LOCATION
SURFACE WATER SAMPLE LOCATION
PUSH PROBE BORING LOCATION
SURFACE SOIL SAMPLE LOCATION

50' 0 100'
SCALE: 1" = 100'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No:	B1903316.00
Drawing No:	B1903316-00
Drawn By:	BJB
Date Drawn:	2/6/20
Checked By:	MK
Last Modified:	2/28/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

Saint Paul, Minnesota

Maintenance Buildings Buried Debris Area

Figure 7

F:\2019\B1903316\CAD\B1903316-00.dwg,Maintenance Buried Debris,2/28/2022 3:17:24 PM

COMPOSITE SOIL SAMPLE LOCATION HOT AREA

MERCURY CONCENTRATIONS IN SOIL EXCEED SOIL REFERENCE VALUE FOR MECURY

MERCURY CONCENTRATIONS IN SOIL ARE BELOW THE SOIL REFERENCE VALUE FOR MERCURY

N

75' 0 150'

SCALE: 1" = 150'

F:\2019\B1903316\CAD\B1903316-00G.dwg,DU-1,4/27/2022 3:12:40 PM

BRAUN INTERTEC
The Science You Build On.

11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No:	B1903316.00
Drawing No:	B1903316-00G
Drawn By:	BJB
Date Drawn:	8/25/21
Checked By:	MK
Last Modified:	4/27/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

Saint Paul, Minnesota

Fairway Mercury Soil Cleanup Areas

Sheet: 1 of 2

Fig: 8

COMPOSITE SOIL SAMPLE LOCATION

MERCURY CONCENTRATIONS IN SOIL EXCEED SOIL REFERENCE VALUE FOR MECURY

MERCURY CONCENTRATIONS IN SOIL ARE BELOW THE SOIL REFERENCE VALUE FOR MERCURY

75' 0 150'

SCALE: 1" = 150'

F:\2019\B1903316\CAD\B1903316-00G.dwg,DU-2,4/27/2022 3:12:42 PM

BRAUN INTERTEC
The Science You Build On.

11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00G

Drawn By:	BJB
Date Drawn:	8/25/21
Checked By:	MK
Last Modified:	4/27/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

Saint Paul, Minnesota

Fairway Mercury Soil Cleanup Areas

Sheet: 2 of 2

Fig: 8

FW-8-DU3	
Depth	0-0.5'
Mercury	1.8

FW-8-DU2	
Depth	0-0.5'
Mercury	5.4

FW-9-DU1	
Depth	0-0.5'
Mercury	0.31

FW-8-DU1	
Depth	0-0.5'
Mercury	5.2

FW-1-DU2	
Depth	0-0.5'
Mercury	4.1

FW-1-DU1	
Depth	0-0.5'
Mercury	3.1

FW-18-DU2	
Depth	0-0.5'
Mercury	3.6

FW-18-DU1	
Depth	0-0.5'
Mercury	7.6

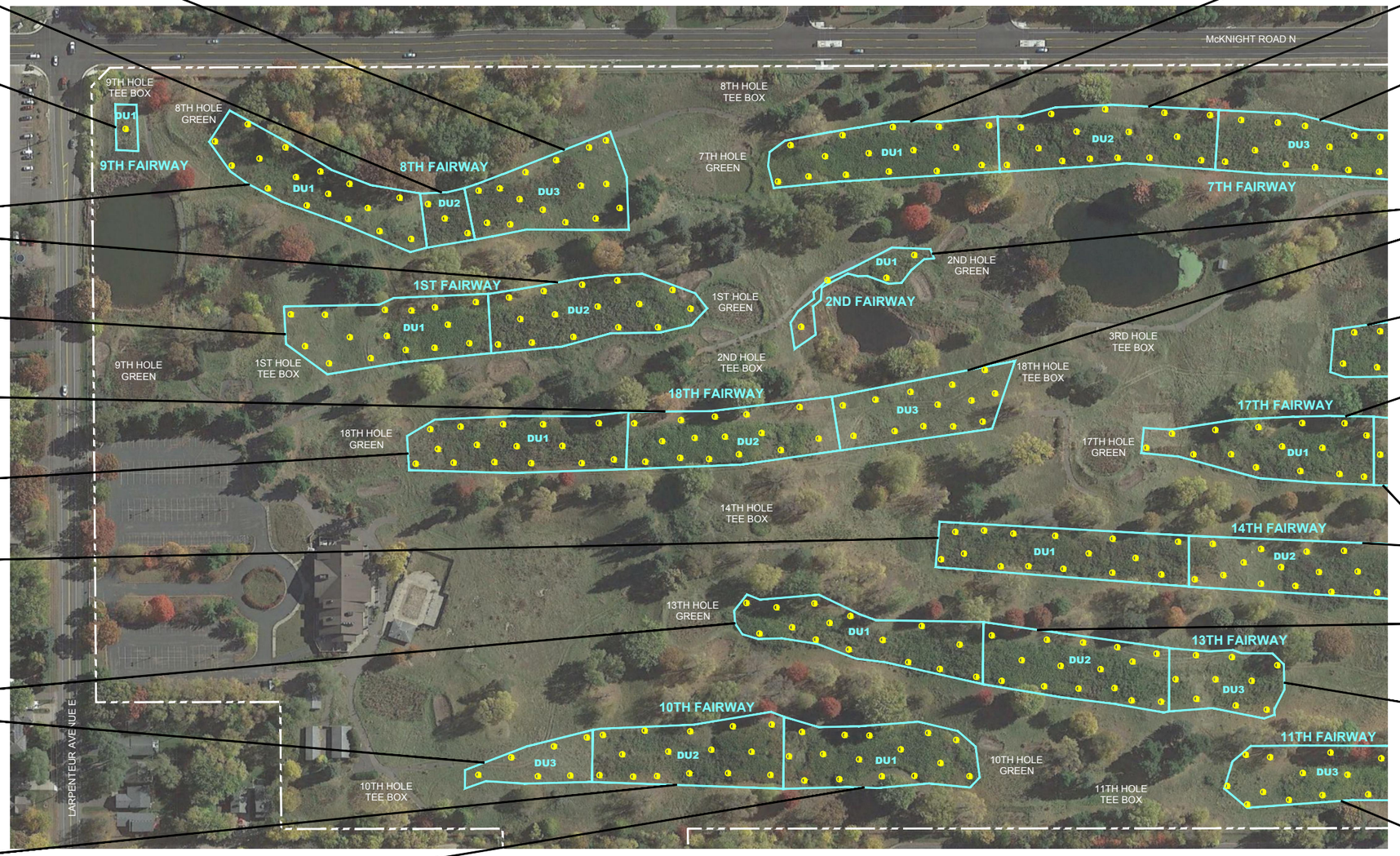
FW-14-DU1	
Depth	0-0.5'
Mercury	3.5

FW-13-DU1	
Depth	0-0.5'
Mercury	15.1

FW-10-DU3	
Depth	0-0.5'
Mercury	2.8

FW-10-DU2	
Depth	0-0.5'
Mercury	3.4

FW-10-DU1	
Depth	0-0.5'
Mercury	11.9



FW-7-DU1	
Depth	0-0.5'
Mercury	2.8

FW-7-DU2	
Depth	0-0.5'
Mercury	3.0

FW-7-DU3	
Depth	0-0.5'
Mercury	2.9

FW-2-DU1	
Depth	0-0.5'
Mercury	2.6

FW-18-DU3	
Depth	0-0.5'
Mercury	1.7

FW-3-DU3	
Depth	0-0.5'
Mercury	3.1

FW-17-DU1	
Depth	0-0.5'
Mercury	1.4

FW-17-DU2	
Depth	0-0.5'
Mercury	2.7

FW-14-DU2	
Depth	0-0.5'
Mercury	3.1

FW-13-DU2	
Depth	0-0.5'
Mercury	2.9

FW-13-DU3	
Depth	0-0.5'
Mercury	2.9

FW-11-DU3	
Depth	0-0.5'
Mercury	2.7

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

COMPOSITE SOIL SAMPLE LOCATION

100' 0 200'

SCALE: 1" = 200'

F:\2019\B1903316\CAD\B1903316-00G.dwg,DU-1 Analytical,8/25/2022 2:13:28 PM

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00G

Drawn By:	BJB
Date Drawn:	8/25/21
Checked By:	MK
Last Modified:	8/25/22

Project Information

Hillcrest Development Site

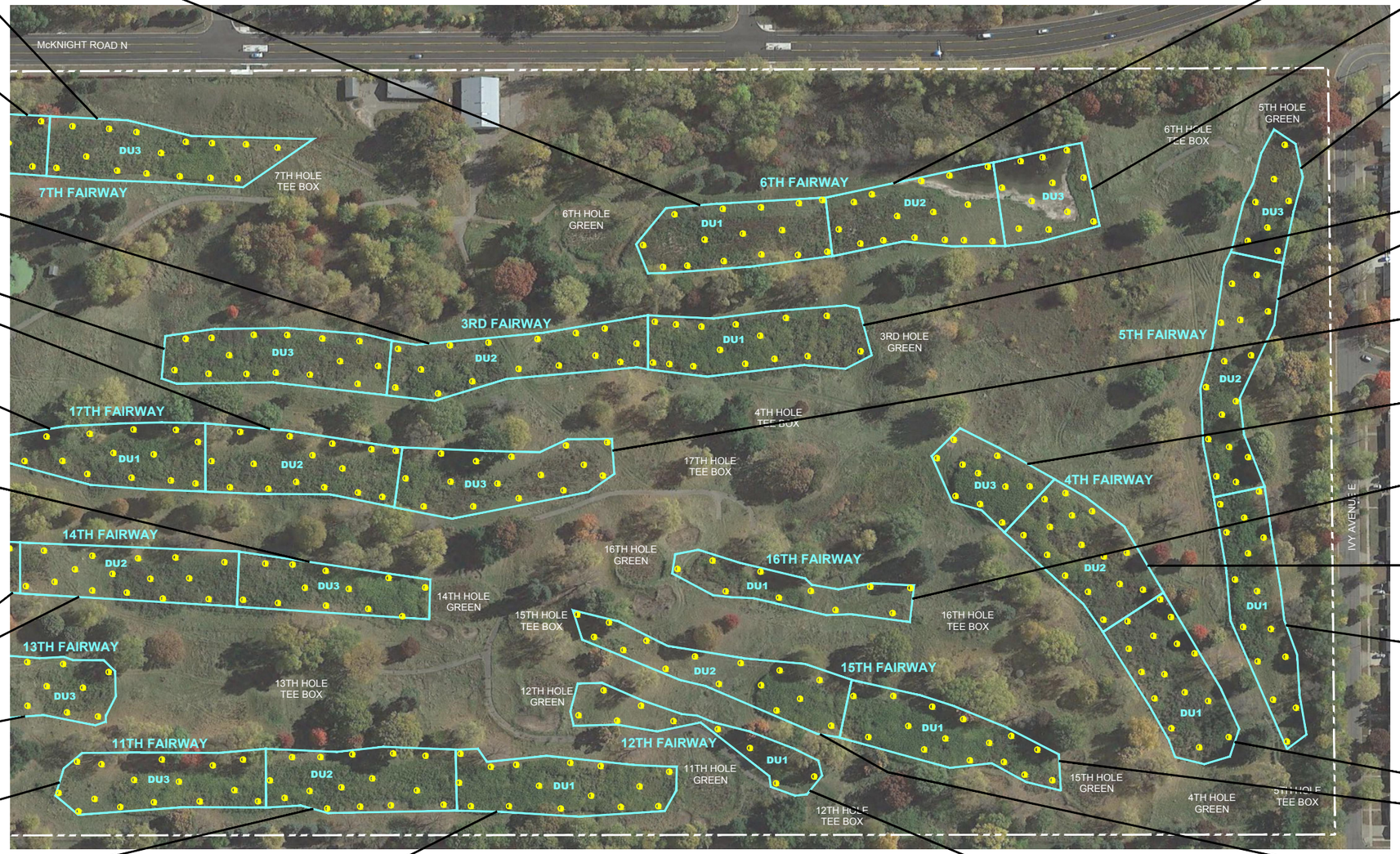
2200 Larpenteur Avenue E

Saint Paul, Minnesota

Fairway Soil Analytical Results

Sheet: 1 of 2

Fig: 9



FW-6-DU1	
Depth	0-0.5'
Mercury	4.4

FW-7-DU3	
Depth	0-0.5'
Mercury	2.9

FW-7-DU2	
Depth	0-0.5'
Mercury	3.0

FW-3-DU2	
Depth	0-0.5'
Mercury	3.6

FW-3-DU3	
Depth	0-0.5'
Mercury	3.1

FW-17-DU2	
Depth	0-0.5'
Mercury	2.7

FW-17-DU1	
Depth	0-0.5'
Mercury	1.4

FW-14-DU3	
Depth	0-0.5'
Mercury	3.5

FW-14-DU1	
Depth	0-0.5'
Mercury	3.5

FW-14-DU2	
Depth	0-0.5'
Mercury	3.1

FW-13-DU3	
Depth	0-0.5'
Mercury	2.9

FW-11-DU3	
Depth	0-0.5'
Mercury	2.7

FW-11-DU2	
Depth	0-0.5'
Mercury	2.3

FW-11-DU1	
Depth	0-0.5'
Mercury	3.3

FW-12-DU1	
Depth	0-0.5'
Mercury	1.1

FW-6-DU2	
Depth	0-0.5'
Mercury	6.8

FW-6-DU3	
Depth	0-0.5'
Mercury	1.9

FW-5-DU3	
Depth	0-0.5'
Mercury	6.8

FW-3-DU1	
Depth	0-0.5'
Mercury	3.2

FW-5-DU2	
Depth	0-0.5'
Mercury	2.4

FW-17-DU3	
Depth	0-0.5'
Mercury	1.2

FW-4-DU3	
Depth	0-0.5'
Mercury	1.9

FW-16-DU1	
Depth	0-0.5'
Mercury	3.3

FW-4-DU2	
Depth	0-0.5'
Mercury	2.4

FW-5-DU1	
Depth	0-0.5'
Mercury	2.2

FW-4-DU1	
Depth	0-0.5'
Mercury	2.5

FW-15-DU1	
Depth	0-0.5'
Mercury	1.9

FW-15-DU2	
Depth	0-0.5'
Mercury	4.7

Exceeds Residential/Recreational SRV

Exceeds Commercial/Industrial SRV

◑ **COMPOSITE SOIL SAMPLE LOCATION**

100' 0 200'

SCALE: 1" = 200'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00G

Drawn By:	BJB
Date Drawn:	8/25/21
Checked By:	MK
Last Modified:	8/25/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

Saint Paul, Minnesota

Fairway Soil Analytical Results

Sheet: 2 of 2

Fig: 9

F:\2019\B1903316\CAD\B1903316-00G.dwg,DU-2 Analytical,8/25/2022 2:13:31 PM

TYPE 2 SOIL EXCAVATION AREAS

- 0.5 FT. DEPTH

TYPE 3 SOIL EXCAVATION AREAS

- 0.5 to 1 FT. DEPTH
- 2 FT. DEPTH
- 3 FT. DEPTH
- 4 FT. DEPTH
- 5 FT. DEPTH
- 10 FT. DEPTH

SOIL EXCAVATION VOLUMES

TYPE 3 SOIL WITH MERCURY CONCENTRATION >10 MG/KG = 7,130 CUBIC YARDS

TYPE 3 SOIL WITH MERCURY CONCENTRATION <10 MG/KG = 20,165 CUBIC YARDS

TYPE 2 SOIL = 6,980 CUBIC YARDS

SOIL WITH INTERMIXED DEBRIS POOL AREA = 2,000 CUBIC YARDS

SOIL WITH INTERMIXED DEBRIS MAINTENANCE AREA = 4,000 CUBIC YARDS

N

75' 0 150'

SCALE: 1" = 150'

F:\2019\B1903316\CAD\B1903316-00G.dwg,RAP_Exc-1,5/2/2022 9:42:54 AM

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00G

Drawn By:	BJB
Date Drawn:	8/25/21
Checked By:	MK
Last Modified:	5/2/22

Project Information

Hillcrest Redevelopment Site

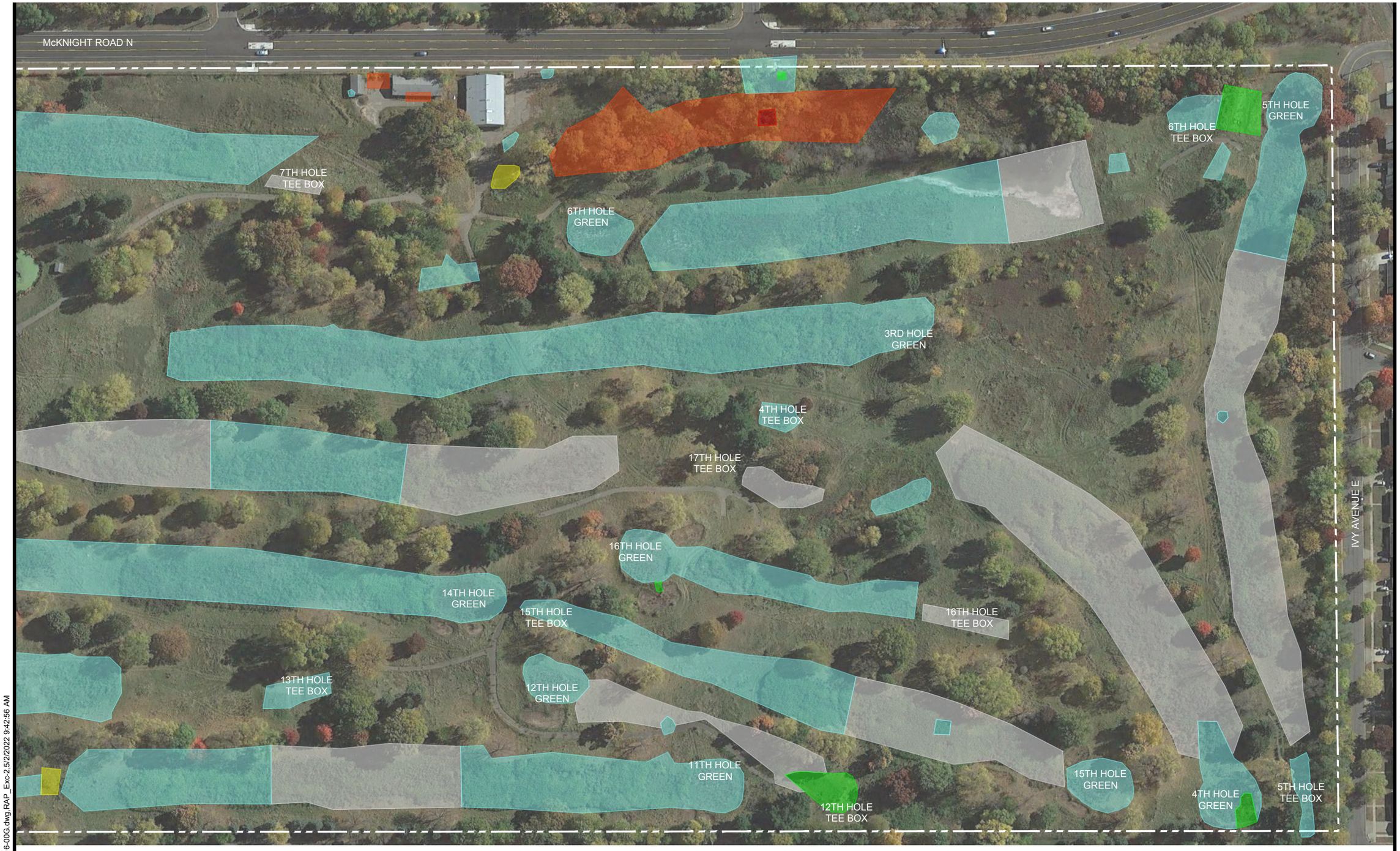
2200 Larpenteur Avenue E

Saint Paul, Minnesota

Contaminated Soil Excavation Areas

Sheet: 1 of 2

Fig: 10



TYPE 2 SOIL EXCAVATION AREAS

- 0.5 FT. DEPTH

TYPE 3 SOIL EXCAVATION AREAS

- 0.5 to 1 FT. DEPTH
- 2 FT. DEPTH
- 3 FT. DEPTH
- 4 FT. DEPTH
- 5 FT. DEPTH
- 10 FT. DEPTH

SOIL EXCAVATION VOLUMES

TYPE 3 SOIL WITH MERCURY CONCENTRATION >10 MG/KG = 7,130 CUBIC YARDS

TYPE 3 SOIL WITH MERCURY CONCENTRATION <10 MG/KG = 20,165 CUBIC YARDS

TYPE 2 SOIL = 6,980 CUBIC YARDS

SOIL WITH INTERMIXED DEBRIS POOL AREA = 2,000 CUBIC YARDS

SOIL WITH INTERMIXED DEBRIS MAINTENANCE AREA = 4,000 CUBIC YARDS

N

75' 0 150'

SCALE: 1" = 150'

F:\2019\B1903316\CAD\B1903316-00G.dwg,RAP_Exc-2,5/2/2022 9:42:56 AM

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No:	B1903316.00
Drawing No:	B1903316-00G
Drawn By:	BJB
Date Drawn:	8/25/21
Checked By:	MK
Last Modified:	5/2/22

Project Information

Hillcrest Redevelopment Site

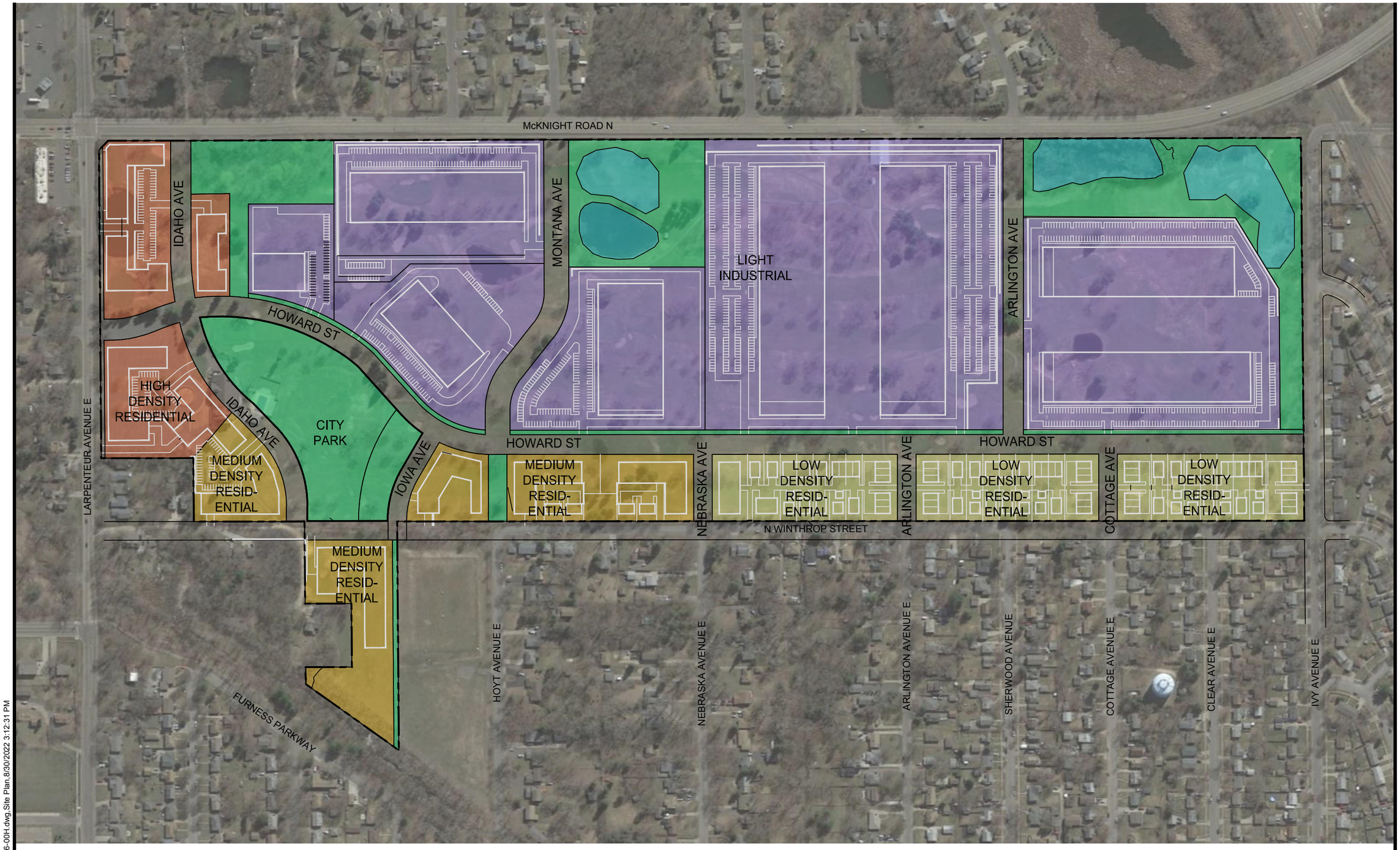
2200 Larpenteur Avenue E

Saint Paul, Minnesota

Contaminated Soil Excavation Areas

Sheet: 2 of 2

Fig: 10



TYPE 2 SOILS ARE RESTRICTED TO REUSE ONSITE ONLY WITHIN THE ROADS, IN THE AREAS ZONED AS INDUSTRIAL, OR COMMERCIAL USE.

150' 0 300'

SCALE: 1" = 300'

BRAUN INTERTEC
The Science You Build On.

11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00H

Drawn By:	BJB
Date Drawn:	5/23/19
Checked By:	MK
Last Modified:	8/30/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

Saint Paul, Minnesota

Site Plan

Figure 11

F:\2019\B1903316\CAD\B1903316-00H.dwg,Site Plan,8/30/2022 3:12:31 PM

MONITORING WELL LOCATION

WELL LOCATION

150' 0 300'

SCALE: 1" = 300'

F:\2019\B1903316\CAD\B1903316-00A.dwg,Wells,2/28/2022 4:23:34 PM

BRAUN INTERTEC
The Science You Build On.

11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No:	B1903316.00
Drawing No:	B1903316-00A
Drawn By:	BJB
Date Drawn:	5/23/19
Checked By:	MK
Last Modified:	2/28/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

Saint Paul, Minnesota

Well Locations

Figure 12

DEMOLITION AREAS

150' 0 300'

SCALE: 1" = 300'

F:\2019\B1903316\CAD\B1903316-00F.dwg,Demo,2/28/2022 4:30:31 PM

BRAUN INTERTEC
The Science You Build On.

11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No:	B1903316.00
Drawing No:	B1903316-00F
Drawn By:	BJB
Date Drawn:	8/25/21
Checked By:	MK
Last Modified:	2/28/22

Project Information

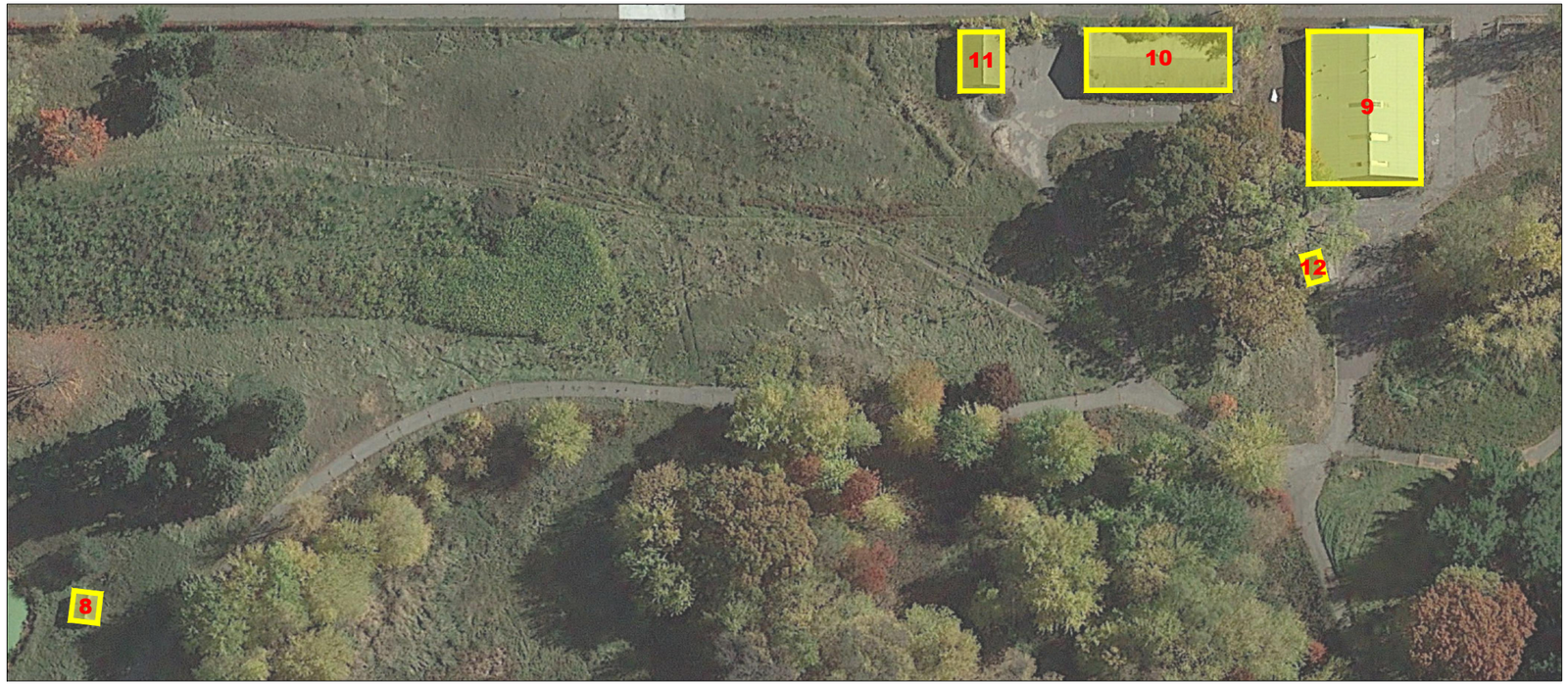
Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

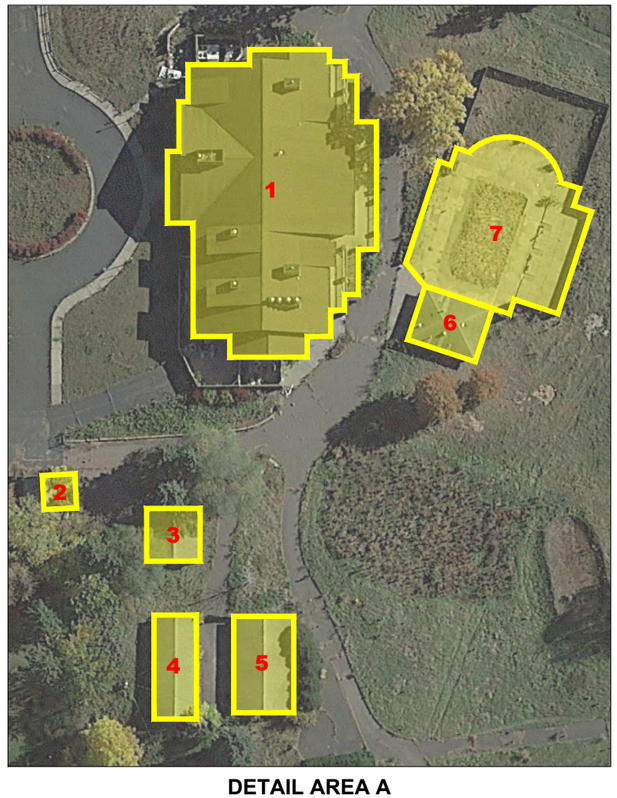
Saint Paul, Minnesota

Demolition Project Extent - Overview

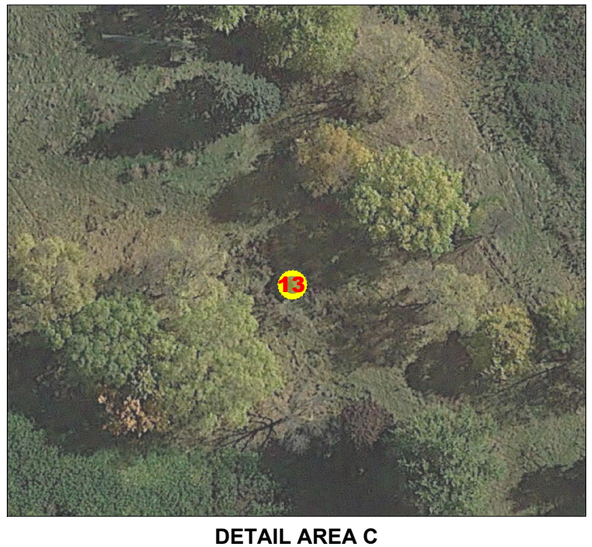
Sheet:	Fig:
1 of 2	13



DETAIL AREA B



DETAIL AREA A



DETAIL AREA C

HILLCREST BUILDINGS

NUMBER, SECRIPTION, SQ. FT.

1. 1, CLUB HOUSE, 14353
2. 2, CLUB HOUSE PARKING LOT GARAGE, 411
3. 3, CADDY SHACK, 738
4. 4, CADDY GARAGE A, 1232
5. 5, CADDY GARAGE B, 1563
6. 6, POOL PUMP ROOM / BAR, 1168
7. 7, POOL, 6440
8. 8, IRRIGATION PUMP SHACK, 190
9. 9, MAIN MAINTENANCE SHED, 4770
10. 10, MCKNIGHT GARAGE A, 2641
11. 11, MCKNIGHT GARAGE B, 665
12. 12, CHEMICAL SHED, 161
13. 13, GAZEBO, 132

40' 0 80'

SCALE: 1" = 80'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00F

Drawn By:	BJB
Date Drawn:	8/25/21
Checked By:	MK
Last Modified:	2/28/22

Project Information

Hillcrest Redevelopment Site

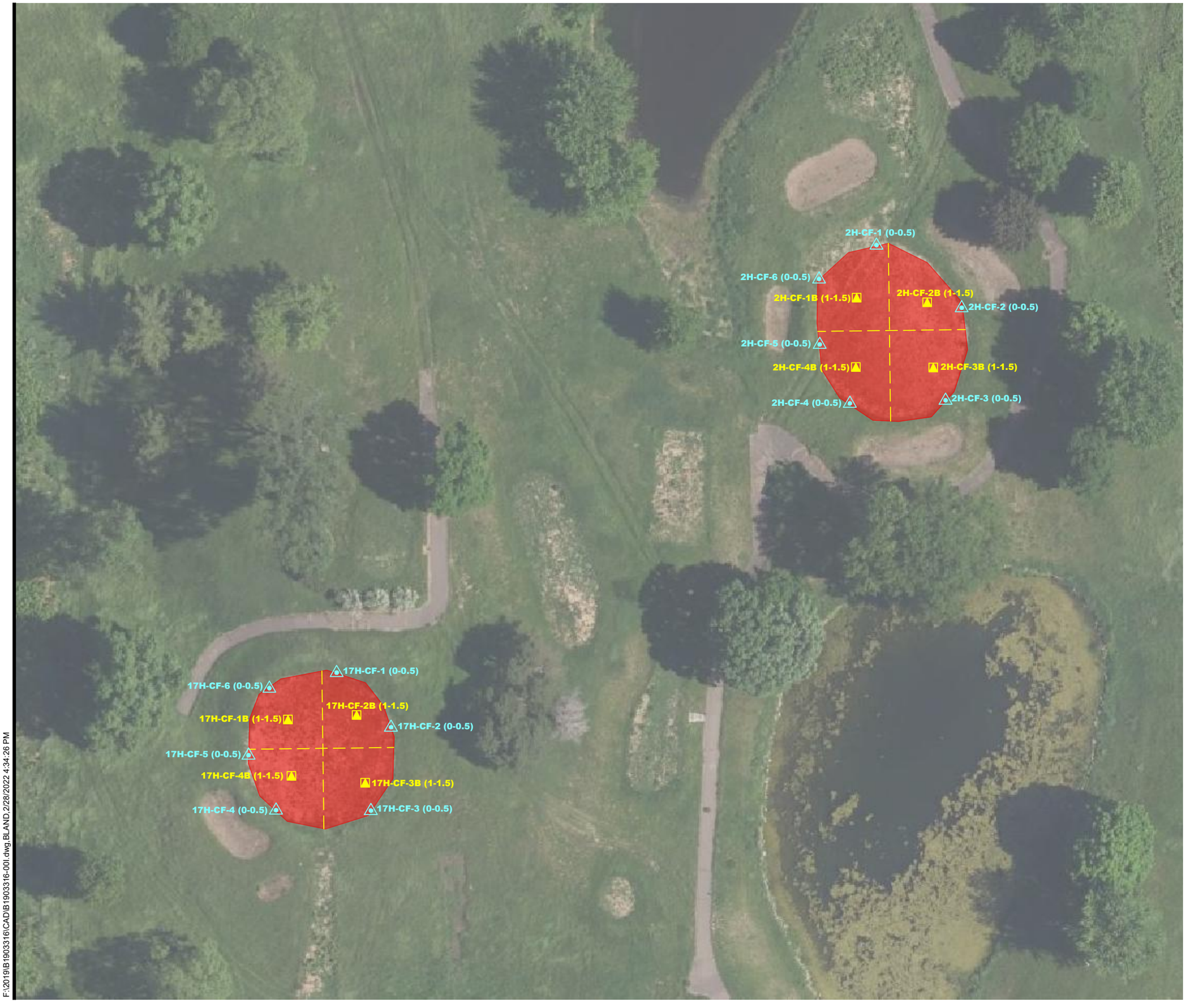
2200 Larpenteur Avenue E

Saint Paul, Minnesota

Demolition Project Extent - Detail Areas

Sheet: 2 of 2 | Fig: 13

F:\2019\B1903316\CAD\B1903316-00F.dwg,Demo Detail,2/28/2022 4:31:11 PM



REMEDIAL EXCAVATION AREAS

BASE SAMPLE LOCATION

SIDEWALL SAMPLE LOCATION

N

25' 0 50'

SCALE: 1" = 50'

F:\2019\B1903316\CAD\B1903316-00I.dwg,BLAND,2/28/2022 4:34:26 PM

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316.00

Drawing No: B1903316-00I

Drawn By:	BJB
Date Drawn:	2/18/22
Checked By:	MK
Last Modified:	2/28/22

Project Information

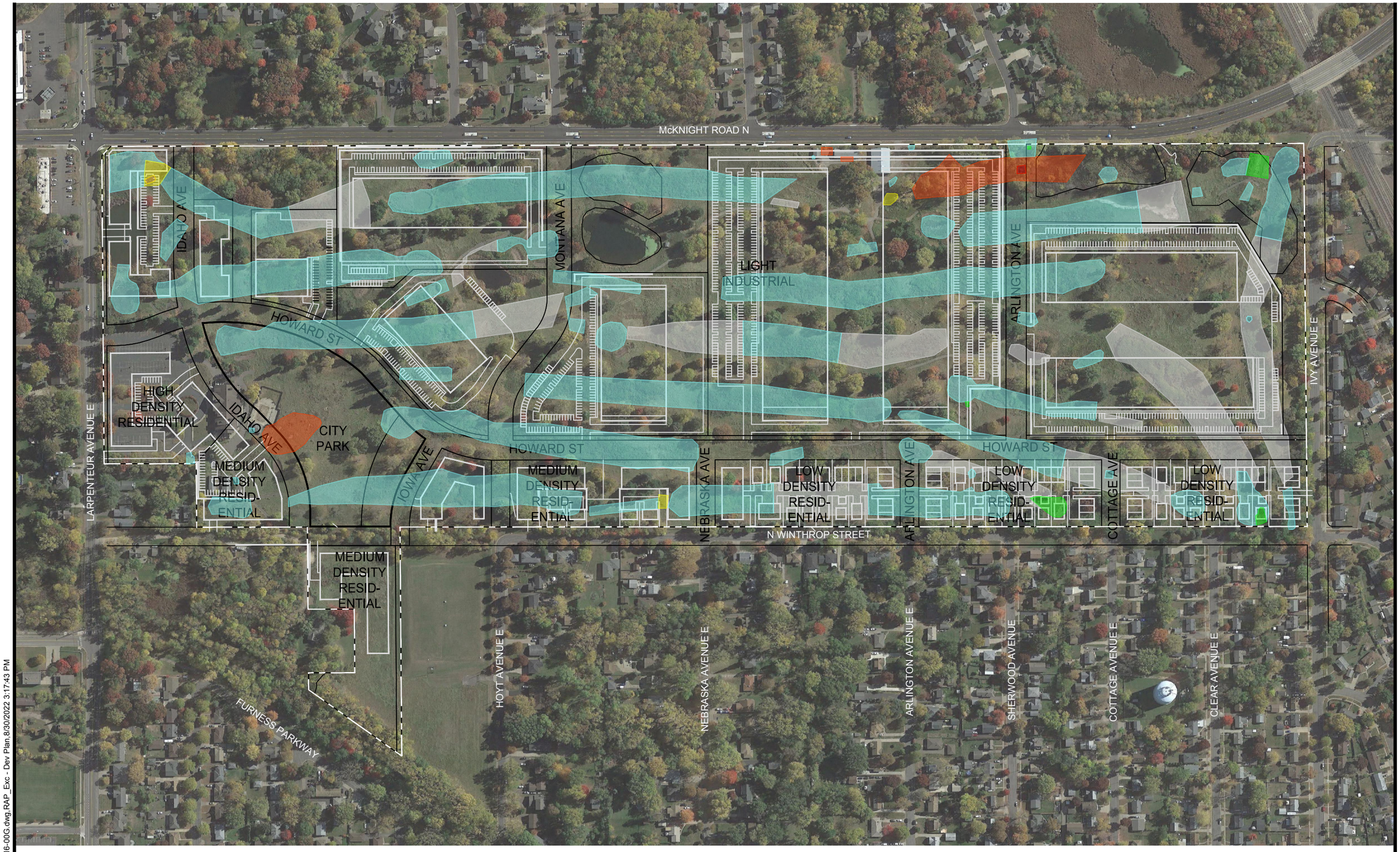
Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

Saint Paul, Minnesota

Proposed Confirmation Sampling Plan, Typical Approach

Figure 14



TYPE 2 SOIL EXCAVATION AREAS

- 0.5 FT. DEPTH

TYPE 3 SOIL EXCAVATION AREAS

- 0.5 to 1 FT. DEPTH
- 2 FT. DEPTH
- 3 FT. DEPTH
- 4 FT. DEPTH
- 5 FT. DEPTH
- 10 FT. DEPTH

75' 0 150'

SCALE: 1" = 150'

F:\2019\B1903316\CAD\B1903316-00G.dwg,RAP_Exc - Dev Plan,8/30/2022 3:17:43 PM

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No:	B1903316.00
Drawing No:	B1903316-00G
Drawn By:	BJB
Date Drawn:	8/25/21
Checked By:	MK
Last Modified:	8/30/22

Project Information

Hillcrest Redevelopment Site

2200 Larpenteur Avenue E

Saint Paul, Minnesota

Contaminated Soil Excavation Areas - Development Plan

Figure 15

Tables

Table 1 - Fairways, Greens, Roughs, and Tee Boxes
Soil Analytical Results
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Sample Identifier, Date Collected, and Location Description					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
Compound/Parameter						
CAS No.					7440-38-2	7439-97-6
	SS-1B (0-0.5)	6/7/2020	8th Hole	Green	**117**	**38.2**
	SS-1BN (0-0.5)	11/15/2021			**5.5**	**4.7**
	DUP-10 [SS-1BN (0-0.5)]	11/15/2021			**5.3**	---
	SS-1B (1-1.5)	6/7/2020			**29.1**	**11.6**
	SS-1B (2-2.5)	11/16/2021			**2.5**	**13.0**
	SS-1BN (1-1.5)	11/15/2021			**2.5**	**3.6** [M1]
	SS-1C (0-0.5)	6/7/2020		Rough adjacent to Green	**3.2**	**0.08**
	SS-1C (1-1.5)	6/7/2020			**3.7**	**0.057**
	SS-1D (0-0.5)	6/7/2020	9th Hole	Rough near Sidewalk	---	**0.039**
	SS-1D (1-1.5)	6/7/2020			---	**0.028**
	SS-1E (0-0.5)	6/7/2020		Tee Box	---	**3.9**
	SS-1E (1-1.5)	6/7/2020			---	**0.11**
	SS-1F (0-0.5)	6/7/2020	8th Hole	Rough near Sidewalk	**7.4**	**6.6**
	SS-1F (1-1.5)	6/7/2020			**2.9**	**0.057**
	SS-1FN (0-0.5)	11/16/2021			---	**0.84**
	SS-1FE (0-0.5)	11/16/2021			---	**0.94**
	SS-1FS (0-0.5)	11/16/2021			---	**0.026**
	SS-1FW (0-0.5)	11/16/2021			---	**16.1**
	SS-1G (0-0.5)	6/7/2020		Sand Trap	---	<0.022
	SS-1G (1-1.5)	6/7/2020			---	**0.028**
	SS-1H (0-0.5)	6/7/2020		Rough adjacent to Sand Trap	---	**0.13**
	SS-1H (1-1.5)	6/7/2020			---	<0.021
	SS-1I (0-0.5)	6/7/2020		Fairway	---	**6.7** [M6]
	SS-1I (1-1.5)	6/7/2020			---	**0.2**
	SS-1IN (0-0.5)	11/16/2021				**2.4**
	SS-1IE (0-0.5)	11/16/2021			---	**7.1**
	SS-1IS (0-0.5)	11/16/2021				**4.6** [P6]
	SS-1IW (0-0.5)	11/16/2021				**4.4**
	SS-1J (0-0.5)	6/7/2020	9th Hole	Tee Box	---	**5.1**
	SS-1J (1-1.5)	6/7/2020			---	**0.087**
	SS-1K (0-0.5)	6/7/2020		Rough adjacent to Tee Box	---	**1.1**
	SS-1K (1-1.5)	6/7/2020			---	**0.1**
	SS-3G (0-0.5)	6/9/2020	13th Hole	Sand Trap	---	**0.15**
	SS-3G (1-1.5)	6/9/2020			---	<0.022
	SS-3H (0-0.5)	6/9/2020		Fringe of Green	---	**130**
	SS-3H (1-1.5)	6/9/2020			---	**1.8**
	SS-3I (0-0.5)	6/9/2020		Rough adjacent to Green	---	**0.92**
	SS-3I (1-1.5)	6/9/2020			---	**0.051**
	SS-3J (0-0.5)	6/9/2020		Fairway	---	**4.0**
	SS-3J (1-1.5)	6/9/2020			---	**0.14**
	SS-3 J N (0-0.5)	11/17/2021				**2.5**
	SS-3 J E (0-0.5)	11/17/2021				**3.8**
	SS-3 J S (0-0.5)	11/17/2021				**3.9**
	SS-3 J W (0-0.5)	11/17/2021				**3.7**
	SS-3K (0-0.5)	6/9/2020		Rough	---	**0.9**
	SS-3K (1-1.5)	6/9/2020			---	**0.1**
	SS-3L (0-0.5)	6/9/2020		Rough	---	**1.4**
	SS-3L (1-1.5)	6/9/2020			---	**0.054**
	SS-3M (0-0.5)	6/9/2020		Fairway	---	**1.5**
	Dup-4-06092020 (SS-3M (0-0.5)	6/9/2020			---	**1.2**
	SS-3M (1-1.5)	6/9/2020			---	**0.043**
	SS-4B (0-0.5)	6/11/2020	4th Hole	Fringe of Green	---	**46.0**
	SS-4B (1-1.5)	6/11/2020			---	**0.27**
	SS-4C (0-0.5)	6/11/2020		Rough	---	**2.5** [M1]
	Dup-11-06112020 (SS-4C 0-0.5)	6/11/2020			---	**2.1**
	SS-4C (1-1.5)	6/11/2020			---	**0.24**
	SS-4D (0-0.5)	6/11/2020		Fringe of Fairway	---	**3.6**
	SS-4D (1-1.5)	6/11/2020			---	**0.046**
	SS-4E (0-0.5)	6/11/2020		Fairway	---	**3.4**
	SS-4E (1-1.5)	6/11/2020			---	**0.12**
	SS-4F (0-0.5)	6/11/2020		Fringe of Fairway	---	**0.13**
	SS-4F (1-1.5)	6/11/2020			---	<0.023
	SS-5D (0-0.5)	6/12/2020	5th Hole	Fairway	---	**5.6**
	SS-5D (1-1.5)	6/12/2020			---	**0.035**
	SS-5E (0-0.5)	6/12/2020		Fairway	---	**2.3**
	SS-5E (1-1.5)	6/12/2020			---	**0.053**
	SS-5F (0-0.5)	6/12/2020		Rough	---	**1.9**
	Dup-13-06122020 (SS-5F (0-0.5)	6/12/2020			---	**2.0**
	SS-5F (1-1.5)	6/12/2020			---	<0.019
	SS-5G (0-0.5)	6/12/2020		Fringe of Green	---	**33.5**
	SS-5G (1-1.5)	6/12/2020			---	**0.066**
	SS-5H (0-0.5)	6/12/2020		Sand Trap	---	<0.021
	SS-5H (1-1.5)	6/12/2020			---	**0.025**
	SS-5I (0-0.5)	6/12/2020		Rough	---	**1.3**
	SS-5I (1-1.5)	6/12/2020			---	**0.11**
Residential Soil Reference Value (SRV) (mg/kg)					**9**	**2.7**
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					**9**	**3.1**
Screening Soil Leaching Value (SLV) (mg/kg)					**5.8**	**3.3**

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

[P6] Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level. - [R1] RPD value was outside control limits.

Exceeds Residential/Recreational SRV

Exceeds Commercial/Industrial SRV

Table 1 - Fairways, Greens, Roughs, and Tee Boxes
Soil Analytical Results
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Sample Identifier, Date Collected, and Location Description					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
Compound/Parameter						
CAS No.					7440-38-2	7439-97-6
	SS-5J (0-0.5)	6/12/2020	6th Hole	Tee Box	---	**5.5**
	SS-5J (1-1.5)	6/12/2020			---	**2.8**
	SS-5K (0-0.5)	6/12/2020		Tee Box	---	**0.055** [M1]
	Dup-14-06122020 (SS-5K (0-0.5)	6/12/2020			---	**0.053**
	SS-5K (1-1.5)	6/12/2020			---	**0.24**
	SS-5L (0-0.5)	6/12/2020		Rough	---	**0.16**
	SS-5L (1-1.5)	6/12/2020			---	<0.022
	SS-5M (0-0.5)	6/12/2020		Drainage Area adjacent to Tee Box	---	**0.13**
	SS-5M (1-1.5)	6/12/2020			---	**0.3**
	SS-10B (0-0.5)	6/9/2020	13th Hole	Fairway	---	**3.7**
	SS-10B (1-1.5)	6/9/2020			---	**0.04**
	SS-10C (0-0.5)	6/9/2020		Fringe of Fairway	---	**1.7**
	SS-10C (1-1.5)	6/9/2020			---	<0.023
	SS-10D (0-0.5)	6/9/2020		Rough	---	**0.87**
	SS-10D (1-1.5)	6/9/2020			---	**0.071**
	SS-10E (0-0.5)	6/9/2020	10th Hole	Rough	---	**0.22**
	SS-10E (1-1.5)	6/9/2020			---	<0.022
	SS-10F (0-0.5)	6/9/2020		Fringe of Fairway	---	**2.3**
	SS-10F (1-1.5)	6/9/2020			---	**0.22**
	Dup-5-06092020 (SS-10F (1-1.5)	6/9/2020			---	**0.61**
	SS-10G (0-0.5)	6/9/2020		Fairway	---	**2.8**
	SS-10G (1-1.5)	6/9/2020			---	**0.57**
	SS-10H (0-0.5)	6/9/2020		Fairway	---	**3.5**
	SS-10H (1-1.5)	6/9/2020			---	<0.023
	SS-13B (0-0.5)	6/9/2020	13th Hole	Fairway	---	**3.0**
	SS-13B (1-1.5)	6/9/2020			---	**0.08**
	SS-13C (0-0.5)	6/9/2020		Rough	---	<0.023
	SS-13C (1-1.5)	6/9/2020			---	**0.087**
	SS-14B (0-0.5)	6/9/2020	11th Hole	Fairway	---	**4.0**
	SS-14B (1-1.5)	6/9/2020			---	**0.14**
	SS-14C (0-0.5)	6/9/2020		Fringe of Fairway	---	**1.7**
	SS-14C (1-1.5)	6/9/2020			---	**0.2**
	SS-14D (0-0.5)	6/9/2020		Rough	---	**0.093**
	SS-14D (1-1.5)	6/9/2020			---	<0.024
	SS-16B (0-0.5)	6/11/2020	5th Hole	Fairway	---	**1.1**
	SS-16B (1-1.5)	6/11/2020			---	**0.2**
	SS-16C (0-0.5)	6/11/2020		Fringe of Fairway	---	**1.2**
	SS-16C (1-1.5)	6/11/2020			---	<0.023
	SS-16D (0-0.5)	6/11/2020		Rough	---	**1.2**
	SS-16D (1-1.5)	6/11/2020			---	**0.13**
	SS-17 (0-0.5)	6/10/2020	16th Hole	Rough next to sand trap	---	**0.65**
	SS-17 (1-1.5)	6/10/2020			---	**10.0**
	SS-17 (2-2.5)	11/17/2021			---	**0.035**
	SS-17 N (0-0.5)	11/17/2021			---	**0.52**
	SS-17 N (1-1.5)	11/17/2021			---	**1.3**
	SS-17 S (0-0.5)	11/17/2021			---	**0.3**
	SS-17 S (1-1.5)	11/17/2021			---	**1.6**
	SS-17B (0-0.5)	6/10/2020		Sand Trap	---	**0.05**
	SS-17B (1-1.5)	6/10/2020			---	**0.023**
	SS-17C (0-0.5)	6/10/2020		Rough	---	**0.088**
	SS-17C (1-1.5)	6/10/2020			---	**0.041**
	SS-17D (0-0.5)	6/10/2020	15th Hole	Rough	---	**0.39**
	SS-17D (1-1.5)	6/10/2020			---	**0.028**
	SS-17E (0-0.5)	6/10/2020		Fairway	---	**2.4**
	SS-17E (1-1.5)	6/10/2020			---	**0.022**
	SS-17F (0-0.5)	6/10/2020		Rough	---	**0.16**
	SS-17F (1-1.5)	6/10/2020			---	<0.023
	SS-17G (0-0.5)	6/10/2020	12th Hole	Fairway	---	**16.5**
	SS-17G (1-1.5)	6/10/2020			---	**0.21**
	SS-17G N (0-0.5)	11/17/2021			---	**0.77**
	SS-17G E (0-0.5)	11/17/2021			---	**1.3**
	SS-17G S (0-0.5)	11/17/2021			---	**0.098**
	SS-17G W (0-0.5)	11/17/2021			---	**0.44**
	SS-17H (0-0.5)	6/10/2020		Rough near Sidewalk	---	**1.0**
	SS-17H (1-1.5)	6/10/2020			---	**0.12**
	Dup-9-06102020 (SS-17H (1-1.5)	6/10/2020			---	**0.12**
	SS-17I (0-0.5)	6/10/2020			---	**3.3**
	SS-17I (1-1.5)	6/10/2020			---	**0.56**
	SS-17J (0-0.5)	6/10/2020			---	**3.8**
	SS-17J (1-1.5)	6/10/2020			---	**0.16**
Residential Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

Table 1 - Fairways, Greens, Roughs, and Tee Boxes
Soil Analytical Results
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Sample Identifier, Date Collected, and Location Description					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
Compound/Parameter						
CAS No.					7440-38-2	7439-97-6
	SS-18 (0-0.5)	6/7/2020	1st Hole	Rough	---	**0.48**
	SS-18 (1-1.5)	6/7/2020			---	**0.054**
	SS-18B (0-0.5)	6/7/2020		Fringe of Fairway	---	**3.1**
	SS-18B (1-1.5)	6/7/2020			---	**2.7**
	SS-18C (0-0.5)	6/7/2020		Fairway	---	**4.1**
	Dup-1-06072020 (SS-18C (0-0.5)	6/7/2020			---	**0.85**
	SS-18C (1-1.5)	6/7/2020			---	**0.11**
	SS-18D (0-0.5)	6/7/2020		Fringe of Fairway	---	**0.8**
	SS-18D (1-1.5)	6/7/2020			---	**0.042**
	SS-18E (0-0.5)	6/7/2020		Rough	---	**0.13**
	SS-18E (1-1.5)	6/7/2020			---	<0.021
	SS-19 (0-0.5)	6/10/2020	3rd Hole	Rough adjacent to Fairway	---	**1.1**
	SS-19 (1-1.5)	6/10/2020			---	**0.12**
	SS-19B (0-0.5)	6/10/2020		Rough adjacent to Fairway	---	**3.1**
	SS-19B (1-1.5)	6/10/2020			---	**0.65**
	SS-19BN (0-0.5)	11/16/2021				**2.9**
	SS-19BE (0-0.5)	11/16/2021				**2.3**
	SS-19BS (0-0.5)	11/16/2021				**2.8**
	SS-19C (0-0.5)	6/10/2020		Fairway	---	**3.0**
	SS-19C (1-1.5)	6/10/2020			---	**0.3**
	SS-19D (0-0.5)	6/10/2020		Fairway	---	**2.0**
	SS-19D (1-1.5)	6/10/2020			---	**0.092**
	SS-19E (0-0.5)	6/10/2020		Fringe of Fairway	---	**0.67**
	SS-19E (1-1.5)	6/10/2020			---	<0.021
	SS-19F (0-0.5)	6/10/2020		Rough	---	**0.35**
	Dup-8-06102020 (SS-19F (0-0.5)	6/10/2020			---	**0.35**
	SS-19F (1-1.5)	6/10/2020			---	**0.047**
	SS-20 (0-0.5)	6/9/2020	14th Hole	Tee Box	---	**0.021**
	SS-20 (1-1.5)	6/9/2020			---	**0.07**
	SS-20B (0-0.5)	6/9/2020		Rough adjacent to Tee Box	---	**0.33**
	Dup-3-06092020 (SS-20B (0-0.5)	6/9/2020			---	**0.26**
	SS-20B (1-1.5)	6/9/2020			---	**0.11**
	SS-20C (0-0.5)	6/9/2020		Tee Box	---	**6.8**
	SS-20C (1-1.5)	6/9/2020			---	**0.023**
	SS-20D (0-0.5)	6/9/2020		Rough adjacent to Tee Box	---	**2.8**
	SS-20D (1-1.5)	6/9/2020			---	**0.068** [M1]
	SS-21 (0-0.5)	6/11/2020	15th Hole	Fairway	---	**4.5**
	SS-21 (1-1.5)	6/11/2020			---	**0.031**
	SS-21B (0-0.5)	6/11/2020		Rough	---	**0.1**
	SS-21B (1-1.5)	6/11/2020			---	<0.023
	SS-21C (0-0.5)[a]	6/11/2020	16th Hole	Tee Box	---	**0.6**
	SS-21C (1-1.5)[a]	6/11/2020			---	**0.062**
	SS-21D (0-0.5)	6/11/2020		Tee Box	---	**0.53**
	Dup-10-06112020 (SS-21D (0-0.5)	6/11/2020			---	**0.54**
	SS-21D (1-1.5)	6/11/2020			---	**0.19**
	SS-21E (0-0.5)	6/11/2020		Tee Box	---	**0.047**
	SS-21E (1-1.5)	6/11/2020			---	<0.022
	SS-21F (0-0.5)	6/11/2020		Tee Box	---	**0.82**
	SS-21F (1-1.5)	6/11/2020			---	**0.25**
	SS-21G (0-0.5)	6/11/2020		Rough adjacent to Tee Box	---	**0.56**
	SS-21G (1-1.5)	6/11/2020			---	**0.051**
	SS-22 (0-0.5)	6/9/2020	11th Hole	Rough adjacent to Tee Box	---	**1.4**
	SS-22 (1-1.5)	6/9/2020			---	**0.038**
	SS-22B (0-0.5)	6/9/2020		Tee Box	---	**16.9**
	Dup-6-06092020 (SS-22B (0-0.5)	6/9/2020			---	**25.0**
	SS-22B (1-1.5)	6/9/2020			---	**109**
	SS-22B N (0-0.5)	11/17/2021			---	**0.19** [M1]
	SS-22B N (1-1.5)	11/17/2021			---	**0.028**
	SS-22B N (2-2.5)	11/17/2021			---	**0.028**
	SS-22B E (0-0.5)	11/17/2021			---	**0.37**
	SS-22B S (0-0.5)	11/17/2021			---	**2.2**
	SS-22B E (1-1.5)	11/17/2021			---	**0.049**
	SS-22B S (1-1.5)	11/17/2021			---	**0.097**
	SS-22C (0-0.5)	6/9/2020			---	**4.5**
	SS-22C (1-1.5)	6/9/2020			---	**0.22**
	SS-22D (0-0.5)	6/9/2020		Rough	---	**0.077**
	SS-22D (1-1.5)	6/9/2020			---	**0.023**
	SS-22E (0-0.5)	6/9/2020	13th Hole	Rough Adjacent to Fairway	---	**2.2**
	SS-22E (1-1.5)	6/9/2020			---	**0.15**
	SS-22F (0-0.5)	6/9/2020		Fairway	---	**3.0**
	SS-22F (1-1.5)	6/9/2020			---	**0.072**
	SS-22G (0-0.5)	6/9/2020		Fairway	---	**4.7**
	SS-22G (1-1.5)	6/9/2020			---	**0.073**
	SS-22H (0-0.5)	6/9/2020		Fringe of Fairway	---	**1.8**
	SS-22H (1-1.5)	6/9/2020			---	**0.08**
	SS-22I (0-0.5)	6/9/2020		Rough	---	**0.066**
	SS-22I (1-1.5)	6/9/2020			---	<0.023
Residential Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

Table 1 - Fairways, Greens, Roughs, and Tee Boxes
Soil Analytical Results
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Sample Identifier, Date Collected, and Location Description					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
CAS No.					7440-38-2	7439-97-6
	SS-23 (0-0.5)	6/10/2020	2nd Hole	Green	---	**44.1** [M6]
	SS-23 (1-1.5)	6/10/2020			---	**0.04**
	SS-23B (0-0.5)	6/10/2020		Sand Trap	---	**0.029**
	SS-23B (1-1.5)	6/10/2020			---	**0.025**
	SS-23C (0-0.5)	6/10/2020		Rough	---	**1.3**
	SS-23C (1-1.5)	6/10/2020			---	**0.086**
	SS-23D (0-0.5)	6/10/2020	3rd Hole	Rough adjacent to Tee Box	---	**2.3**
	SS-23D (1-1.5)	6/10/2020			---	**0.091**
	SS-23E (0-0.5)	6/10/2020		Tee Box	---	**4.8**
	SS-23E (1-1.5)	6/10/2020			---	**1.0**
	SS-23F (0-0.5)	6/10/2020		Tee Box	---	**0.042**
	SS-23F (1-1.5)	6/10/2020			---	**0.035**
	SS-23G (0-0.5)	6/10/2020		Tee Box	---	**8.0**
	SS-23G (1-1.5)	6/10/2020			---	**0.11**
	SS-23H (0-0.5)	6/10/2020		Rough	---	**0.33**
	SS-23H (1-1.5)	6/10/2020			---	<0.022
	SS-23I (0-0.5)	6/10/2020	17th Hole	Rough	---	**1.4**
	SS-23I (1-1.5)	6/10/2020			---	**0.042**
	SS-23J (0-0.5)	6/10/2020		Fairway	---	**0.49**
	SS-23J (1-1.5)	6/10/2020			---	**0.39**
	SS-23K (0-0.5)	6/10/2020		Fairway	---	**1.4**
	SS-23K (1-1.5)	6/10/2020			---	**0.029**
	SS-24 (0-0.5)	6/12/2020	Driving Range	Tee Box	---	**0.023**
	SS-24 (1-1.5)	6/12/2020			---	<0.022
	SS-24B (0-0.5)	6/12/2020		Practice Green	---	<0.021
	SS-24B (1-1.5)	6/12/2020			---	<0.021
	SS-24C (0-0.5)	6/12/2020		Fairway	---	**0.033**
	SS-24C (1-1.5)	6/12/2020			---	<0.020
	SS-24D (0-0.5)	6/12/2020		Tee Box	---	<0.022
	SS-24D (1-1.5)	6/12/2020			---	<0.020
	SS-24E (0-0.5)	6/12/2020		Fairway	---	**0.25**
	SS-24E (1-1.5)	6/12/2020			---	<0.021
	SS-24F (0-0.5)	6/12/2020		Fairway	---	**0.024**
	Dup-15-06122020 (SS-24F (0-0.5)	6/12/2020			---	<0.023
	SS-24F (1-1.5)	6/12/2020			---	<0.021
	SS-25 (0-0.5)	6/7/2020	1st Hole	Green	---	**63.9**
	SS-25 (1-1.5)	6/7/2020			---	**1.6**
	SS-26 (0-0.5)	6/10/2020	3rd Hole	Green	---	**1.7**
	SS-26 (1-1.5)	6/10/2020			---	**0.64** [M1]
	SS-27 (0-0.5)	6/11/2020	6th Hole	Green	---	**3.0**
	SS-27 (1-1.5)	6/11/2020			---	**0.18**
	SS-28 (0-0.5)	6/7/2020	9th Hole	Green	---	**110** [M6]
	SS-28 (1-1.5)	6/7/2020			---	**0.22**
	SS-29 (0-0.5)	6/9/2020	10th Hole	Green	---	**79.8**
	SS-29 (1-1.5)	6/9/2020			---	**0.33**
	SS-30 (0-0.5)	6/10/2020	11th Hole	Green	---	**1.3**
	SS-30 (1-1.5)	6/10/2020			---	**0.032**
	SS-31 (0-0.5)	6/10/2020	12th Hole	Green	---	**1.4**
	SS-31 (1-1.5)	6/10/2020			---	**1.6**
	SS-32 (0-0.5)	6/9/2020	14th Hole	Green	---	**40.9**
	SS-32 (1-1.5)	6/9/2020			---	<0.022
	SS-33 (0-0.5)	6/11/2020	15th Hole	Green	---	**73.0**
	SS-33 (1-1.5)	6/11/2020			---	**0.085**
	SS-34 (0-0.5)	6/10/2020	16th Hole	Green	---	**3.1**
	SS-34 (1-1.5)	6/10/2020			---	**0.15**
	SS-35 (0-0.5)	6/10/2020	17th Hole	Green	---	**23.4** [M6]
	Dup-7-06092020 (SS-35 (0-0.5)	6/10/2020			---	**20.5**
	SS-35 (1-1.5)	6/10/2020			---	**0.086**
	SS-36 (0-0.5)	6/15/2020	18th Hole	Green	---	**2.0**
	SS-36 (1-1.5)	6/15/2020			---	**0.1**
	SS-37 (0-0.5)	6/11/2020	Practice Green by Club House		---	**2.0**
	SS-37 (1-1.5)	6/11/2020			---	**0.089**
	SS-38 (0-0.5)	6/7/2020	2nd Hole	Tee Box	---	**0.056**
	SS-38 (1-1.5)	6/7/2020			---	**0.05**
	SS-39 (0-0.5)	6/10/2020	4th Hole	Tee Box	---	**4.4**
	SS-39 (1-1.5)	6/10/2020			---	<0.023
	SS-40 (0-0.5)	6/11/2020	7th Hole	Tee Box	---	**0.4**
	SS-40 (1-1.5)	6/11/2020			---	**0.036**
	SS-41 (0-0.5)	6/7/2020	8th Hole	Tee Box	---	**6.4**
	Dup-2-06072020 (SS-41 (0-0.5))	6/7/2020			---	**4.6**
	SS-41 (1-1.5)	6/7/2020			---	**1.6**
Residential Soil Reference Value (SRV) (mg/kg)					**9**	**2.7**
Commerical/Industrial Soil Reference Value (SRV) (mg/kg)					**9**	**3.1**
Screening Soil Leaching Value (SLV) (mg/kg)					**5.8**	**3.3**

Notes
Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.
mg/kg = Milligrams per kilogram.
< = Not detected at or above the laboratory reporting limit indicated.
--- = Not analyzed or calculated for this parameter or not applicable.
[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.
[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

Table 1 - Fairways, Greens, Roughs, and Tee Boxes
Soil Analytical Results
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
CAS No.					7440-38-2	7439-97-6
Sample Identifier, Date Collected, and Location Description	SS-42 (0-0.5)	6/10/2020	12th Hole	Tee Box	---	**0.11**
	SS-42 (1-1.5)	6/10/2020			---	**7.2**
	SS-42 (2-2.5)	11/17/2021			---	**1.3** [M1]
	SS-42 N (0-0.5)	11/17/2021			---	**0.11**
	SS-42 N (1-1.5)	11/17/2021			---	**5.1**
	SS-42 S (0-0.5)	11/17/2021			---	**0.37**
	SS-42 S (1-1.5)	11/17/2021			---	**0.66**
	SS-43 (0-0.5)	6/9/2020	13th Hole	Tee Box	---	**2.7**
	SS-43 (1-1.5)	6/9/2020			---	**0.16**
	SS-44 (0-0.5)	6/10/2020	15th Hole	Tee Box	---	**11.7**
	SS-44 (1-1.5)	6/10/2020			---	**0.13**
	SS-45 (0-0.5)	6/10/2020	17th Hole	Tee Box	---	**0.069**
	SS-45 (1-1.5)	6/10/2020			---	**0.028**
	SS-46 (0-0.5)	6/10/2020	18th Hole	Tee Box	---	**1.3**
	SS-46 (1-1.5)	6/10/2020			---	**0.043**
	SS-47 (0-0.5)	6/10/2020		Tee Box	---	**0.054**
	SS-47 (1-1.5)	6/10/2020			---	**0.025**
	SS-48 (0-0.5)	6/7/2020	2nd Hole	Fairway	---	**8.2**
	SS-48 (1-1.5)	6/7/2020			---	**0.073**
	SS-48N (0-0.5)	11/16/2021			---	**4.7**
	SS-48S (0-0.5)	11/16/2021				**3.7**
	SS-49 (0-0.5)	6/15/2020	5th Hole	Rough	---	**0.96**
	SS-49 (1-1.5)	6/15/2020			---	<0.022 [M1]
	SS-50 (0-0.5)	6/7/2020	7th Hole	Fairway	---	**3.5**
	SS-50 (1-1.5)	6/7/2020			---	**0.047**
	SS-51 (0-0.5)	6/10/2020	16th Hole	Rough adjacent to Fairway	---	**2.8**
	SS-51 (1-1.5)	6/10/2020			---	**0.21**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					**9**	**2.7**
Commercial/Industrial Soil Reference Value (SRV)					**9**	**3.1**
Screening Soil Leaching Value (SLV)					**5.8**	**3.3**

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV

Exceeds Commercial/Industrial SRV

Table 2
Soil Analytical Results: Wetlands, Ponds and Associated Areas
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter					Mercury, Total (mg/kg)
CAS No.					7439-97-6
Sample Identifier, Date Collected, and Location Description	Sed-1	07/02/2020	9th Hole	Center of Pond Adjacent to 9th Hole	1.5 [M1]
	SED 1A (0-0.5)	07/15/2020		Southeast slope	0.23
	PW-1A (0-0.5)	08/12/2020		West slope	0.41
	PW-1B (0-0.5)	08/12/2020			2.8
	PW-1C (0-0.5)	08/12/2020		Southeast slope	0.31
	PW-1D (0-0.5)	08/12/2020			0.54
	PW-1E (0-0.5)	08/12/2020		South of pond	0.94
	PW-1F (0-0.5)	08/12/2020			26.3
	PW-IF (1-1.5)	11/16/2021			0.063
	PW-IFE (0-0.5)	11/16/2021			0.7
	PW-IFS (0-0.5)	11/16/2021			1.2
	PW-1G (0-0.5)	08/12/2020		Southwest of pond	16.5
	PW-1G (1-1.5)	11/16/2021			0.076
	PW-1GN (0-0.5)	11/16/2021			1.0
	PW-1GW (0-0.5)	11/16/2021			8.8
	PW-1H (0-0.5)	08/12/2020			0.83
	Sed-2	07/02/2020	8th Hole	Center	0.21
	SED 2A (0-0.5)	07/15/2020		Southwest slope	0.59
	Sed-2A (1-1.5)	08/12/2020			0.42
	PW-2A (0-0.5)	08/12/2020		East slope	0.73
	PW-2B (0-0.5)	08/12/2020		East of pond	0.16
	PW-2C (0-0.5)	08/12/2020		West slope	0.94
	PW-2D (0-0.5)	08/12/2020			1.9
	PW-2E (0-0.5)	08/12/2020		East slope	0.028
	PW-2F (0-0.5)	08/12/2020		Northwest of pond	0.28
	PW-2F (1-1.5)	08/12/2020			0.22
	PW-2G (0-0.5)	08/12/2020		Southwest of pond	0.13
	PW-2H (0-0.5)	08/12/2020		South of pond	0.2
	PW-2I (0-0.5)	08/12/2020		Southwest of pond	0.18
	PW-2J (0-0.5)	08/12/2020			0.063
	Sed-3	07/02/2020	2nd Hole	Center	0.56
	Sed-101 (Sed-3)	07/02/2020			0.3
	SED 3A (0-0.5)	07/15/2020		North slope	0.044
	PW-3A (0-0.5)	08/12/2020		Northwest slope	0.075
	PW-3B (0-0.5)	08/12/2020		West of center	0.47
	PW-3C (0-0.5)	08/12/2020		Southeast slope	1.1
	PW-3D (0-0.5)	08/12/2020			0.056
	Sed-4	07/02/2020	South of 2nd Hole	Center	0.069
	SED 4A (0-0.5)	07/15/2020		Southwest slope	0.16
	SED 4A (1-1.5)	07/15/2020			0.19
	PW-4A (0-0.5)	08/12/2020			<0.024
	PW-4B (0-0.5)	08/12/2020		Southeast slope	0.18
	PW-4C (0-0.5)	08/12/2020		East slope	0.2
	PW-4D (0-0.5)	08/12/2020			0.046
	Sed-5	07/02/2020	Maintenance Building	Southeast of building	0.1
	PW-5A (0-0.5)	08/12/2020		Northwest of building	0.14
	PW-5B (0-0.5)	08/12/2020			0.098
	PW-5C (0-0.5)	08/12/2020			0.084
	PW-5D (0-0.5)	08/12/2020			0.28
	PW-5E (0-0.5)	08/12/2020		West of building	8.0
	PW-5E (1-1.5)	11/16/2021			0.071
	PW-5EE (0-0.5)	11/16/2021			2.9
	PW-5ES (0-0.5)	11/16/2021			41.9
	PW-5EW (0-0.5)	11/16/2021			0.27
	PW-5F (0-0.5)	08/12/2020		Southwest of building	3.7
	PW-5F (1-1.5)	11/18/2021			6.8
	PW-5F N (0-0.5)	11/18/2021			0.29
	PW-5F E (0-0.5)	11/18/2021			2.2
	PW-5F S (0-0.5)	11/18/2021			0.66
	PW-5G (0-0.5)	08/12/2020			2.5
				Residential/Recreational Soil Reference Value (SRV) (mg/kg)	2.7
				Commercial/Industrial Soil Reference Value (SRV) (mg/kg)	3.1
				Screening Soil Leaching Value (SLV) (mg/kg)	3.3

Notes
Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.
mg/kg = Milligrams per kilogram.
< = Not detected at or above the laboratory reporting limit indicated.
--- = Not analyzed or calculated for this parameter or not applicable.
[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

Table 2
Soil Analytical Results: Wetlands, Ponds and Associated Areas
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Sample Identifier, Date Collected, and Location Description					Mercury, Total (mg/kg)
CAS No.					7439-97-6
	Sed-6	07/02/2020	North of 6th Hole	Center	**12.9**
	Sed-6 (0-0.5)	7/13/2022			**0.29**
	Sed-6 (1-1.5)	7/13/2022			<0.027
	Sed-6 E (0-0.5)	7/13/2022			**0.069**
	Sed-6 S (0-0.5)	7/13/2022			**1.6**
	Sed-6 W (0-0.5)	7/13/2022			**0.56**
	PW-6A (0-0.5)	08/12/2020		North slope	**1.9**
	PW-6B (0-0.5)	08/12/2020			**2.5**
	PW-6C (0-0.5)	08/12/2020		Northeast slope	**6.4** [M6]
	PW-6C (1-1.5)	7/13/2022			**2.9**
	PW-6C N (0-0.5)	7/13/2022			**4.0**
	PW-6C W (0-0.5)	7/13/2022			**2.4**
	PW-6D (0-0.5)	08/12/2020		Northwest slope	**9.3**
	PW-6D (1-1.5)	7/13/2022			**0.68**
	PW-6D S (0-0.5)	7/13/2022			**2.5**
	PW-6D W (0-0.5)	7/13/2022			**0.24**
	PW-6E (0-0.5)	08/12/2020		South slope	**1.3**
	PW-6F (0-0.5)	08/12/2020			**0.26**
	PW-6G (0-0.5)	08/12/2020		Southeast slope	**0.025**
	PW-6H (0-0.5)	08/12/2020		North of pond	**0.28**
	PW-6I (0-0.5)	08/12/2020			**0.5**
	PW-6J (0-0.5)	08/12/2020			**0.91**
	PW-6K (0-0.5)	08/12/2020			**3.4**
	PW-6K (1-1.5)	11/18/2021			**2.3**
	PW-6K N (0-0.5)	11/18/2021			**0.27**
	PW-6K S (0-0.5)	11/18/2021			**1.4**
	PW-6K W (0-0.5)	11/18/2021			**0.11**
	SED-7	07/02/2020	4th Hole	Center	**11.7**
	SED-7 (1-1.5)	11/17/2021			<0.024
	SED 7A (0-0.5)	07/15/2020		Northwest slope	**0.12**
	SED 7B (0-0.5)	07/15/2020		Northwest of center	**11.9**
	Sed-7B (1-1.5)	08/12/2020			**0.045**
	SED 7C (0-0.5)	07/15/2020		Southeast of center	**1.1**
	SED 7C (1-1.5)	07/15/2020			**0.21**
	SED 7D (0-0.5)	07/15/2020		Southeast slope	**0.28**
	SED 7D (1-1.5)	07/15/2020			**0.16**
	SED-7 E (0-0.5)	11/17/2021			**0.13**
	SED-7 E (1-1.5)	11/17/2021			**0.055**
	SED-7 F (0-0.5)	11/17/2021			**0.24**
	SED-7 G (0-0.5)	11/17/2021			**0.075**
	SED-7 H (0-0.5)	11/17/2021			**0.33**
	PW-7A (0-0.5)	08/12/2020		Southeast of center	**2.4**
	PW-7B (0-0.5)	08/12/2020		Southeast slope	**0.21**
	PW-7C (0-0.5)	08/12/2020		Northwest of pond	**0.046**
	PW-7D (0-0.5)	08/12/2020		Northwest slope	**1.6**
	Soil 1-0-0.5	07/15/2020	4th Hole Tee box	West slope	**0.1**
	Soil 1-1-1.5	07/15/2020			**0.034**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					**2.7**
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					**3.1**
Screening Soil Leaching Value (SLV) (mg/kg)					**3.3**

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV

Exceeds Commercial/Industrial SRV

Table 3: Soil Borings
Soil Analytical Results
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter	CAS No.	Sample Identifier and Date Collected								Residential/Recreational Soil Reference Value (SRV) (mg/kg)	Commercial/ Industrial Soil Reference Value (SRV) (mg/kg)	Screening Soil Leaching Value (SLV) (mg/kg)
		SB-1 (0.5-1.5)	SB-2 (0.5-1)	SB-3 (6.5-7)	SB-4 (4"-10")	SB-5 (.5-1.5)	Dup-20-06252020 SB-5 (.5-1.5)	MeOH Trip Blank	MeOH Trip Blank			
		06/24/2020	06/24/2020	06/24/2020	06/24/2020	06/25/2020	06/25/2020	06/24/2020	06/24/2020			
		Former UST Basin Leak Site #5050	Former UST Basin Leak Site #18327	Former Diesel AST	Former Gasoline AST	North Parking Lot near clubhouse		Field QAQC Sample - Lab Report 10522854	Field QAQC Sample -Lab Report 10523060			
Volatile Organic Compounds (VOCs) (mg/kg)												
All reported VOCs	---	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	---	---	---
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)												
Benzo(b)fluoranthene	205-99-2	---	---	<0.0129 [R1]	---	**0.0144**	**0.0211**	---	---	cPAH	cPAH	cPAH
Benzo(a)pyrene	50-32-8	---	---	<0.0129	---	<0.0109	**0.0119**	---	---	cPAH	cPAH	cPAH
Benzo(g,h,i)perylene	191-24-2	---	---	<0.0129 [R1]	---	<0.0109	**0.0142**	---	---	NE	NE	NE
Chrysene	218-01-9	---	---	<0.0129 [R1]	---	**0.011**	**0.0159**	---	---	cPAH	cPAH	cPAH
Fluoranthene	206-44-0	---	---	<0.0129	---	**0.0182**	**0.0218**	---	---	1,080	6,800	670
Pyrene	129-00-0	---	---	<0.0129	---	**0.0171**	**0.021**	---	---	890	5,800	440
All other reported PAHs	---	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	---	---	---
BaP Equivalent[a]	---	**0.0**	**0.0**	**0.0**	**0.0**	**0.002**	**0.014**	**0.0**	**0.0**	2	23	1.4
Metals (mg/kg)												
Arsenic, Total	7440-38-2	**3.2**	**2.3**	---	---	**2.4**	**1.7**	---	---	9	9	5.8
Barium, Total	7440-39-3	**37.7**	**50.6**	---	---	**45.6** [M1]	**39.6**	---	---	1,100	18,000	1,700
Cadmium, Total	7440-43-9	<0.16	**0.31**	---	---	<0.16	<0.15	---	---	25	200	8.8
Chromium, Total[b]	7440-47-3	**16.7**	**15.5**	---	---	**18.4**	**19.1**	---	---	44,000/87[b]	100,000/650[b]	1,000,000,000/36[b]
Lead, Total	7439-92-1	**8.1**	**21.5**	---	---	**4.5**	**7.0**	---	---	300	700	2,700
Mercury, Total	7439-97-6	**0.94**	**0.82**	---	---	<0.020	**0.49**	---	---	2.7	3.1	3.3
Selenium, Total	7782-49-2	<1.1	<1.1	---	---	<1.1	<1.0	---	---	160	1,300	2.6
Silver, Total	7440-22-4	<0.54	<0.55	---	---	<0.53	<0.51	---	---	160	1,300	7.9
List 2 Pesticides (mg/kg)												
2,4-D	94-75-7	<0.10	---	---	---	---	---	---	---	285	2200	NE
2,4-DB	94-82-6	<0.10	---	---	---	---	---	---	---	226	1750	NE
2,4,5-T	93-76-5	<0.10	---	---	---	---	---	---	---	290	2150	NE
2,4,5-TP (Silvex)	93-72-1	<0.10	---	---	---	---	---	---	---	NE	NE	NE
Bentazon	25057-89-0	<0.10	---	---	---	---	---	---	---	NE	NE	NE
Dicamba	1918-00-9	<0.10	---	---	---	---	---	---	---	NE	NE	NE
MCPA	94-74-6	<0.10	---	---	---	---	---	---	---	16	110	NE
Picloram	1918-02-1	<0.10	---	---	---	---	---	---	---	2000	15000	NE
Triclopyr	55335-06-3	<0.10	---	---	---	---	---	---	---	NE	NE	NE
Chlorothalonil	1897-45-6	<0.05	---	---	---	---	---	---	---	NE	NE	NE
Iprodione	36934-19-7	<0.10	---	---	---	---	---	---	---	NE	NE	NE
Propiconazole	60207-90-1	<0.05	---	---	---	---	---	---	---	NE	NE	NE
Other Parameters (mg/kg)												
Diesel Range Organics (DRO)	---	<9.1	<8.9	<9.5	**605** [T6]	---	---	---	---	NE[c]	NE[c]	NE[c]
Gasoline Range Organics (GRO)	---	<10.6	<10.9	<13.3	<10.2 [G+]	---	---	<10.0	<10.0	NE[c]	NE[c]	NE[c]
Diisopropyl ether	108-20-3	<0.0558	<0.0541	<0.0646	<0.0516	---	---	<0.0500	---	NE	NE	NE
Nitrogen, Kjeldahl, Total	7727-37-9	**124**	---	---	---	---	---	---	---	5,000/1,000*	---	NE
Nitrogen, NO2 plus NO3	14797-55-8	**0.30** [N2]	---	---	---	---	---	---	---	150-200*	---	NE
Total Solids (%)	TSOLIDS	**89.6**	**92.5**	**77.4**	**96.9**	---	---	---	---	NE	NE	NE

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

RL = Reporting limits for other parameters that are not listed individually in this table because their concentrations were below reporting limits provided in the laboratory report.

NE = Regulatory limit not established for this parameter.

cPAH = Individual regulatory limit not established for this carcinogenic PAH; included in BaP equivalent calculation.

[a] = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of cPAHs; MPCA; 2009. If no cPAHs were detected above reasonable laboratory reporting limits the BaP equivalent is reported as 0 mg/kg per MPCA Remediation Division Policy; June 2011.

[b] = Reported result is total chromium, regulatory limit for chromium III and chromium VI are provided.

[c] = DRO/GRO concentrations greater than 100 mg/kg are not suitable for reuse as unregulated fill per MPCA Guidance Document c-rem1-01 "Best Management Practices for the Off-Site Reuse of Unregulated Fill" (February 2012).

*The MDA preliminary generic soil cleanup goal for nitrate-nitite is 150-200 mg/kg, and for TKN is 5,000 mg/kg for the upper 2.5 feet of soil, and 1,000 mg/kg below 2.5 feet.

[1] The continuing calibration for this analyte exceeded 20% difference acceptance criteria for EPA method. Analyte presence below reporting limits in associated samples. No impact to data.

[G+] Late peaks present outside the GRO window.

[L0] Analyte recovery in the laboratory control sample (LCS) was outside QC limits.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[N2] The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

[R1] RPD value was outside control limits.

[T6] High boiling point hydrocarbons are present in the sample.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV
Exceeds 100 mg/kg for DRO/GRO

BRAUN INTERTEC

Table 4
Soil Analytical Results - Hand Augers in Club House Area
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter	CAS No.	Sample Identifier and Date Collected																			Residential/ Recreational Soil Reference Value (SRV) (mg/kg)	Commercial/ Industrial Soil Reference Value (SRV) (mg/kg)	Screening Soil Leaching Value (SLV) (mg/kg)
		DSS-1 (0-6'')	DSS-1 (1-1.5')	DSS-2 (0-6'')	DSS-2 (1-1.5')	DSS-3 (0-6'')	DSS-4 (0-6'')	DSS-4 (1-1.5')	DSS-5 (0-6'')	DSS-5 (1-1.5')	DSS-6 (0-6'')	DSS-6 (1-1.5')	DSS-7 (0-6'')	DSS-7 (1-1.5')	DSS-7E (0-0.5)	DSS-7S (0-0.5)	DSS-7W (0-0.5)	DSS-8 (0-6'')	DSS-8 (1-1.5')	DSS-102 DSS-8 (1-1.5)			
		07/02/2020	07/02/2020	07/02/2020	07/02/2020	07/02/2020	07/02/2020	07/02/2020	07/02/2020	07/02/2020	07/02/2020	07/02/2020	07/02/2020	07/02/2020	11/16/2021	11/16/2021	11/16/2021	07/02/2020	07/02/2020	07/02/2020			
		Shed northwest of clubhouse					Garages west of clubhouse - North garage				Garages west of clubhouse - South garage												
		North of shed		Directly northwest of shed		East-southeast of shed	Directly northeast of garage		Directly northwest of garage	Directly northwest of garage	Directly northwest of garage		South of garage					East of garage					
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)																							
Acenaphthene	83-32-9	---	---	<0.057	**0.019**	---	<0.012	<0.012	---	---	---	---	---	---	---	---	---	<0.012	<0.057	**0.016**	1,200	5,260	81
Acenaphthylene	208-96-8	---	---	**0.53**	**0.22**	---	<0.012	<0.012	---	---	---	---	---	---	---	---	---	<0.012	<0.057	**0.029**	NE	NE	NE
Anthracene	120-12-7	---	---	**0.45**	**0.2**	---	<0.012	<0.012	---	---	---	---	---	---	---	---	---	<0.012	<0.057	**0.054**	7,880	45,400	1,300
Benz(a)anthracene	56-55-3	---	---	**1.6**	**0.71**	---	<0.012	<0.012	---	---	---	---	---	---	---	---	---	**0.069**	**0.15**	**0.19**	cPAH	cPAH	cPAH
Benzo(b)fluoranthene	205-99-2	---	---	**3.0**	**1.4**	---	**0.012**	<0.012	---	---	---	---	---	---	---	---	---	**0.12**	**0.23**	**0.31**	cPAH	cPAH	cPAH
Benzo(k)fluoranthene	207-08-9	---	---	**0.9**	**0.49**	---	<0.012	<0.012	---	---	---	---	---	---	---	---	---	**0.04**	**0.083**	**0.1**	cPAH	cPAH	cPAH
Benzo(a)pyrene	50-32-8	---	---	**2.1**	**0.87**	---	<0.012	<0.012	---	---	---	---	---	---	---	---	---	**0.079**	**0.14**	**0.21**	cPAH	cPAH	cPAH
Benzo(g,h,i)perylene	191-24-2	---	---	**1.7**	**0.71**	---	<0.012	<0.012	---	---	---	---	---	---	---	---	---	**0.059**	**0.12**	**0.16**	NE	NE	NE
Chrysene	218-01-9	---	---	**1.7**	**0.9**	---	<0.012	<0.012	---	---	---	---	---	---	---	---	---	**0.066**	**0.15**	**0.22**	cPAH	cPAH	cPAH
Dibenz(a,h)anthracene	53-70-3	---	---	**0.37**	**0.16**	---	<0.012	<0.012	---	---	---	---	---	---	---	---	---	**0.014**	<0.057	**0.041**	cPAH	cPAH	cPAH
Fluoranthene	206-44-0	---	---	**3.6**	**2.1**	---	**0.014**	<0.012	---	---	---	---	---	---	---	---	---	**0.18**	**0.3**	**0.39**	1,080	6,800	670
Fluorene	86-73-7	---	---	**0.1**	**0.045**	---	<0.012	<0.012	---	---	---	---	---	---	---	---	---	<0.012	<0.057	**0.016**	850	4,120	110
Indeno(1,2,3-cd)pyrene	193-39-5	---	---	**1.4**	**0.6**	---	<0.012	<0.012	---	---	---	---	---	---	---	---	---	**0.046**	**0.083**	**0.14**	cPAH	cPAH	cPAH
Phenanthrene	85-01-8	---	---	**1.7**	**0.84**	---	<0.012	<0.012	---	---	---	---	---	---	---	---	---	**0.053**	**0.12**	**0.23**	NE	NE	NE
Pyrene	129-00-0	---	---	**3.3**	**1.6**	---	**0.012**	<0.012	---	---	---	---	---	---	---	---	---	**0.13**	**0.24**	**0.34**	890	5,800	440
All other reported PAHs	---	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	---	---	---
BaP Equivalent[a]	---	**0.0**	**0.0**	**3.0**	**1.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.2**	**0.3**	2	23	1.4
Metals (mg/kg)																							
Arsenic, Total	7440-38-2	---	---	**2.7**	**2.7**	---	**5.7**	**5.8**	---	---	---	---	---	---	---	---	---	**2.6**	**2.5**	**3.3**	9	9	5.8
Barium, Total	7440-39-3	---	---	**44.0**	**51.5**	---	**83.3**	**79.6**	---	---	---	---	---	---	---	---	---	**70.4**	**55.6**	**84.4**	1,100	18,000	1,700
Cadmium, Total	7440-43-9	---	---	**0.42**	**0.43**	---	<0.17	<0.17	---	---	---	---	---	---	---	---	---	**0.2**	**0.17**	**0.18**	25	200	8.8
Chromium, Total[b]	7440-47-3	---	---	**13.1**	**14.7**	---	**18.4**	**18.7**	---	---	---	---	---	---	---	---	---	**14.8**	**14.3**	**13.6**	44,000/87[b]	100,000/650[b]	1,000,000,000/36[b]
Lead, Total	7439-92-1	---	---	**75.2**	**110**	---	**10.1**	**8.0**	---	---	---	---	---	---	---	---	---	**11.4**	**10.2**	**11.8**	300	700	2,700
Mercury, Total	7439-97-6	**0.37**	**0.38**	**0.38**	**0.31**	**0.11**	**0.08**	**0.062**	**0.21**	**0.06**	**0.076**	**0.11**	**3.3**	**0.3**	**0.62**	**0.095**	**0.084**	**0.31**	**0.3**	**0.38**	2.7	3.1	3.3
Selenium, Total	7782-49-2	---	---	<1.1	<1.0	---	<1.1	<1.1	---	---	---	---	---	---	---	---	---	<1.1	<1.1	<1.1	160	1,300	2.6
Silver, Total	7440-22-4	---	---	<0.57	<0.52	---	<0.56	<0.56	---	---	---	---	---	---	---	---	---	<0.53	<0.55	<0.57	160	1,300	7.9

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

RL = Reporting limits for other parameters that are not listed individually in this table because their concentrations were below reporting limits provided in the laboratory report.

NE = Regulatory limit not established for this parameter.

cPAH = Individual regulatory limit not established for this carcinogenic PAH; included in BaP equivalent calculation.

[a] = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of cPAHs; MPCA; 2009. If no cPAHs were detected above reasonable laboratory reporting limits the BaP equivalent is reported as 0 mg/kg per MPCA Remediation Division Policy; June 2011.

[b] = Reported result is total chromium, regulatory limit for chromium III and chromium VI are provided.

[1] [D3] Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

Exceeds Residential SRV

Exceeds Industrial SRV

BRAUN INTERTEC

Table 4
Soil Analytical Results - Hand Augers in Club House Area
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter	CAS No.	Sample Identifier and Date Collected																					Residential/ Recreational Soil Reference Value (SRV) (mg/kg)	Commercial/ Industrial Soil Reference Value (SRV) (mg/kg)	Screening Soil Leaching Value (SLV) (mg/kg)
		DSS-9 (0-6'')	DSS-9 (1-1.5')	DSS-10 (0-6'')	DSS-11 (0-6'')	DSS-11 (1-1.5')	DSS-12 (0-6'')	DSS-13 (0-6'')	DSS-13 (1-1.5')	DSS-14 (0-6'')	DSS-14 (1-1.5')	DSS-14N (0-0.5)	DSS-14S (0-0.5)	DSS-14W (0-0.5)	DSS-15 (0-6'')	DSS-15 (1-1.5')	DSS-16 (0-6'')	DSS-101 DSS-16 (0-6'')	DSS-16 (1-1.5')	DSS-17 (0-6')	DSS-17 (1-1.5')	DSS-18 (0-6'')	DSS-18 (1-1.5')			
		07/02/2020	07/02/2020	07/02/2020	07/02/2020	07/02/2020	07/02/2020	07/02/2020	07/02/2020	07/02/2020	07/02/2020	11/16/2021	11/16/2021	11/16/2021	07/02/2020	07/02/2020	07/02/2020	07/02/2020	07/02/2020	07/02/2020	07/02/2020	07/02/2020	07/02/2020			
		North garage		Shed west of clubhouse			Clubhouse								Poolhouse		Clubhouse									
		East of garage		Directly southwest of shed	Directly southeast of shed		Directly NW of clubhouse	West of clubhouse		South-southwest of clubhouse					Directly south of poolhouse		South-southeast of clubhouse			East-southeast of clubhouse		North-northwest of clubhouse				
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)																										
Acenaphthene	83-32-9	---	---	---	<0.011	<0.011	---	---	---	---	---	---	---	---	<0.011	<0.011	---	---	---	<0.012	<0.011	---	---	1,200	5,260	81
Acenaphthylene	208-96-8	---	---	---	<0.011	<0.011	---	---	---	---	---	---	---	---	<0.011	<0.011	---	---	---	**0.014**	<0.011	---	---	NE	NE	NE
Anthracene	120-12-7	---	---	---	<0.011	<0.011	---	---	---	---	---	---	---	---	<0.011	<0.011	---	---	---	**0.033**	<0.011	---	---	7,880	45,400	1,300
Benz(a)anthracene	56-55-3	---	---	---	**0.048**	**0.032**	---	---	---	---	---	---	---	---	**0.017**	**0.013**	---	---	---	**0.17**	<0.011	---	---	cPAH	cPAH	cPAH
Benzo(b)fluoranthene	205-99-2	---	---	---	**0.08**	**0.056**	---	---	---	---	---	---	---	---	**0.022**	<0.011	---	---	---	**0.21**	<0.011	---	---	cPAH	cPAH	cPAH
Benzo(k)fluoranthene	207-08-9	---	---	---	**0.035**	**0.024**	---	---	---	---	---	---	---	---	**0.012**	<0.011	---	---	---	**0.099**	<0.011	---	---	cPAH	cPAH	cPAH
Benzo(a)pyrene	50-32-8	---	---	---	**0.056**	**0.041**	---	---	---	---	---	---	---	---	**0.02**	<0.011	---	---	---	**0.15**	<0.011	---	---	cPAH	cPAH	cPAH
Benzo(g,h,i)perylene	191-24-2	---	---	---	**0.046**	**0.032**	---	---	---	---	---	---	---	---	**0.013**	<0.011	---	---	---	**0.11**	<0.011	---	---	NE	NE	NE
Chrysene	218-01-9	---	---	---	**0.056**	**0.037**	---	---	---	---	---	---	---	---	**0.022**	<0.011	---	---	---	**0.13**	<0.011	---	---	cPAH	cPAH	cPAH
Dibenz(a,h)anthracene	53-70-3	---	---	---	<0.011	<0.011	---	---	---	---	---	---	---	---	<0.011	<0.011	---	---	---	**0.028**	<0.011	---	---	cPAH	cPAH	cPAH
Fluoranthene	206-44-0	---	---	---	**0.12**	**0.082**	---	---	---	---	---	---	---	---	**0.048**	**0.022**	---	---	---	**0.35**	<0.011	---	---	1,080	6,800	670
Fluorene	86-73-7	---	---	---	<0.011	<0.011	---	---	---	---	---	---	---	---	<0.011	<0.011	---	---	---	<0.012	<0.011	---	---	850	4,120	110
Indeno(1,2,3-cd)pyrene	193-39-5	---	---	---	**0.033**	**0.025**	---	---	---	---	---	---	---	---	<0.011	<0.011	---	---	---	**0.09**	<0.011	---	---	cPAH	cPAH	cPAH
Phenanthrene	85-01-8	---	---	---	**0.035**	**0.027**	---	---	---	---	---	---	---	---	**0.027**	**0.016**	---	---	---	**0.092**	<0.011	---	---	NE	NE	NE
Pyrene	129-00-0	---	---	---	**0.094**	**0.061**	---	---	---	---	---	---	---	---	**0.033**	**0.019**	---	---	---	**0.26**	<0.011	---	---	890	5,800	440
All other reported PAHs	---	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	---	---	---
BaP Equivalent[a]	---	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	2	23	1.4
Metals (mg/kg)																										
Arsenic, Total	7440-38-2	---	---	---	**2.3**	**2.3**	---	---	---	---	---	---	---	---	**2.1**	**2.4**	---	---	---	**3.6**	**2.3**	---	---	9	9	5.8
Barium, Total	7440-39-3	---	---	---	**19.9**	**51.0**	---	---	---	---	---	---	---	---	**47.5**	**47.3**	---	---	---	**67.6**	**46.9**	---	---	1,100	18,000	1,700
Cadmium, Total	7440-43-9	---	---	---	**0.17**	<0.16	---	---	---	---	---	---	---	---	<0.16	<0.16	---	---	---	**0.32**	**0.38**	---	---	25	200	8.8
Chromium, Total[b]	7440-47-3	---	---	---	**5.8**	**15.2**	---	---	---	---	---	---	---	---	**34.3**	**17.9**	---	---	---	**18.0**	**17.6**	---	---	44,000/87[b]	100,000/650[b]	1,000,000,000/36[b]
Lead, Total	7439-92-1	---	---	---	**9.5**	**7.4**	---	---	---	---	---	---	---	---	**8.7**	**6.2**	---	---	---	**13.7**	**4.9**	---	---	300	700	2,700
Mercury, Total	7439-97-6	**0.52**	**0.099**	**0.16**	**0.29**	**0.089**	**0.042**	**2.0**	**1.7**	**4.1**	**0.91**	**0.19**	**0.8**	**0.71**	**0.31**	**0.24**	**1.6**	**1.1**	**0.11**	**0.79**	**0.062**	**0.62**	**0.89**	2.7	3.1	3.3
Selenium, Total	7782-49-2	---	---	---	<5.1 [1]	<1.1	---	---	---	---	---	---	---	---	<1.0	<1.1	---	---	---	<1.2	<1.1	---	---	160	1,300	2.6
Silver, Total	7440-22-4	---	---	---	<0.51	<0.53	---	---	---	---	---	---	---	---	<0.52	<0.54	---	---	---	<0.58	<0.54	---	---	160	1,300	7.9

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

RL = Reporting limits for other parameters that are not listed individually in this table because their concentrations were below reporting limits provided in the laboratory report.

NE = Regulatory limit not established for this parameter.

cPAH = Individual regulatory limit not established for this carcinogenic PAH; included in BaP equivalent calculation.

[a] = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of cPAHs; MPCA; 2009. If no cPAHs were detected above reasonable laboratory reporting limits the BaP equivalent is reported as 0 mg/kg per MPCA Remediation Division Policy; June 2011.

[b] = Reported result is total chromium, regulatory limit for chromium III and chromium VI are provided.

[1] [D3] Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

Exceeds Residential SRV

Exceeds Industrial SRV

BRAUN INTERTEC

Table 5: Agricultural Soil Boring
Soil Analytical Results
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter	CAS No.	Sample Identifier and Date Collected																					
		ASB-1 (0-0.5)	ASB-1 (2-2.5)	ASB-2 (0-0.5)	ASB-2 (2-2.5)	ASB-3 (0-0.5)	ASB-3 (2-2.5)	ASB-3 (4-4.5)	ASB-4 (0-0.5)	ASB-4 (2-2.5)	ASB-5C (0-0.5)	ASB-5C (2-2.5)	ASB-6c (0-0.5)	ASB-6c (2-2.5)	DUP-17-06222020 ASB-6c (2-2.5)	ASB-7 (0-0.5)	ASB-7 (2-2.5)	ASB-8c (0-0.5)	ASB-8c (2-2.5)	DUP-18-06222020 ASB-8c (2-2.5)	ASB-8c (4-4.5)	ASB-9C (0-0.5)	ASB-9C (2-2.5)	ASB-9C (4-4.5)
		06/22/2020	06/22/2020	06/22/2020	06/22/2020	06/22/2020	06/22/2020	06/22/2020	06/22/2020	06/22/2020	06/23/2020	06/23/2020	06/22/2020	06/22/2020	06/22/2020	06/22/2020	06/22/2020	06/22/2020	06/22/2020	06/22/2020	06/22/2020	06/23/2020	06/23/2020	06/23/2020
		Agricultural Chemical Storage Building (Interior)				Agricultural Chemical Storage			Exterior Chemical Loading Areas		Agricultural Chemical Storage Shed					Agricultural Chemical Mixing Area								
		Large crack in floor of west bay		Large crack in floor of east bay		Large crack in exterior asphalt loading area (South of Agricultural Chemical Storage Building)			Cracked asphalt		Outlet for drain in concrete loading pad		Grass area immediately adjacent to concrete loading pad			Inlet to drainage swale adjacent to mixing area		Main mixing area				Drainage area		
Volatile Organic Compounds (VOCs) (mg/kg)																								
All reported VOCs	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	<RL
Metals (mg/kg)																								
Arsenic, Total	7440-38-2	---	**2.4**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Barium, Total	7440-39-3	---	**57.2**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cadmium, Total	7440-43-9	---	<0.16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chromium, Total[a]	7440-47-3	---	**20.4**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Lead, Total	7439-92-1	---	**5.0**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Mercury, Total	7439-97-6	**0.042**	<0.022	**0.024**	<0.022	**0.15**	**0.048**	---	**<0.018**	<0.022	<0.023	<0.024	**0.21**	<0.021	<0.024	**0.036**	**0.048**	**1.1**	**0.58**	**0.14**	**0.037**	**0.61**	**0.78**	---
Selenium, Total	7782-49-2	---	<1.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Silver, Total	7440-22-4	---	<0.54	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
List 2 Pesticides (mg/kg)																								
2,4-D	94-75-7	---	---	---	---	---	---	---	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.10	---
2,4-DB	94-82-6	---	---	---	---	---	---	---	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.10	---
2,4,5-T	93-76-5	---	---	---	---	---	---	---	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.10	---
2,4,5-TP (Silvex)	93-72-1	---	---	---	---	---	---	---	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.10	---
Bentazon	25057-89-0	---	---	---	---	---	---	---	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.10	---
Dicamba	1918-00-9	---	---	---	---	---	---	---	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.10	---
MCPA	94-74-6	---	---	---	---	---	---	---	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.10	---
Picloram	1918-02-1	---	---	---	---	---	---	---	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.10	---
Triclopyr	55335-06-3	---	---	---	---	---	---	---	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.10	---
Chlorothalonil	1897-45-6	---	---	---	---	---	---	---	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	---	<0.05	<0.05	---
Iprodione	36934-19-7	---	---	---	---	---	---	---	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.10	---
Propiconazole	60207-90-1	---	---	---	---	---	---	---	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	---	<0.05	<0.05	---
Other Parameters (mg/kg)																								
Diesel Range Organics (DRO)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**35.0** [T6]
Gasoline Range Organics (GRO)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Diisopropyl ether	108-20-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	<0.0531
Nitrogen, Kjeldahl, Total	7727-37-9	**351**	**298**	**448**	**355**	**340**	**2,640**	**332**	---	---	---	---	---	---	---	**2,060**	**515**	**1,370**	**2,170**	**807**	---	**483**	**793**	---
Nitrogen, NO2 plus NO3	14797-55-8	**1.1 [N2]**	<0.23 [N2]	**1.7 [N2]**	**0.38** [N2]	**1.1 [N2]**	**0.28** [N2]	---	---	---	---	---	---	---	---	**10.4 [N2]**	**5.4** [N2]	**0.97 [N2]**	**0.31** [N2]	**0.33** [N2]	---	**0.40 [N2]**	**0.44** [N2]	---
Total Solids (%)	TSOLIDS	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**94.1**

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

RL = Reporting limits for other parameters that are not listed individually in this table because their concentrations were below reporting limits provided in the laboratory report.

NE = Regulatory limit not established for this parameter.

[a] = Reported result is total chromium, regulatory limit for chromium III and chromium VI are provided.

[b] = DRO/GRO concentrations greater than 100 mg/kg are not suitable for reuse as unregulated fill per MPCA Guidance Document c-rem1-01 "Best Management Practices for the Off-Site Reuse of Unregulated Fill" (February 2012).

*The MDA preliminary generic soil cleanup goal for nitrate-nitite is 150-200 mg/kg, and for TKN is 5,000 mg/kg for the upper 2.5 feet of soil, and 1,000 mg/kg below 2.5 feet.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
Sample was received or analysis requested beyond the recognized method holding time.

[N2] The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

[R1] RPD value was outside control limits.

[2] [P6] Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

Exceeds Residential SRV

Exceeds Commercial/Industrial SRV

BRAUN INTERTEC

Table 5: Agricultural Soil Boring
Soil Analytical Results
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter	CAS No.	Sample Identifier and Date Collected																		Residential Soil Reference Value (SRV) (mg/kg)	Commercial/ Industrial Soil Reference Value (SRV) (mg/kg)	Screening Soil Leaching Value (SLV) (mg/kg)
		ASB-10 (2-2.5)	ASB-11C (0-0.5)	ASB-11C (2-2.5)	ASB-12C (0-0.5)	ASB-12C (2-2.5)	ASB-12C (4-4.5)	ASB-13c (0-0.5)	ASB-13c (2-2.5)	DUP-16-06222020 ASB-13c (2-2.5)	ASB-13c (4-4.5)	ABS-13 N (0-0.5)	ABS-13 N (1-1.5)	ABS-13 E (0-0.5)	ABS-13 E (1-1.5)	ABS-13 S (0-0.5)	ABS-13 S (1-1.5)	ABS-13 W (0-0.5)	ABS-13 W (1-1.5)			
		06/22/2020	06/23/2020	06/23/2020	06/23/2020	06/23/2020	06/23/2020	06/22/2020	06/22/2020	06/22/2020	06/22/2020	11/18/2021	11/18/2021	11/18/2021	11/18/2021	11/18/2021	11/18/2021	11/18/2021	11/18/2021			
		Maintenance building (Interior)	Maintenance building (Exterior)					Water fill area														
		Interior crack in slab where agricultural chemical storage occurred	Loading door on west side of building		Loading door on south side of building																	
Volatile Organic Compounds (VOCs) (mg/kg)																						
All reported VOCs	---	<RL	---	---	---	---	---	---	---	---	---	<RL		<RL		<RL				---	---	---
Metals (mg/kg)																						
Arsenic, Total	7440-38-2	**1.4**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	9	9	5.8
Barium, Total	7440-39-3	**61.2** [M1]	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1,100	18,000	1,700
Cadmium, Total	7440-43-9	<0.17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	25	200	8.8
Chromium, Total[a]	7440-47-3	**20.9**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	44,000/87[a]	100,000/650[a]	1,000,000,000/36[a]
Lead, Total	7439-92-1	**4.9**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	300	700	2,700
Mercury, Total	7439-97-6	<0.022	---	---	---	---	---	**14.6**	**1.3**	**4.2**	**0.16**	**3.3**	**2.4** [2]	**2.4**	**3.5**	**2.4**	**4.2**	**3.3**	**3.6**	2.7	3.1	3.3
Selenium, Total	7782-49-2	<1.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	160	1,300	2.6
Silver, Total	7440-22-4	<0.56	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	160	1,300	7.9
List 2 Pesticides (mg/kg)																						
2,4-D	94-75-7	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.10	<0.10	---	---	---	---	---	---	---	---	---	285	2200	NE
2,4-DB	94-82-6	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.10	<0.10	---	---	---	---	---	---	---	---	---	226	1750	NE
2,4,5-T	93-76-5	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.10	<0.10	---	---	---	---	---	---	---	---	---	290	2150	NE
2,4,5-TP (Silvex)	93-72-1	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.10	<0.10	---	---	---	---	---	---	---	---	---	NE	NE	NE
Bentazon	25057-89-0	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.10	<0.10	---	---	---	---	---	---	---	---	---	NE	NE	NE
Dicamba	1918-00-9	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.10	<0.10	---	---	---	---	---	---	---	---	---	NE	NE	NE
MCPA	94-74-6	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.10	<0.10	---	---	---	---	---	---	---	---	---	16	110	NE
Picloram	1918-02-1	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.10	<0.10	---	---	---	---	---	---	---	---	---	2000	15000	NE
Triclopyr	55335-06-3	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.10	<0.10	---	---	---	---	---	---	---	---	---	NE	NE	NE
Chlorothalonil	1897-45-6	<0.05	<0.05	<0.05	<0.05	<0.05	---	<0.05	<0.05	<0.05	---	---	---	---	---	---	---	---	---	NE	NE	NE
Iprodione	36934-19-7	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.10	<0.10	---	---	---	---	---	---	---	---	---	NE	NE	NE
Propiconazole	60207-90-1	<0.05	<0.05	<0.05	<0.05	<0.05	---	<0.05	<0.05	<0.05	---	---	---	---	---	---	---	---	---	NE	NE	NE
Other Parameters (mg/kg)																						
Diesel Range Organics (DRO)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	NE[b]	NE[b]	NE[b]
Gasoline Range Organics (GRO)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	NE[b]	NE[b]	NE[b]
Diisopropyl ether	108-20-3	<0.0582	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	NE	NE	NE
Nitrogen, Kjeldahl, Total	7727-37-9	---	**1,060 [M1][R1]**	**3,850** [M6]	**197**	**638**	---	---	---	---	---	---	---	---	---	---	---	---	---	5,000/1,000*	---	NE
Nitrogen, NO2 plus NO3	14797-55-8	---	**0.25 [N2]**	<0.28 [N2]	**0.25 [N2]**	<0.22 [N2]	---	---	---	---	---	---	---	---	---	---	---	---	---	150-200*	---	NE
Total Solids (%)	TSOLIDS	**86.0**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	NE	NE	NE

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 a
mg/kg = Milligrams per kilogram.
< = Not detected at or above the laboratory reporting limit indicated.
--- = Not analyzed or calculated for this parameter or not applicable.
RL = Reporting limits for other parameters that are not listed individuall
NE = Regulatory limit not established for this parameter.
[a] = Reported result is total chromium, regulatory limit for chromium II
[b] = DRO/GRO concentrations greater than 100 mg/kg are not suitable
*The MDA preliminary generic soil cleanup goal for nitrate-nitite is 150-
[M1] Matrix spike recovery exceeded QC limits. Batch accepted based
[M6] Matrix spike and Matrix spike duplicate recovery not evaluated ag
Sample was received or analysis requested beyond the recognized met
[N2] The lab does not hold NELAC/TNI accreditation for this parameter
[R1] RPD value was outside control limits.

[2] [P6] Matrix spike recovery was outside laboratory control lim

Exceeds Residential SRV
Exceeds Commercial/Industrial SRV

BRAUN INTERTEC

Table 6: Test Trenches
Soil Analytical Results
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter	CAS No.	Sample Identifier and Date Collected														Residential Soil Reference Value (SRV) (mg/kg)	Commercial/ Industrial Soil Reference Value (SRV) (mg/kg)	Screening Soil Leaching Value (SLV) (mg/kg)
		TT-1 (2'-4')	TT-1 Hotspot (2-4)	TT-1 (6-7)	TT-2 (2-3')	TT-3 (1-2)	TT-4 (7-8)	TT-5 (2-3)	TT-6 (8-9)	DUP-19-06232020 TT-6 (8-9)	TT-7 (3-5)	TT-9 (3-5)	MeOH Trip Blank	MeOH Trip Blank	MeOH Trip Blank			
		06/24/2020	06/24/2020	06/24/2020	06/24/2020	06/24/2020	06/23/2020	06/23/2020	06/23/2020	06/23/2020	06/25/2020	06/25/2020	06/23/2020	06/24/2020	06/24/2020			
		Former Pool House - South of Club House				Former Tennis Courts (south of Pool House)	Raised Berm - Maintenance Area				Former Pool House	Former Tennis Courts						
		Soil with debris (concrete, asphalt, plastic)	Odorous soil found near buried paint can	Rock base beneath buried concrete slab	Sandy clay fill	Sandy, clayey gravel, fill with weathered Class V gravel	Soil with debris (metal, ash, glass)	Soil with debris (glass, golf ball)	Soil with debris (concrete, brick, clay, plastic, tile)		Soil with debris (red asphalt, plastic, concrete, apparent Class 5 aggregate)	Soil with debris (red asphalt, plastic, concrete, apparent Class 5 aggregate)	Field QAQC Sample - Lab Report 10522687	Field QAQC Sample - Lab Report 10522854	Field QAQC Sample Lab Report 10523060			
Volatile Organic Compounds (VOCs) (mg/kg)																		
All reported VOCs	---	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	---	---	---
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)																		
Fluoranthene	206-44-0	<0.0109	**0.0129**	**0.0114**	<0.0113	<0.0112	**0.245**	<0.0113	**0.0123**	<0.0114	<0.0113	**0.0158**	---	---	---	1,080	6,800	670
Naphthalene	91-20-3	<0.0109	**0.0134**	<0.0111	<0.0113	<0.0112	<0.180	<0.0113	<0.0115	<0.0114	<0.0113	<0.0111	---	---	---	10	28	4.5
Pyrene	129-00-0	<0.0109	**0.0124**	<0.0111	<0.0113	<0.0112	<0.180	<0.0113	**0.0118**	<0.0114	<0.0113	**0.0165**	---	---	---	890	5,800	440
All other reported PAHs	---	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	---	---	---
BaP Equivalent[c]	---	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	2	23	1.4
Metals (mg/kg)																		
Arsenic, Total	7440-38-2	**1.5**	**2.0**	**2.4**	**1.8**	**1.8**	**4.3**	**3.4**	**2.9**	**3.8**	**2.5**	**2.8**	---	---	---	9	9	5.8
Barium, Total	7440-39-3	**33.1**	**45.2**	**36.6**	**31.4**	**57.9**	**213**	**43.6**	**67.4**	**104**	**44.2**	**51.0**	---	---	---	1,100	18,000	1,700
Cadmium, Total	7440-43-9	<0.16	<0.16	<0.16	<0.16	<0.16	**2.0**	**0.23**	**0.73**	**0.71**	**0.18**	<0.16	---	---	---	25	200	8.8
Chromium, Total[e]	7440-47-3	**18.9**	**18.2**	**12.8**	**10.7**	**17.4**	**21.8**	**13.1**	**32.9**	**25.8**	**16.5**	**16.8**	---	---	---	44,000/87[e]	100,000/650[e]	1,000,000,000/36[e]
Lead, Total	7439-92-1	**3.3**	**6.3**	**9.1**	**4.9**	**4.6**	**622**	**27.4**	**13.1**	**15.7**	**5.2**	**4.6**	---	---	---	300	700	2,700
Mercury, Total	7439-97-6	<0.019	**0.064**	**0.45**	<0.022	**0.041**	**1.2**	**1.2**	**4.6**	**7.2**	**0.059**	**0.06**	---	---	---	2.7	3.1	3.3
Selenium, Total	7782-49-2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.7	<1.1	<1.1	<1.1	<1.1	<1.0	---	---	---	160	1,300	2.6
Silver, Total	7440-22-4	<0.53	<0.53	<0.54	<0.53	<0.55	<0.87	<0.55	<0.56	<0.54	<0.55	<0.52	---	---	---	160	1,300	7.9
Other Parameters (mg/kg)																		
Diesel Range Organics (DRO)	---	<8.5	**48.6** [T6]	<9.5	---	---	---	---	---	---	<9.4	---	---	---	---	NE[f]	NE[f]	NE[f]
Gasoline Range Organics (GRO)	---	<10.6	**199** [G+]	<10.9	---	---	---	---	---	---	---	---	---	<10.0	<10.0	NE[f]	NE[f]	NE[f]
Diisopropyl ether	108-20-3	<0.0550	<0.0574	---	<0.0558	<0.0552	<0.0977	<0.0574	<0.0568	<0.0577	---	---	<0.0500	<0.0500	---	NE	NE	NE
Total Solids (%)	TSOLIDS	**90.9**	**87.1**	---	**89.5**	**90.6**	**51.2**	**87.1**	**88.0**	**86.7**	---	---	---	---	---	NE	NE	NE

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

RL = Reporting limits for other parameters that are not listed individually in this table because their concentrations were below reporting limits provided in the laboratory report.

NE = Regulatory limit not established for this parameter.

cPAH = Individual regulatory limit not established for this carcinogenic PAH; included in BaP equivalent calculation.

[c] = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of cPAHs; MPCA; 2009. If no cPAHs were detected above reasonable laboratory reporting limits the BaP equivalent is reported as 0 mg/kg per MPCA Remediation Division Policy; June 2011.

[e] = Reported result is total chromium, regulatory limit for chromium III and chromium VI are provided.

[f] = DRO/GRO concentrations greater than 100 mg/kg are not suitable for reuse as unregulated fill per MPCA Guidance Document c-rem1-01 "Best Management Practices for the Off-Site Reuse of Unregulated Fill" (February 2012).

[1] The continuing calibration for this analyte exceeded 20% difference acceptance criteria for EPA method. Analyte presence below reporting limits in associated samples. No impact to data.

[CC] The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The result may be biased.

[G+] Late peaks present outside the GRO window.

[L0] Analyte recovery in the laboratory control sample (LCS) was outside QC limits.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

[R1] RPD value was outside control limits.

[T6] High boiling point hydrocarbons are present in the sample.

Exceeds Residential SRV
Exceeds Commercial/Industrial SRV
Exceeds 100 mg/kg for DRO/GRO

BRAUN INTERTEC

Table 7
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
CAS No.					7440-38-2	7439-97-6
Sample Identifier, Date Collected, and Location Description	SS-1 (0-0.5)	04/19/2019	8th Hole	Green	---	**18.6**
	SS-1B (0-0.5)	6/7/2020			**117**	**38.2**
	SS-1B (1-1.5)	6/7/2020			**29.1**	**11.6**
	SS-1B (2-2.5)	11/16/2022			**2.5**	**13.0**
	SS-1BN (0-0.5)	11/15/2021			**5.5**	**4.7**
	DUP-10 (SS-1BN (0-0.5))	11/16/2021			**5.3**	---
	SS-1BN (1-1.5)	11/15/2021			**2.5**	**3.6** [M1]
	SS-1C (0-0.5)	6/7/2020		Rough adjacent to Green	**3.2**	**0.08**
	SS-1C (1-1.5)	6/7/2020			**3.7**	**0.057**
	SS-1D (0-0.5)	6/7/2020	9th Hole	Rough near Sidewalk	---	**0.039**
	SS-1D (1-1.5)	6/7/2020			---	**0.028**
	SS-1E (0-0.5)	6/7/2020		Tee Box	---	**3.9**
	SS-1E (1-1.5)	6/7/2020			---	**0.11**
	SS-1F (0-0.5)	6/7/2020	8th Hole	Rough near Sidewalk	**7.4**	**6.6**
	SS-1F (1-1.5)	6/7/2020			**2.9**	**0.057**
	SS-1FE (0-0.5)	11/16/2021			---	**0.94**
	SS-1FN (0-0.5)	11/16/2021			---	**0.84**
	SS-1FS (0-0.5)	11/16/2021			---	**0.026**
	SS-1FW (0-0.5)	11/16/2021			---	**16.1**
	SS-1G (0-0.5)	6/7/2020		Sand Trap	---	<0.022
	SS-1G (1-1.5)	6/7/2020			---	**0.028**
	SS-1H (0-0.5)	6/7/2020		Rough adjacent to Sand Trap	---	**0.13**
	SS-1H (1-1.5)	6/7/2020			---	<0.021
	SS-1I (0-0.5)	6/7/2020		Fairway	---	**6.7** [M6]
	SS-1I (1-1.5)	6/7/2020			---	**0.2**
	SS-1IE (0-0.5)	11/16/2021			---	**7.1**
	SS-1IN (0-0.5)	11/16/2021			---	**2.4**
	SS-1IS (0-0.5)	11/16/2021			---	**4.6** [P6]
	SS-1IW (0-0.5)	11/16/2021			---	**4.4**
	SS-1J (0-0.5)	6/7/2020	9th Hole	Tee Box	---	**5.1**
	SS-1J (1-1.5)	6/7/2020			---	**0.087**
	SS-1K (0-0.5)	6/7/2020		Rough adjacent to Tee Box	---	**1.1**
	SS-1K (1-1.5)	6/7/2020			---	**0.1**
	SS-2 (0-0.5)	04/19/2019	Practice Green	Near Driving Range	---	**0.089**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes
Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.
mg/kg = Milligrams per kilogram.
< = Not detected at or above the laboratory reporting limit indicated.
--- = Not analyzed or calculated for this parameter or not applicable.
[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.
[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

Table 7
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Sample Identifier, Date Collected, and Location Description				Compound/Parameter	Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
				CAS No.	7440-38-2	7439-97-6
SS-3 (0-0.5)	04/19/2019	13th Hole	Green		---	**43.4**
SS-3B (0-0.5)	05/01/2019		North Fringe of Green		---	**17.8**
SS-3C (0-0.5)	05/01/2019		South Fringe of Green		---	**144**
SS-3D (0-0.5)	05/01/2019		10 ft South of Fringe of Green		---	**113**
SS-3E (0-0.5)	05/10/2019		20 ft South of Fringe of Green		---	**15.1**
SS-3F (0-0.5)	05/10/2019		10 ft North of Fringe of Green		---	**9.9**
SS-3G (0-0.5)	6/9/2020		Sand Trap		---	**0.15**
SS-3G (1-1.5)	6/9/2020				---	<0.022
SS-3H (0-0.5)	6/9/2020		Fringe of Green		---	**130**
SS-3H (1-1.5)	6/9/2020				---	**1.8**
SS-3I (0-0.5)	6/9/2020		Rough adjacent to Green		---	**0.92**
SS-3I (1-1.5)	6/9/2020				---	**0.051**
SS-3J (0-0.5)	6/9/2020		Fairway		---	**4.0**
SS-3J (1-1.5)	6/9/2020				---	**0.14**
SS-3 J N (0-0.5)	11/17/2021				---	**2.5**
SS-3 J E (0-0.5)	11/17/2021				---	**3.8**
SS-3 J S (0-0.5)	11/17/2021				---	**3.9**
SS-3 J W (0-0.5)	11/17/2021				---	**3.7**
SS-3K (0-0.5)	6/9/2020		Rough		---	**0.9**
SS-3K (1-1.5)	6/9/2020				---	**0.1**
SS-3L (0-0.5)	6/9/2020		Rough		---	**1.4**
SS-3L (1-1.5)	6/9/2020				---	**0.054**
SS-3M (0-0.5)	6/9/2020		Fairway		---	**1.5**
Dup-4-06092020 (SS-3M (0-0.5)	6/9/2020				---	**1.2**
SS-3M (1-1.5)	6/9/2020				---	**0.043**
SS-4 (0-0.5)	04/19/2019	4th Hole	Green		---	**21.1**
SS-4B (0-0.5)	6/11/2020		Fringe of Green		---	**46.0**
SS-4B (1-1.5)	6/11/2020				---	**0.27**
SS-4C (0-0.5)	6/11/2020		Rough		---	**2.5** [M1]
Dup-11-06112020 (SS-4C 0-0.5)	6/11/2020				---	**2.1**
SS-4C (1-1.5)	6/11/2020				---	**0.24**
SS-4D (0-0.5)	6/11/2020		Fringe of Fairway		---	**3.6**
SS-4D (1-1.5)	6/11/2020				---	**0.046**
SS-4E (0-0.5)	6/11/2020		Fairway		---	**3.4**
SS-4E (1-1.5)	6/11/2020				---	**0.12**
SS-4F (0-0.5)	6/11/2020		Fringe of Fairway		---	**0.13**
SS-4F (1-1.5)	6/11/2020				---	<0.023
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes
Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.
mg/kg = Milligrams per kilogram.
< = Not detected at or above the laboratory reporting limit indicated.
--- = Not analyzed or calculated for this parameter or not applicable.
[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.
[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

Table 7
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Sample Identifier, Date Collected, and Location Description					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
CAS No.					7440-38-2	7439-97-6
	SS-5 (0-0.5)	6/12/2020	5th Hole	Green	---	**45.3**
	SS-5A (0-0.5)	6/12/2020		East Fringe of Green	---	**6.5**
	SS-5B (0-0.5)	6/12/2020		West Fringe of Green	---	**46.3**
	SS-5C (0-0.5)	6/12/2020		10 ft West of Fringe of Green	---	**8.2**
	SS-5D (0-0.5)	6/12/2020		Fairway	---	**5.6**
	SS-5D (1-1.5)	6/12/2020			---	**0.035**
	SS-5E (0-0.5)	6/12/2020		Fairway	---	**2.3**
	SS-5E (1-1.5)	6/12/2020			---	**0.053**
	SS-5F (0-0.5)	6/12/2020		Rough	---	**1.9**
	Dup-13-06122020 (SS-5F (0-0.5)	6/12/2020			---	**2.0**
	SS-5F (1-1.5)	6/12/2020			---	<0.019
	SS-5G (0-0.5)	6/12/2020		Fringe of Green	---	**33.5**
	SS-5G (1-1.5)	6/12/2020			---	**0.066**
	SS-5H (0-0.5)	6/12/2020		Sand Trap	---	<0.021
	SS-5H (1-1.5)	6/12/2020			---	**0.025**
	SS-5I (0-0.5)	6/12/2020		Rough	---	**1.3**
	SS-5I (1-1.5)	6/12/2020			---	**0.11**
	SS-5J (0-0.5)	6/12/2020	6th Hole	Tee Box	---	**5.5**
	SS-5J (1-1.5)	6/12/2020			---	**2.8**
	SS-5K (0-0.5)	6/12/2020		Tee Box	---	**0.055** [M1]
	Dup-14-06122020 (SS-5K (0-0.5)	6/12/2020			---	**0.053**
	SS-5K (1-1.5)	6/12/2020			---	**0.24**
	SS-5L (0-0.5)	6/12/2020		Rough	---	**0.16**
	SS-5L (1-1.5)	6/12/2020			---	<0.022
	SS-5M (0-0.5)	6/12/2020		Drainage Area adjacent to Tee Box	---	**0.13**
	SS-5M (1-1.5)	6/12/2020			---	**0.3**
	SS-6 (0-1)	04/19/2019	Maintenance Building	South of Wash Out Area	**2.7**	**2.8**
	SS-7 (0-1)	04/19/2019	Fertilizer Storage Building	Northwest corner	**2.7**	**2.8**
	SS-8 (0-0.5)	05/01/2019	10th Hole	Tee Box	---	**6.8**
	SS-8 (0-0.5)	05/10/2019	10th Hole		---	**0.030**
	SS-9 (0-0.5)	05/01/2019	14th Hole	Tee Box	---	**0.45**
	SS-10 (0-0.5)	05/01/2019	13th Hole	Fairway - Low Area	---	**4.7**
	SS-10B (0-0.5)	6/9/2020		Fairway	---	**3.7**
	SS-10B (1-1.5)	6/9/2020			---	**0.04**
	SS-10C (0-0.5)	6/9/2020		Fringe of Fairway	---	**1.7**
	SS-10C (1-1.5)	6/9/2020			---	<0.023
	SS-10D (0-0.5)	6/9/2020		Rough	---	**0.87**
	SS-10D (1-1.5)	6/9/2020			---	**0.071**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.
mg/kg = Milligrams per kilogram.
< = Not detected at or above the laboratory reporting limit indicated.
--- = Not analyzed or calculated for this parameter or not applicable.
[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.
[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

Table 7
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Sample Identifier, Date Collected, and Location Description					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
Compound/Parameter						
CAS No.					7440-38-2	7439-97-6
	SS-10E (0-0.5)	6/9/2020	10th Hole	Rough	---	**0.22**
	SS-10E (1-1.5)	6/9/2020			---	<0.022
	SS-10F (0-0.5)	6/9/2020		Fringe of Fairway	---	**2.3**
	SS-10F (1-1.5)	6/9/2020			---	**0.22**
	Dup-5-06092020 (SS-10F (1-1.5)	6/9/2020			---	**0.61**
	SS-10G (0-0.5)	6/9/2020		Fairway	---	**2.8**
	SS-10G (1-1.5)	6/9/2020			---	**0.57**
	SS-10H (0-0.5)	6/9/2020		Fairway	---	**3.5**
	SS-10H (1-1.5)	6/9/2020			---	<0.023
	SS-11 (0-0.5)	5/10/2019	11th Hole	Tee Box	---	**5.2**
	SS-12 (0-0.5)	5/10/2019	18th Hole	Fairway	---	**5.0**
	SS-13 (0-0.5)	5/10/2019	11th Hole	Fairway	---	**5.1**
	SS-13B (0-0.5)	6/9/2020	13th Hole	Fairway	---	**3.0**
	SS-13B (1-1.5)	6/9/2020			---	**0.08**
	SS-13C (0-0.5)	6/9/2020		Rough	---	<0.023
	SS-13C (1-1.5)	6/9/2020			---	**0.087**
	SS-14 (0-0.5)	5/10/2019		Fairway - Low Area	---	**4.4**
	SS-14B (0-0.5)	6/9/2020	11th Hole	Fairway	---	**4.0**
	SS-14B (1-1.5)	6/9/2020			---	**0.14**
	SS-14C (0-0.5)	6/9/2020		Fringe of Fairway	---	**1.7**
	SS-14C (1-1.5)	6/9/2020			---	**0.2**
	SS-14D (0-0.5)	6/9/2020		Rough	---	**0.093**
	SS-14D (1-1.5)	6/9/2020			---	<0.024
	SS-15 (0-0.5)	5/10/2019	5th Hole	Tee Box	---	**7.0**
	SS-16 (0-0.5)	5/10/2019		Fairway	---	**4.5**
	SS-16B (0-0.5)	6/11/2020			---	**1.1**
	SS-16B (1-1.5)	6/11/2020			---	**0.2**
	SS-16C (0-0.5)	6/11/2020		Fringe of Fairway	---	**1.2**
	SS-16C (1-1.5)	6/11/2020			---	<0.023
	SS-16D (0-0.5)	6/11/2020		Rough	---	**1.2**
	SS-16D (1-1.5)	6/11/2020			---	**0.13**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes
Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.
mg/kg = Milligrams per kilogram.
< = Not detected at or above the laboratory reporting limit indicated.
--- = Not analyzed or calculated for this parameter or not applicable.
[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.
[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

Table 7
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
CAS No.					7440-38-2	7439-97-6
Sample Identifier, Date Collected, and Location Description	SS-17 (0-0.5)	6/10/2020	16th Hole	Rough next to sand trap	---	**0.65**
	SS-17 (1-1.5)	6/10/2020			---	**10.0**
	SS-17 (2-2.5)	11/17/2021			---	**0.035**
	SS-17 N (0-0.5)	11/17/2021			---	**0.52**
	SS-17 N (1-1.5)	11/17/2021			---	**1.3**
	SS-17 S (0-0.5)	11/17/2021			---	**0.3**
	SS-17 S (1-1.5)	11/17/2021			---	**1.6**
	SS-17B (0-0.5)	6/10/2020		Sand Trap	---	**0.05**
	SS-17B (1-1.5)	6/10/2020			---	**0.023**
	SS-17C (0-0.5)	6/10/2020		Rough	---	**0.088**
	SS-17C (1-1.5)	6/10/2020			---	**0.041**
	SS-17D (0-0.5)	6/10/2020	15th Hole	Rough	---	**0.39**
	SS-17D (1-1.5)	6/10/2020			---	**0.028**
	SS-17E (0-0.5)	6/10/2020		Fairway	---	**2.4**
	SS-17E (1-1.5)	6/10/2020			---	**0.022**
	SS-17F (0-0.5)	6/10/2020		Rough	---	**0.16**
	SS-17F (1-1.5)	6/10/2020			---	<0.023
	SS-17G (0-0.5)	6/10/2020	12th Hole	Fairway	---	**16.5**
	SS-17G (1-1.5)	6/10/2020			---	**0.21**
	SS-17G N (0-0.5)	11/17/2021			---	**0.77**
	SS-17G E (0-0.5)	11/17/2021			---	**1.3**
	SS-17G S (0-0.5)	11/17/2021			---	**0.098**
	SS-17G W (0-0.5)	11/17/2021			---	**0.44**
	SS-17H (0-0.5)	6/10/2020		Rough near Sidewalk	---	**1.0**
	SS-17H (1-1.5)	6/10/2020			---	**0.12**
	Dup-9-06102020 (SS-17H (1-1.5)	6/10/2020			---	**0.12**
	SS-17I (0-0.5)	6/10/2020	11th Hole	Fringe of Fairway	---	**3.3**
	SS-17I (1-1.5)	6/10/2020			---	**0.56**
	SS-17J (0-0.5)	6/10/2020		Fairway	---	**3.8**
	SS-17J (1-1.5)	6/10/2020			---	**0.16**
	SS-18 (0-0.5)	6/7/2020	1st Hole	Rough	---	**0.48**
	SS-18 (1-1.5)	6/7/2020			---	**0.054**
	SS-18B (0-0.5)	6/7/2020		Fringe of Fairway	---	**3.1**
	SS-18B (1-1.5)	6/7/2020			---	**2.7**
	SS-18C (0-0.5)	6/7/2020		Fairway	---	**4.1**
	Dup-1-06072020 (SS-18C (0-0.5)	6/7/2020			---	**0.85**
	SS-18C (1-1.5)	6/7/2020			---	**0.11**
	SS-18D (0-0.5)	6/7/2020		Fringe of Fairway	---	**0.8**
	SS-18D (1-1.5)	6/7/2020			---	**0.042**
	SS-18E (0-0.5)	6/7/2020		Rough	---	**0.13**
	SS-18E (1-1.5)	6/7/2020			---	<0.021
Residential/Recreationa; Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes
Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.
mg/kg = Milligrams per kilogram.
< = Not detected at or above the laboratory reporting limit indicated.
--- = Not analyzed or calculated for this parameter or not applicable.
[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.
[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

Table 7
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Sample Identifier, Date Collected, and Location Description					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
Compound/Parameter						
CAS No.					7440-38-2	7439-97-6
	SS-19 (0-0.5)	6/10/2020	3rd Hole	Rough adjacent to Fairway	---	**1.1**
	SS-19 (1-1.5)	6/10/2020			---	**0.12**
	SS-19B (0-0.5)	6/10/2020		Rough adjacent to Fairway	---	**3.1**
	SS-19B (1-1.5)	6/10/2020			---	**0.65**
	SS-19BE (0-0.5)	11/16/2021			---	**2.3**
	SS-19BN (0-0.5)	11/16/2021			---	**2.9**
	SS-19BS (0-0.5)	11/16/2021			---	**2.8**
	SS-19C (0-0.5)	6/10/2020		Fairway	---	**3.0**
	SS-19C (1-1.5)	6/10/2020			---	**0.3**
	SS-19D (0-0.5)	6/10/2020		Fairway	---	**2.0**
	SS-19D (1-1.5)	6/10/2020			---	**0.092**
	SS-19E (0-0.5)	6/10/2020		Fringe of Fairway	---	**0.67**
	SS-19E (1-1.5)	6/10/2020			---	<0.021
	SS-19F (0-0.5)	6/10/2020		Rough	---	**0.35**
	Dup-8-06102020 (SS-19F (0-0.5)	6/10/2020			---	**0.35**
	SS-19F (1-1.5)	6/10/2020			---	**0.047**
	SS-20 (0-0.5)	6/9/2020	14th Hole	Tee Box	---	**0.021**
	SS-20 (1-1.5)	6/9/2020			---	**0.07**
	SS-20B (0-0.5)	6/9/2020		Rough adjacent to Tee Box	---	**0.33**
	Dup-3-06092020 (SS-20B (0-0.5)	6/9/2020			---	**0.26**
	SS-20B (1-1.5)	6/9/2020			---	**0.11**
	SS-20C (0-0.5)	6/9/2020		Tee Box	---	**6.8**
	SS-20C (1-1.5)	6/9/2020			---	**0.023**
	SS-20D (0-0.5)	6/9/2020		Rough adjacent to Tee Box	---	**2.8**
	SS-20D (1-1.5)	6/9/2020			---	**0.068** [M1]
	SS-21 (0-0.5)	6/11/2020	15th Hole	Fairway	---	**4.5**
	SS-21 (1-1.5)	6/11/2020			---	**0.031**
	SS-21B (0-0.5)	6/11/2020		Rough	---	**0.1**
	SS-21B (1-1.5)	6/11/2020			---	<0.023
	SS-21C (0-0.5)[a]	6/11/2020	16th Hole	Tee Box	---	**0.6**
	SS-21C (1-1.5)[a]	6/11/2020			---	**0.062**
	SS-21D (0-0.5)	6/11/2020		Tee Box	---	**0.53**
	Dup-10-06112020 (SS-21D (0-0.5)	6/11/2020			---	**0.54**
	SS-21D (1-1.5)	6/11/2020			---	**0.19**
	SS-21E (0-0.5)	6/11/2020		Tee Box	---	**0.047**
	SS-21E (1-1.5)	6/11/2020			---	<0.022
	SS-21F (0-0.5)	6/11/2020		Tee Box	---	**0.82**
	SS-21F (1-1.5)	6/11/2020			---	**0.25**
	SS-21G (0-0.5)	6/11/2020		Rough adjacent to Tee Box	---	**0.56**
	SS-21G (1-1.5)	6/11/2020			---	**0.051**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes
Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.
mg/kg = Milligrams per kilogram.
< = Not detected at or above the laboratory reporting limit indicated.
--- = Not analyzed or calculated for this parameter or not applicable.
[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.
[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

Table 7
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Sample Identifier, Date Collected, and Location Description					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
CAS No.					7440-38-2	7439-97-6
	SS-22 (0-0.5)	6/9/2020	11th Hole	Rough adjacent to Tee Box	---	**1.4**
	SS-22 (1-1.5)	6/9/2020			---	**0.038**
	SS-22B (0-0.5)	6/9/2020		Tee Box	---	**16.9**
	Dup-6-06092020 (SS-22B (0-0.5)	6/9/2020			---	**25.0**
	SS-22B (1-1.5)	6/9/2020			---	**109**
	SS-22B N (0-0.5)	11/17/2021			---	**0.19** [M1]
	SS-22B N (1-1.5)	11/17/2021			---	**0.028**
	SS-22B N (2-2.5)	11/17/2021			---	**0.028**
	SS-22B E (0-0.5)	11/17/2021			---	**0.37**
	SS-22B E (1-1.5)	11/17/2021			---	**0.049**
	SS-22B S (0-0.5)	11/17/2021			---	**2.2**
	SS-22B S (1-1.5)	11/17/2021			---	**0.097**
	SS-22C (0-0.5)	6/9/2020		Tee Box	---	**4.5**
	SS-22C (1-1.5)	6/9/2020			---	**0.22**
	SS-22D (0-0.5)	6/9/2020		Rough	---	**0.077**
	SS-22D (1-1.5)	6/9/2020			---	**0.023**
	SS-22E (0-0.5)	6/9/2020	13th Hole	Rough Adjacent to Fairway	---	**2.2**
	SS-22E (1-1.5)	6/9/2020			---	**0.15**
	SS-22F (0-0.5)	6/9/2020		Fairway	---	**3.0**
	SS-22F (1-1.5)	6/9/2020			---	**0.072**
	SS-22G (0-0.5)	6/9/2020		Fairway	---	**4.7**
	SS-22G (1-1.5)	6/9/2020			---	**0.073**
	SS-22H (0-0.5)	6/9/2020		Fringe of Fairway	---	**1.8**
	SS-22H (1-1.5)	6/9/2020			---	**0.08**
	SS-22I (0-0.5)	6/9/2020		Rough	---	**0.066**
	SS-22I (1-1.5)	6/9/2020			---	<0.023
	SS-23 (0-0.5)	6/10/2020	2nd Hole	Green	---	**44.1** [M6]
	SS-23 (1-1.5)	6/10/2020			---	**0.04**
	SS-23B (0-0.5)	6/10/2020		Sand Trap	---	**0.029**
	SS-23B (1-1.5)	6/10/2020			---	**0.025**
	SS-23C (0-0.5)	6/10/2020		Rough	---	**1.3**
	SS-23C (1-1.5)	6/10/2020			---	**0.086**
	SS-23D (0-0.5)	6/10/2020	3rd Hole	Rough adjacent to Tee Box	---	**2.3**
	SS-23D (1-1.5)	6/10/2020			---	**0.091**
	SS-23E (0-0.5)	6/10/2020		Tee Box	---	**4.8**
	SS-23E (1-1.5)	6/10/2020			---	**1.0**
	SS-23F (0-0.5)	6/10/2020		Tee Box	---	**0.042**
	SS-23F (1-1.5)	6/10/2020			---	**0.035**
	SS-23G (0-0.5)	6/10/2020		Tee Box	---	**8.0**
	SS-23G (1-1.5)	6/10/2020			---	**0.11**
	SS-23H (0-0.5)	6/10/2020		Rough	---	**0.33**
	SS-23H (1-1.5)	6/10/2020			---	<0.022
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes
Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.
mg/kg = Milligrams per kilogram.
< = Not detected at or above the laboratory reporting limit indicated.
--- = Not analyzed or calculated for this parameter or not applicable.
[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.
[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

Table 7
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
CAS No.					7440-38-2	7439-97-6
Sample Identifier, Date Collected, and Location Description	SS-23I (0-0.5)	6/10/2020	17th Hole	Rough	---	**1.4**
	SS-23I (1-1.5)	6/10/2020			---	**0.042**
	SS-23J (0-0.5)	6/10/2020		Fairway	---	**0.49**
	SS-23J (1-1.5)	6/10/2020			---	**0.39**
	SS-23K (0-0.5)	6/10/2020		Fairway	---	**1.4**
	SS-23K (1-1.5)	6/10/2020			---	**0.029**
	SS-24 (0-0.5)	6/12/2020	Driving Range	Tee Box	---	**0.023**
	SS-24 (1-1.5)	6/12/2020			---	<0.022
	SS-24B (0-0.5)	6/12/2020		Practice Green	---	<0.021
	SS-24B (1-1.5)	6/12/2020			---	<0.021
	SS-24C (0-0.5)	6/12/2020		Fairway	---	**0.033**
	SS-24C (1-1.5)	6/12/2020			---	<0.020
	SS-24D (0-0.5)	6/12/2020		Tee Box	---	<0.022
	SS-24D (1-1.5)	6/12/2020			---	<0.020
	SS-24E (0-0.5)	6/12/2020		Fairway	---	**0.25**
	SS-24E (1-1.5)	6/12/2020			---	<0.021
	SS-24F (0-0.5)	6/12/2020		Fairway	---	**0.024**
	Dup-15-06122020 (SS-24F (0-0.5)	6/12/2020			---	<0.023
	SS-24F (1-1.5)	6/12/2020			---	<0.021
	SS-25 (0-0.5)	6/7/2020	1st Hole	Green	---	**63.9**
	SS-25 (1-1.5)	6/7/2020			---	**1.6**
	SS-26 (0-0.5)	6/10/2020	3rd Hole	Green	---	**1.7**
	SS-26 (1-1.5)	6/10/2020			---	**0.64** [M1]
	SS-27 (0-0.5)	6/11/2020	6th Hole	Green	---	**3.0**
	SS-27 (1-1.5)	6/11/2020			---	**0.18**
	SS-28 (0-0.5)	6/7/2020	9th Hole	Green	---	**110** [M6]
	SS-28 (1-1.5)	6/7/2020			---	**0.22**
	SS-29 (0-0.5)	6/9/2020	10th Hole	Green	---	**79.8**
	SS-29 (1-1.5)	6/9/2020			---	**0.33**
	SS-30 (0-0.5)	6/10/2020	11th Hole	Green	---	**1.3**
	SS-30 (1-1.5)	6/10/2020			---	**0.032**
	SS-31 (0-0.5)	6/10/2020	12th Hole	Green	---	**1.4**
	SS-31 (1-1.5)	6/10/2020			---	**1.6**
	SS-32 (0-0.5)	6/9/2020	14th Hole	Green	---	**40.9**
	SS-32 (1-1.5)	6/9/2020			---	<0.022
	SS-33 (0-0.5)	6/11/2020	15th Hole	Green	---	**73.0**
	SS-33 (1-1.5)	6/11/2020			---	**0.085**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes
Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.
mg/kg = Milligrams per kilogram.
< = Not detected at or above the laboratory reporting limit indicated.
--- = Not analyzed or calculated for this parameter or not applicable.
[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.
[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

Table 7
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Sample Identifier, Date Collected, and Location Description					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
Compound/Parameter						
CAS No.					7440-38-2	7439-97-6
	SS-34 (0-0.5)	6/10/2020	16th Hole	Green	---	**3.1**
	SS-34 (1-1.5)	6/10/2020			---	**0.15**
	SS-35 (0-0.5)	6/10/2020	17th Hole	Green	---	**23.4** [M6]
	Dup-7-06092020 (SS-35 (0-0.5)	6/10/2020			---	**20.5**
	SS-35 (1-1.5)	6/10/2020			---	**0.086**
	SS-36 (0-0.5)	6/15/2020	18th Hole	Green	---	**2.0**
	SS-36 (1-1.5)	6/15/2020			---	**0.1**
	SS-37 (0-0.5)	6/11/2020	Practice Green by Club House		---	**2.0**
	SS-37 (1-1.5)	6/11/2020			---	**0.089**
	SS-38 (0-0.5)	6/7/2020	2nd Hole	Tee Box	---	**0.056**
	SS-38 (1-1.5)	6/7/2020			---	**0.05**
	SS-39 (0-0.5)	6/10/2020	4th Hole	Tee Box	---	**4.4**
	SS-39 (1-1.5)	6/10/2020			---	<0.023
	SS-40 (0-0.5)	6/11/2020	7th Hole	Tee Box	---	**0.4**
	SS-40 (1-1.5)	6/11/2020			---	**0.036**
	SS-41 (0-0.5)	6/7/2020	8th Hole	Tee Box	---	**6.4**
	Dup-2-06072020 (SS-41 (0-0.5)	6/7/2020			---	**4.6**
	SS-41 (1-1.5)	6/7/2020			---	**1.6**
	SS-42 (0-0.5)	6/10/2020	12th Hole	Tee Box	---	**0.11**
	SS-42 (1-1.5)	6/10/2020			---	**7.2**
	SS-42 (2-2.5)	11/17/2021			---	**1.3** [M1]
	SS-42 N (0-0.5)	11/17/2021			---	**0.11**
	SS-42 N (1-1.5)	11/17/2021			---	**5.1**
	SS-42 S (0-0.5)	11/17/2021			---	**0.37**
	SS-42 S (1-1.5)	11/17/2021			---	**0.66**
	SS-43 (0-0.5)	6/9/2020	13th Hole	Tee Box	---	**2.7**
	SS-43 (1-1.5)	6/9/2020			---	**0.16**
	SS-44 (0-0.5)	6/10/2020	15th Hole	Tee Box	---	**11.7**
	SS-44 (1-1.5)	6/10/2020			---	**0.13**
	SS-45 (0-0.5)	6/10/2020	17th Hole	Tee Box	---	**0.069**
	SS-45 (1-1.5)	6/10/2020			---	**0.028**
	SS-46 (0-0.5)	6/10/2020	18th Hole	Tee Box	---	**1.3**
	SS-46 (1-1.5)	6/10/2020			---	**0.043**
	SS-47 (0-0.5)	6/10/2020		Tee Box	---	**0.054**
	SS-47 (1-1.5)	6/10/2020			---	**0.025**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes
Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.
mg/kg = Milligrams per kilogram.
< = Not detected at or above the laboratory reporting limit indicated.
--- = Not analyzed or calculated for this parameter or not applicable.
[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.
[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

Table 7
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
CAS No.					7440-38-2	7439-97-6
Sample Identifier, Date Collected, and Location Description	SS-48 (0-0.5)	6/7/2020	2nd Hole	Fairway	---	**8.2**
	SS-48 (1-1.5)	6/7/2020			---	**0.073**
	SS-48N (0-0.5)	11/16/2021			---	**4.7**
	SS-48S (0-0.5)	11/16/2021			---	**3.7**
	SS-49 (0-0.5)	6/15/2020	5th Hole	Rough	---	**0.96**
	SS-49 (1-1.5)	6/15/2020			---	<0.022 [M1]
	SS-50 (0-0.5)	6/7/2020	7th Hole	Fairway	---	**3.5**
	SS-50 (1-1.5)	6/7/2020			---	**0.047**
	SS-51 (0-0.5)	6/10/2020	16th Hole	Rough adjacent to Fairway	---	**2.8**
	SS-51 (1-1.5)	6/10/2020			---	**0.21**
	ASB-1 (0-0.5)	06/22/2020	Agricultural Chemical Storage Building (Interior)	Large crack in floor of west bay	---	**0.042**
	ASB-1 (2-2.5)	06/22/2020			**2.4**	<0.022
	ASB-2 (0-0.5)	06/22/2020		Large crack in floor of east bay	---	**0.024**
	ASB-2 (2-2.5)	06/22/2020			---	<0.022
	ASB-3 (0-0.5)	06/22/2020	Agricultural Chemical Storage	Large crack in exterior asphalt loading area	---	**0.15**
	ASB-3 (2-2.5)	06/22/2020			---	**0.048**
	ASB-4 (0-0.5)	06/22/2020	Exterior Chemical Loading Area	Cracked asphalt	---	**<0.018**
	ASB-4 (2-2.5)	06/22/2020			---	<0.022
	ASB-5C (0-0.5)	06/23/2020	Agricultural Chemical Storage Shed	Outlet for drain in concrete loading pad	---	<0.023
	ASB-5C (2-2.5)	06/23/2020			---	<0.024
	ASB-6c (0-0.5)	06/22/2020		Grass area immediately adjacent to concrete loading pad	---	**0.21**
	ASB-6c (2-2.5)	06/22/2020			---	<0.021
	DUP-17-06222020 ASB-6c (2-2.5)	06/22/2020			---	<0.024
	ASB-7 (0-0.5)	06/22/2020	Agricultural Chemical Mixing Area	Inlet to drainage swale adjacent to mixing area	---	**0.036**
	ASB-7 (2-2.5)	06/22/2020			---	**0.048**
	ASB-8c (0-0.5)	06/22/2020		Main mixing area	---	**1.1**
	ASB-8c (2-2.5)	06/22/2020			---	**0.58**
	DUP-18-06222020 ASB-8c (2-2.5)	06/22/2020			---	**0.14**
	ASB-8c (4-4.5)	06/22/2020			---	**0.037**
	ASB-9C (0-0.5)	06/23/2020		Drainage area	---	**0.61**
	ASB-9C (2-2.5)	06/23/2020			---	**0.78**
	ASB-10 (2-2.5)	06/22/2020	Maintenance building (Interior)	Interior crack in slab where agricultural chemical storage occurred	**1.4**	<0.022
	ABS-13 N (0-0.5)	11/18/2021	Water fill area		---	**3.3**
	ABS-13 E (0-0.5)	11/18/2021			---	**2.4**
	ABS-13 S (0-0.5)	11/18/2021			---	**2.4**
	ABS-13 W (0-0.5)	11/18/2021			---	**3.3**
	ABS-13 N (1-1.5)	11/18/2021			---	**2.4** [P6]
	ABS-13 E (1-1.5)	11/18/2021			---	**3.5**
	ABS-13 S (1-1.5)	11/18/2021			---	**4.2**
	ABS-13 W (1-1.5)	11/18/2021			---	**3.6**
	ASB-13c (0-0.5)	06/22/2020			---	**14.6**
	ASB-13c (2-2.5)	06/22/2020			---	**1.3**
	DUP-16-06222020 ASB-13c (2-2.5)	06/22/2020			---	**4.2**
	ASB-13c (4-4.5)	06/22/2020			---	**0.16**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes
Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.
mg/kg = Milligrams per kilogram.
< = Not detected at or above the laboratory reporting limit indicated.
--- = Not analyzed or calculated for this parameter or not applicable.
[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.
[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

Table 7
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
CAS No.					7440-38-2	7439-97-6
Sample Identifier, Date Collected, and Location Description	TT-7 (3-5)	06/25/2020	Former Pool House	Soil with debris (red asphalt, plastic, concrete, apparent Class 5 aggregate base)	**2.5**	**0.059**
	TT-9 (3-5)	06/25/2020	Former Tennis Courts	Soil with debris (red asphalt, plastic, concrete, apparent Class 5 aggregate base)	**2.8**	**0.06**
	SB-1 (0.5-1.5)	06/24/2020	Former UST Basin Leak Site #5050		**3.2**	**0.94**
	SB-2 (0.5-1)	06/24/2020	Former UST Basin Leak Site #18327		**2.3**	**0.82**
	SB-5 (.5-1.5)	06/25/2020	North Parking Lot near clubhouse		**2.4**	<0.020
	Dup-20-06252020 SB-5 (.5-1.5)	06/25/2020			**1.7**	**0.49**
	DSS-1 (0-6'')	07/02/2020	Shed northwest of clubhouse	North of shed	---	**0.37**
	DSS-1 (1-1.5')	07/02/2020			---	**0.38**
	DSS-2 (0-6'')	07/02/2020		Directly northwest of shed	**2.7**	**0.38**
	DSS-2 (1-1.5')	07/02/2020			**2.7**	**0.31**
	DUP-9 (DSS-2S (0-0.5))	11/15/2021			---	---
	DSS-3 (0-6'')	07/02/2020		East-southeast of shed	---	**0.11**
	DSS-4 (0-6'')	07/02/2020	Garages west of clubhouse - North garage	Directly northeast of garage	**5.7**	**0.08**
	DSS-4 (1-1.5')	07/02/2020			**5.8**	**0.062**
	DSS-5 (0-6'')	07/02/2020		Directly northwest of garage	---	**0.21**
	DSS-5 (1-1.5')	07/02/2020		Directly northwest of garage	---	**0.06**
	DSS-6 (0-6'')	07/02/2020	Garages west of clubhouse - South garage	Directly northwest of garage	---	**0.076**
	DSS-6 (1-1.5')	07/02/2020			---	**0.11**
	DSS-7 (0-6'')	07/02/2020		South of garage	---	**3.3**
	DSS-7 (1-1.5')	07/02/2020			---	**0.3**
	DSS-7E (0-0.5)	11/16/2021			---	**0.62**
	DSS-7S (0-0.5)	11/16/2021			---	**0.095**
	DSS-7W (0-0.5)	11/16/2021			---	**0.084**
	DSS-8 (0-6'')	07/02/2020		East of garage	**2.6**	**0.31**
	DSS-8 (1-1.5')	07/02/2020			**2.5**	**0.3**
	DSS-102 DSS-8 (1-1.5)	07/02/2020			**3.3**	**0.38**
	DSS-9 (0-6'')	07/02/2020	North garage	East of garage	---	**0.52**
	DSS-9 (1-1.5')	07/02/2020			---	**0.099**
	DSS-10 (0-6'')	7/2/2020	Garages west of clubhouse	Directly east of garages	---	**0.16**
	DSS-11 (0-6'')	7/2/2020			**2.3**	**0.29**
	DSS-11 (1-1.5')	7/2/2020			**2.3**	**0.089**
	DSS-12 (0-6'')	7/2/2020	Clubhouse Area	Northwest of clubhouse	---	**0.042**
	DSS-13 (0-6'')	7/2/2020		West of clubhouse	---	**2.0**
	DSS-13 (1-1.5')	7/2/2020			---	**1.7**
	DSS-14 (0-6'')	7/2/2020		South of clubouse	---	**4.1**
	DSS-14 (1-1.5')	7/2/2020			---	**0.91**
	DSS-14N (0-0.5)	11/16/2021			---	**0.19**
	DSS-14S (0-0.5)	11/16/2021			---	**0.8**
	DSS-14W (0-0.5)	11/16/2021			---	**0.71**
	DSS-15 (0-6'')	7/2/2020	Poolhouse	Southwest of poolhouse	**2.1**	**0.31**
	DSS-15 (1-1.5')	7/2/2020			**2.4**	**0.24**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV

Exceeds Commercial/Industrial SRV

Table 7
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
CAS No.					7440-38-2	7439-97-6
Sample Identifier, Date Collected, and Location Description	DSS-16 (0-6'')	7/2/2020	Poolhouse	Northeast of poolhouse	---	**1.6**
	DSS-101 DSS-16 (0-6")	7/2/2020			---	**1.1**
	DSS-16 (1-1.5')	7/2/2020			---	**0.11**
	DSS-17 (0-6')	7/2/2020	Clubhouse	Southeast of clubhouse	**3.6**	**0.79**
	DSS-17 (1-1.5')	7/2/2020			**2.3**	**0.062**
	DSS-18 (0-6'')	7/2/2020		Northwest of clubhouse	---	**0.62**
	DSS-18 (1-1.5')	7/2/2020			---	**0.89**
	Sed-1	07/02/2020	9th Hole	Center of Pond Adjacent to 9th Hole	---	**1.5** [M1]
	SED 1A (0-0.5)	07/15/2020		Southeast slope	---	**0.23**
	PW-1A (0-0.5)	08/12/2020		West slope	---	**0.41**
	PW-1B (0-0.5)	08/12/2020			---	**2.8**
	PW-1C (0-0.5)	08/12/2020		Southeast slope	---	**0.31**
	PW-1D (0-0.5)	08/12/2020			---	**0.54**
	PW-1E (0-0.5)	08/12/2020		South of pond	---	**0.94**
	PW-1F (0-0.5)	08/12/2020			---	**26.3**
	PW-1G (0-0.5)	08/12/2020		Southwest of pond	---	**16.5**
	PW-1G (1-1.5)	11/16/2021			---	**0.076**
	PW-1GN (0-0.5)	11/16/2021			---	**1.0**
	PW-1GW (0-0.5)	11/16/2021			---	**8.8**
	PW-1F (1-1.5)	11/16/2021			---	**0.063**
	PW-1FE (0-0.5)	11/16/2021			---	**0.7**
	PW-1FS (0-0.5)	11/16/2021			---	**1.2**
	PW-1H (0-0.5)	08/12/2020			---	**0.83**
	Sed-2	07/02/2020	8th Hole	Center	---	**0.21**
	SED 2A (0-0.5)	07/15/2020		Southwest slope	---	**0.59**
	Sed-2A (1-1.5)	08/12/2020			---	**0.42**
	PW-2A (0-0.5)	08/12/2020		East slope	---	**0.73**
	PW-2B (0-0.5)	08/12/2020		East of pond	---	**0.16**
	PW-2C (0-0.5)	08/12/2020		West slope	---	**0.94**
	PW-2D (0-0.5)	08/12/2020			---	**1.9**
	PW-2E (0-0.5)	08/12/2020		East slope	---	**0.028**
	PW-2F (0-0.5)	08/12/2020		Northwest of pond	---	**0.28**
	PW-2F (1-1.5)	08/12/2020			---	**0.22**
	PW-2G (0-0.5)	08/12/2020		Southwest of pond	---	**0.13**
	PW-2H (0-0.5)	08/12/2020		South of pond	---	**0.2**
	PW-2I (0-0.5)	08/12/2020		Southwest of pond	---	**0.18**
	PW-2J (0-0.5)	08/12/2020			---	**0.063**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV

Exceeds Commercial/Industrial SRV

Table 7
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
CAS No.					7440-38-2	7439-97-6
Sample Identifier, Date Collected, and Location Description	Sed-3	07/02/2020	2nd Hole	Center	---	**0.56**
	Sed-101 (Sed-3)	07/02/2020			---	**0.3**
	SED 3A (0-0.5)	07/15/2020		North slope	---	**0.044**
	PW-3A (0-0.5)	08/12/2020		Northwest slope	---	**0.075**
	PW-3B (0-0.5)	08/12/2020		West of center	---	**0.47**
	PW-3C (0-0.5)	08/12/2020		Southeast slope	---	**1.1**
	PW-3D (0-0.5)	08/12/2020			---	**0.056**
	Sed-4	07/02/2020	South of 2nd Hole	Center	---	**0.069**
	SED 4A (0-0.5)	07/15/2020		Southwest slope	---	**0.16**
	SED 4A (1-1.5)	07/15/2020			---	**0.19**
	PW-4A (0-0.5)	08/12/2020			---	<0.024
	PW-4B (0-0.5)	08/12/2020		Southeast slope	---	**0.18**
	PW-4C (0-0.5)	08/12/2020		East slope	---	**0.2**
	PW-4D (0-0.5)	08/12/2020			---	**0.046**
	Sed-5	07/02/2020	Maintenance Building	Southeast of building	---	**0.1**
	PW-5A (0-0.5)	08/12/2020		Northwest of building	---	**0.14**
	PW-5B (0-0.5)	08/12/2020			---	**0.098**
	PW-5C (0-0.5)	08/12/2020			---	**0.084**
	PW-5D (0-0.5)	08/12/2020			---	**0.28**
	PW-5E (0-0.5)	08/12/2020		West of building	---	**8.0**
	PW-5E (1-1.5)	11/16/2021			---	**0.071**
	PW-5EE (0-0.5)	11/16/2021			---	**2.9**
	PW-5ES (0-0.5)	11/16/2021			---	**41.9**
	PW-5EW (0-0.5)	11/16/2021			---	**0.27**
	PW-5F (0-0.5)	08/12/2020		Southwest of building	---	**3.7**
	PW-5F (1-1.5)	11/18/2021			---	**6.8**
	PW-5F N (0-0.5)	11/18/2021			---	**0.29**
	PW-5F E (0-0.5)	11/18/2021			---	**2.2**
	PW-5F S (0-0.5)	11/18/2021			---	**0.66**
	PW-5G (0-0.5)	08/12/2020			---	**2.5**
	Sed-6	07/02/2020	North of 6th Hole	Center	---	**12.9**
	PW-6A (0-0.5)	08/12/2020		North slope	---	**1.9**
	PW-6B (0-0.5)	08/12/2020			---	**2.5**
	PW-6C (0-0.5)	08/12/2020		Northeast slope	---	**6.4** [M6]
	PW-6D (0-0.5)	08/12/2020		Northwest slope	---	**9.3**
	PW-6E (0-0.5)	08/12/2020		South slope	---	**1.3**
	PW-6F (0-0.5)	08/12/2020			---	**0.26**
	PW-6G (0-0.5)	08/12/2020		Southeast slope	---	**0.025**
	PW-6H (0-0.5)	08/12/2020		North of pond	---	**0.28**
	PW-6I (0-0.5)	08/12/2020			---	**0.5**
	PW-6J (0-0.5)	08/12/2020			---	**0.91**
	PW-6K (0-0.5)	08/12/2020			---	**3.4**
	PW-6K (1-1.5)	11/18/2021			---	**2.3**
	PW-6K N (0-0.5)	11/18/2021			---	**0.27**
	PW-6K S (0-0.5)	11/18/2021			---	**1.4**
	PW-6K W (0-0.5)	11/18/2021			---	**0.11**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes
Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.
mg/kg = Milligrams per kilogram.
< = Not detected at or above the laboratory reporting limit indicated.
--- = Not analyzed or calculated for this parameter or not applicable.
[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.
[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

Table 7
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Sample Identifier, Date Collected, and Location Description					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
Compound/Parameter						
CAS No.					7440-38-2	7439-97-6
	Sed-7	07/02/2020	4th Hole	Center	---	**11.7**
	SED-7 (1-1.5)	11/17/2021			---	<0.024
	SED 7A (0-0.5)	07/15/2020		Northwest slope	---	**0.12**
	SED 7B (0-0.5)	07/15/2020		Northwest of center	---	**11.9**
	Sed-7B (1-1.5)	08/12/2020			---	**0.045**
	SED 7C (0-0.5)	07/15/2020		Southeast of center	---	**1.1**
	SED 7C (1-1.5)	07/15/2020			---	**0.21**
	SED 7D (0-0.5)	07/15/2020		Southeast slope	---	**0.28**
	SED 7D (1-1.5)	07/15/2020			---	**0.16**
	SED-7 E (0-0.5)	11/17/2021		Southeast of center	---	**0.13**
	SED-7 E (1-1.5)	11/17/2021			---	**0.055**
	SED-7 F (0-0.5)	11/17/2021			---	**0.24**
	SED-7 G (0-0.5)	11/17/2021		Northwest slope	---	**0.075**
	SED-7 H (0-0.5)	11/17/2021			---	**0.33**
	PW-7A (0-0.5)	08/12/2020		Southeast of center	---	**2.4**
	PW-7B (0-0.5)	08/12/2020		Southeast slope	---	**0.21**
	PW-7C (0-0.5)	08/12/2020		Northwest of pond	---	**0.046**
	PW-7D (0-0.5)	08/12/2020		Northwest slope	---	**1.6**
	Soil 1-0-0.5	07/15/2020	4th Hole Tee box	West slope	---	**0.1**
	Soil 1-1-1.5	07/15/2020			---	**0.034**
	ST-2 (0-2)	04/12/2019	Former Pool House	Southwest corner	**3.9**	**0.22**
	ST-3 (0-2)	04/13/2019	8th Hole	Green	**15.7**	**6.3**
	ST-5 (1-3)	04/12/2019	13th Hole	Green	<5.3 [D3]	**0.044**
	ST-6 (2-4)	04/12/2019	Between 13th Hole and 11th Hole	Rough	**1.7**	<0.020
	ST-8 (5-7)	04/13/2019	Maintenance Shed	Wash Out Area	<1.2	**0.028**
	ST-10 (1-3)	04/12/2019	16th Hole	Rough East of Hole	**2.0**	**0.027**
	ST-11 (4-6)	04/13/2019	4th Hole	Green	**1.7**	<0.020
	ST-12 (2-4)	04/13/2019	5th Hole	Green	**6.4**	**0.031**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes
Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.
mg/kg = Milligrams per kilogram.
< = Not detected at or above the laboratory reporting limit indicated.
--- = Not analyzed or calculated for this parameter or not applicable.
[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.
[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

Table 7
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Sample Identifier, Date Collected, and Location Description				Compound/Parameter	Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
				CAS No.	7440-38-2	7439-97-6
GP-1 0-1	05/07/2019	Practice Green	Fringe		**2.1**	<0.020
GP-1 1-2	05/07/2019				---	<0.019
GP-2 0-1	05/07/2019	Pool House	Grassy Area to South		---	**0.13**
GP-2 4-5	05/07/2019				**2.0**	**0.12**
GP-3 0-1	05/07/2019	Former Tennis Courts	Green		**2.2**	**0.068**
GP-3 1-2	05/07/2019				---	**0.026**
GP-4 1-2	05/07/2019	13th Hole	Green		---	**1.4**
GP-4 2-3	05/07/2019				---	**0.047**
GP-5 1-2	05/07/2019	4th Hole	Green		---	**6.1**
GP-5 2-3	05/07/2019				---	**0.067**
GP-6 1-2	05/07/2019	5th Hole	Green		---	**0.099**
GP-7 1-2	05/07/2019	Maintenance Building	South Wash Area		---	**0.094**
GP-7 3-4	05/07/2019				---	**0.041**
GP-8 1-2	05/07/2019	Maintenance Building	Main Wash Area		---	**2.3**
GP-8 3-4	05/07/2019				---	**0.74**
GP-9 0-1'	05/07/2019	Maintenance Building	Berm to North		**4.6**	**0.23**
GP-9 5-6'	05/07/2019				**4.9**	**0.033**
Maint Berm	05/10/2019	Berm	Berm South of Maintenance Area		**3.7**	**4.9**
FW1-DU1 (0-0.5)	11/12/2021	1st Fairway			---	**3.1**
FW1-DU2 (0-0.5)	11/12/2021				---	**4.1**
DUP-8 (FW1-DU2(0-0.5)	11/12/2021				---	**5.4**
FW2-DU1 (0-0.5)	11/11/2021	2nd Fairway			---	**2.6**
FW3-DU1 (0-0.5)	11/11/2021	3rd Fairway			---	**3.2**
FW3-DU2 (0-0.5)	11/11/2021				---	**3.6**
FW3-DU3 (0-0.5)	11/11/2021				---	**3.1**
DUP-5 (FW3-DU3(0-0.5)	11/11/2021				---	**3.3**
FW4-DU1 (0-0.5)	11/09/2021	4th Fairway			---	**2.5**
DUP-3 (FW4-DU1(0-0.5))	11/09/2021				---	**3.0**
FW4-DU2 (0-0.5)	11/09/2021				---	**2.4**
FW4-DU3 (0-0.5)	11/09/2021				---	**1.9**
FW5-DU1 (0-0.5)	11/08/2021	5th Fairway			---	**2.2**
FW5-DU2 (0-0.5)	11/08/2021				---	**2.4**
DUP-2 (FW5-DU2 (0-0.5))	11/08/2021				---	**2.4**
FW5-DU3 (0-0.5)	11/08/2021				---	**6.8**
FW6-DU1 (0-0.5)	11/08/2021	6th Fairway			---	**4.4** [1]
FW6-DU2 (0-0.5)	11/08/2021				---	**6.8**
DUP-1 (FW6-DU2 (0-0.5))	11/08/2021				---	**20.2**
FW6-DU3 (0-0.5)	11/08/2021				---	**1.9**
FW7-DU1 (0-0.5)	11/11/2021	7th Fairway			---	**2.8**
FW7-DU2 (0-0.5)	11/11/2021				---	**3.0**
FW7-DU3 (0-0.5)	11/11/2021				---	**2.9**
FW8-DU1 (0-0.5)	11/12/2021	8th Fairway			---	**5.2**
FW8-DU2 (0-0.5)	11/12/2021				---	**5.4**
FW8-DU3 (0-0.5)	11/12/2021				---	**1.8**
DUP-7 (FW8-DU3(0-0.5)	11/12/2021				---	**3.5**
FW9-DU1 (0-0.5)	11/12/2021	9th Fairway			---	**0.31**
FW10-DU1 (0-0.5)	11/10/2021	10th Fairway			---	**11.9**
FW10-DU2 (0-0.5)	11/10/2021				---	**3.4**
FW10-DU3 (0-0.5)	11/10/2021				---	**2.8**
FW11-DU1 (0-0.5)	11/09/2021	11th Fairway			---	**3.3**
FW11-DU2 (0-0.5)	11/09/2021				---	**2.3**
FW11-DU3 (0-0.5)	11/10/2021				---	**2.7** [1]
FW12-DU1 (0-0.5)	11/09/2021	12th Fairway			---	**1.1**
FW13-DU1 (0-0.5)	11/10/2021	13th Fairway			---	**15.1**
FW13-DU2 (0-0.5)	11/10/2021				---	**2.9**
DUP-4 (FW13-DU2(0-0.5)	11/10/2021				---	**2.6**
FW13-DU3 (0-0.5)	11/10/2021				---	**2.9**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV

Exceeds Commercial/Industrial SRV

Table 7
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter				Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
CAS No.				7440-38-2	7439-97-6
Sample Identifier, Date Collected, and Location Description	FW14-DU1 (0-0.5)	11/10/2021	14th Fairway	---	**3.5**
	FW14-DU2 (0-0.5)	11/10/2021		---	**3.1**
	FW14-DU3 (0-0.5)	11/10/2021		---	**3.5**
	FW15-DU1 (0-0.5)	11/09/2021	15th Fairway	---	**1.9**
	FW15-DU2 (0-0.5)	11/09/2021		---	**4.7**
	FW16-DU1 (0-0.5)	11/09/2021	16th Fairway	---	**3.3**
	FW17-DU1 (0-0.5)	11/11/2021	17th Fairway	---	**1.4**
	FW17-DU2 (0-0.5)	11/11/2021		---	**2.7**
	FW17-DU3 (0-0.5)	11/11/2021		---	**1.2**
	FW18-DU1 (0-0.5)	11/11/2021	18th Fairway	---	**7.6**
	DUP-6 (FW18-DU1(0-0.5)	11/11/2021		---	**3.4**
	FW18-DU2 (0-0.5)	11/11/2021		---	**3.6**
	FW18-DU3 (0-0.5)	11/11/2021		---	**1.7**
	3rd Green C (0-0.5)	11/18/2021	3rd Green	---	**89.2**
	6th Green C (0-0.5)	11/18/2021	6th Green	---	**18.6**
	7th Green C (0-0.5)	11/18/2021	7th Green	---	**102.0**
	10th Green C (0-0.5)	11/18/2021	10th Green	---	**79.0**
	11th Green C (0-0.5)	11/18/2021	11th Green	---	**161.0**
	12th Green C (0-0.5)	11/18/2021	12th Green	---	**59.8**
	18th Green C (0-0.5)	11/18/2021	18th Green	---	**66.5**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)				9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)				9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)				5.8	3.3

Notes
Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.
mg/kg = Milligrams per kilogram.
< = Not detected at or above the laboratory reporting limit indicated.
--- = Not analyzed or calculated for this parameter or not applicable.
[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.
[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

Table 8
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Sample Identifier, Date Collected, and Location Description					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
Compound/Parameter						
CAS No.					7440-38-2	7439-97-6
	SS-1 (0-0.5)	04/19/2019	8th Hole	Green	---	**18.6**
	SS-1B (0-0.5)	6/7/2020			**117**	**38.2**
	SS-1B (1-1.5)	6/7/2020			**29.1**	**11.6**
	SS-1B (2-2.5)	11/16/2022			**2.5**	**13.0**
	SS-1BN (0-0.5)	11/15/2021			**5.5**	**4.7**
	DUP-10 (SS-1BN (0-0.5))	11/16/2021			**5.3**	---
	SS-1BN (1-1.5)	11/15/2021			**2.5**	**3.6** [M1]
	SS-1C (0-0.5)	6/7/2020		Rough adjacent to Green	**3.2**	**0.08**
	SS-1C (1-1.5)	6/7/2020			**3.7**	**0.057**
	SS-3 (0-0.5)	04/19/2019	13th Hole	Green	---	**43.4**
	SS-3B (0-0.5)	05/01/2019		North Fringe of Green	---	**17.8**
	SS-3C (0-0.5)	05/01/2019		South Fringe of Green	---	**144**
	SS-3D (0-0.5)	05/01/2019		10 ft South of Fringe of Green	---	**113**
	SS-3E (0-0.5)	05/10/2019		20 ft South of Fringe of Green	---	**15.1**
	SS-3F (0-0.5)	05/10/2019		10 ft North of Fringe of Green	---	**9.9**
	SS-3G (0-0.5)	6/9/2020		Sand Trap	---	**0.15**
	SS-3G (1-1.5)	6/9/2020			---	<0.022
	SS-3H (0-0.5)	6/9/2020		Fringe of Green	---	**130**
	SS-3H (1-1.5)	6/9/2020			---	**1.8**
	SS-3I (0-0.5)	6/9/2020		Rough adjacent to Green	---	**0.92**
	SS-3I (1-1.5)	6/9/2020			---	**0.051**
	SS-4 (0-0.5)	04/19/2019	4th Hole	Green	---	**21.1**
	SS-4B (0-0.5)	6/11/2020		Fringe of Green	---	**46.0**
	SS-4B (1-1.5)	6/11/2020			---	**0.27**
	SS-5 (0-0.5)	6/12/2020	5th Hole	Green	---	**45.3**
	SS-5A (0-0.5)	6/12/2020		East Fringe of Green	---	**6.5**
	SS-5B (0-0.5)	6/12/2020		West Fringe of Green	---	**46.3**
	SS-5C (0-0.5)	6/12/2020		10 ft West of Fringe of Green	---	**8.2**
	SS-5G (0-0.5)	6/12/2020		Fringe of Green	---	**33.5**
	SS-5G (1-1.5)	6/12/2020			---	**0.066**
	SS-23 (0-0.5)	6/10/2020	2nd Hole	Green	---	**44.1** [M6]
	SS-23 (1-1.5)	6/10/2020			---	**0.04**
	SS-24B (0-0.5)	6/12/2020	Driving Range	Practice Green	---	<0.021
	SS-24B (1-1.5)	6/12/2020			---	<0.021
	SS-25 (0-0.5)	6/7/2020	1st Hole	Green	---	**63.9**
	SS-25 (1-1.5)	6/7/2020			---	**1.6**
Residential/Recreationa; Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV

Exceeds Commercial/Industrial SRV

Table 8
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
CAS No.					7440-38-2	7439-97-6
Sample Identifier, Date Collected, and Location Description	SS-26 (0-0.5)	6/10/2020	3rd Hole	Green	---	**1.7**
	SS-26 (1-1.5)	6/10/2020			---	**0.64** [M1]
	SS-27 (0-0.5)	6/11/2020	6th Hole	Green	---	**3.0**
	SS-27 (1-1.5)	6/11/2020			---	**0.18**
	SS-28 (0-0.5)	6/7/2020	9th Hole	Green	---	**110** [M6]
	SS-28 (1-1.5)	6/7/2020			---	**0.22**
	SS-29 (0-0.5)	6/9/2020	10th Hole	Green	---	**79.8**
	SS-29 (1-1.5)	6/9/2020			---	**0.33**
	SS-30 (0-0.5)	6/10/2020	11th Hole	Green	---	**1.3**
	SS-30 (1-1.5)	6/10/2020			---	**0.032**
	SS-31 (0-0.5)	6/10/2020	12th Hole	Green	---	**1.4**
	SS-31 (1-1.5)	6/10/2020			---	**1.6**
	SS-32 (0-0.5)	6/9/2020	14th Hole	Green	---	**40.9**
	SS-32 (1-1.5)	6/9/2020			---	<0.022
	SS-33 (0-0.5)	6/11/2020	15th Hole	Green	---	**73.0**
	SS-33 (1-1.5)	6/11/2020			---	**0.085**
	SS-34 (0-0.5)	6/10/2020	16th Hole	Green	---	**3.1**
	SS-34 (1-1.5)	6/10/2020			---	**0.15**
	SS-35 (0-0.5)	6/10/2020	17th Hole	Green	---	**23.4** [M6]
	Dup-7-06092020 (SS-35 (0-0.5)	6/10/2020			---	**20.5**
	SS-35 (1-1.5)	6/10/2020			---	**0.086**
	SS-36 (0-0.5)	6/15/2020	18th Hole	Green	---	**2.0**
	SS-36 (1-1.5)	6/15/2020			---	**0.1**
	SS-37 (0-0.5)	6/11/2020	Practice Green by Club House		---	**2.0**
	SS-37 (1-1.5)	6/11/2020			---	**0.089**
	ST-3 (0-2)	04/13/2019	8th Hole	Green	**15.7**	**6.3**
	ST-5 (1-3)	04/12/2019	13th Hole	Green	<5.3 [D3]	**0.044**
	ST-11 (4-6)	04/13/2019	4th Hole	Green	**1.7**	<0.020
	ST-12 (2-4)	04/13/2019	5th Hole	Green	**6.4**	**0.031**
	GP-3 0-1	05/07/2019	Former Tennis Courts	Green	**2.2**	**0.068**
	GP-3 1-2	05/07/2019			---	**0.026**
	GP-4 1-2	05/07/2019	13th Hole	Green	---	**1.4**
	GP-4 2-3	05/07/2019			---	**0.047**
	GP-5 1-2	05/07/2019	4th Hole	Green	---	**6.1**
	GP-5 2-3	05/07/2019			---	**0.067**
	GP-6 1-2	05/07/2019	5th Hole	Green	---	**0.099**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV

Exceeds Commercial/Industrial SRV

Table 8
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter				Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
CAS No.				7440-38-2	7439-97-6
Sample Identifier, Date Collected, and Location Description	3rd Green C (0-0.5)	11/18/2021	3rd Green	---	**89.2**
	6th Green C (0-0.5)	11/18/2021	6th Green	---	**18.6**
	7th Green C (0-0.5)	11/18/2021	7th Green	---	**102.0**
	10th Green C (0-0.5)	11/18/2021	10th Green	---	**79.0**
	11th Green C (0-0.5)	11/18/2021	11th Green	---	**161.0**
	12th Green C (0-0.5)	11/18/2021	12th Green	---	**59.8**
	18th Green C (0-0.5)	11/18/2021	18th Green	---	**66.5**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)				9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)				9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)				5.8	3.3

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV

Exceeds Commercial/Industrial SRV

Table 9
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
CAS No.					7440-38-2	7439-97-6
Sample Identifier, Date Collected, and Location Description	SS-1E (0-0.5)	6/7/2020	9th Hole	Tee Box	---	**3.9**
	SS-1E (1-1.5)	6/7/2020			---	**0.11**
	SS-1J (0-0.5)	6/7/2020		Tee Box	---	**5.1**
	SS-1J (1-1.5)	6/7/2020			---	**0.087**
	SS-1K (0-0.5)	6/7/2020		Rough adjacent to Tee Box	---	**1.1**
	SS-1K (1-1.5)	6/7/2020			---	**0.1**
	SS-5J (0-0.5)	6/12/2020	6th Hole	Tee Box	---	**5.5**
	SS-5J (1-1.5)	6/12/2020			---	**2.8**
	SS-5K (0-0.5)	6/12/2020		Tee Box	---	**0.055** [M1]
	Dup-14-06122020 (SS-5K (0-0.5)	6/12/2020			---	**0.053**
	SS-5K (1-1.5)	6/12/2020			---	**0.24**
	SS-5M (0-0.5)	6/12/2020		Drainage Area adjacent to Tee Box	---	**0.13**
	SS-5M (1-1.5)	6/12/2020			---	**0.3**
	SS-8 (0-0.5)	05/01/2019	10th Hole	Tee Box	---	**6.8**
	SS-8 (0-0.5)	05/10/2019	10th Hole		---	**0.030**
	SS-9 (0-0.5)	05/01/2019	14th Hole	Tee Box	---	**0.45**
	SS-11 (0-0.5)	5/10/2019	11th Hole	Tee Box	---	**5.2**
	SS-15 (0-0.5)	5/10/2019	5th Hole	Tee Box	---	**7.0**
	SS-20 (0-0.5)	6/9/2020	14th Hole	Tee Box	---	**0.021**
	SS-20 (1-1.5)	6/9/2020			---	**0.07**
	SS-20B (0-0.5)	6/9/2020		Rough adjacent to Tee Box	---	**0.33**
	Dup-3-06092020 (SS-20B (0-0.5)	6/9/2020			---	**0.26**
	SS-20B (1-1.5)	6/9/2020			---	**0.11**
	SS-20C (0-0.5)	6/9/2020		Tee Box	---	**6.8**
	SS-20C (1-1.5)	6/9/2020			---	**0.023**
	SS-20D (0-0.5)	6/9/2020		Rough adjacent to Tee Box	---	**2.8**
	SS-20D (1-1.5)	6/9/2020			---	**0.068** [M1]
	SS-21C (0-0.5)[a]	6/11/2020	16th Hole	Tee Box	---	**0.6**
	SS-21C (1-1.5)[a]	6/11/2020			---	**0.062**
	SS-21D (0-0.5)	6/11/2020		Tee Box	---	**0.53**
	Dup-10-06112020 (SS-21D (0-0.5)	6/11/2020			---	**0.54**
	SS-21D (1-1.5)	6/11/2020			---	**0.19**
	SS-21E (0-0.5)	6/11/2020		Tee Box	---	**0.047**
	SS-21E (1-1.5)	6/11/2020			---	<0.022
	SS-21F (0-0.5)	6/11/2020		Tee Box	---	**0.82**
	SS-21F (1-1.5)	6/11/2020			---	**0.25**
	SS-21G (0-0.5)	6/11/2020		Rough adjacent to Tee Box	---	**0.56**
	SS-21G (1-1.5)	6/11/2020			---	**0.051**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					**9**	**2.7**
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					**9**	**3.1**
Screening Soil Leaching Value (SLV) (mg/kg)					**5.8**	**3.3**

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV

Exceeds Commercial/Industrial SRV

Table 9
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
CAS No.					7440-38-2	7439-97-6
Sample Identifier, Date Collected, and Location Description	SS-22 (0-0.5)	6/9/2020	11th Hole	Rough adjacent to Tee Box	---	**1.4**
	SS-22 (1-1.5)	6/9/2020			---	**0.038**
	SS-22B (0-0.5)	6/9/2020		Tee Box	---	**16.9**
	Dup-6-06092020 (SS-22B (0-0.5)	6/9/2020			---	**25.0**
	SS-22B (1-1.5)	6/9/2020			---	**109**
	SS-22B N (0-0.5)	11/17/2021			---	**0.19** [M1]
	SS-22B N (1-1.5)	11/17/2021			---	**0.028**
	SS-22B N (2-2.5)	11/17/2021			---	**0.028**
	SS-22B E (0-0.5)	11/17/2021			---	**0.37**
	SS-22B E (1-1.5)	11/17/2021			---	**0.049**
	SS-22B S (0-0.5)	11/17/2021			---	**2.2**
	SS-22B S (1-1.5)	11/17/2021			---	**0.097**
	SS-22C (0-0.5)	6/9/2020		Tee Box	---	**4.5**
	SS-22C (1-1.5)	6/9/2020			---	**0.22**
	SS-23E (0-0.5)	6/10/2020	3rd Hole	Tee Box		**4.8**
	SS-23E (1-1.5)	6/10/2020			---	**1.0**
	SS-23F (0-0.5)	6/10/2020		Tee Box	---	**0.042**
	SS-23F (1-1.5)	6/10/2020			---	**0.035**
	SS-23G (0-0.5)	6/10/2020		Tee Box	---	**8.0**
	SS-23G (1-1.5)	6/10/2020			---	**0.11**
	SS-24 (0-0.5)	6/12/2020	Driving Range	Tee Box	---	**0.023**
	SS-24 (1-1.5)	6/12/2020			---	<0.022
	SS-24D (0-0.5)	6/12/2020		Tee Box	---	<0.022
	SS-24D (1-1.5)	6/12/2020			---	<0.020
	SS-38 (0-0.5)	6/7/2020	2nd Hole	Tee Box	---	**0.056**
	SS-38 (1-1.5)	6/7/2020			---	**0.05**
	SS-39 (0-0.5)	6/10/2020	4th Hole	Tee Box	---	**4.4**
	SS-39 (1-1.5)	6/10/2020			---	<0.023
	SS-40 (0-0.5)	6/11/2020	7th Hole	Tee Box	---	**0.4**
	SS-40 (1-1.5)	6/11/2020			---	**0.036**
	SS-41 (0-0.5)	6/7/2020	8th Hole	Tee Box	---	**6.4**
	Dup-2-06072020 (SS-41 (0-0.5)	6/7/2020			---	**4.6**
	SS-41 (1-1.5)	6/7/2020			---	**1.6**
	SS-42 (0-0.5)	6/10/2020	12th Hole	Tee Box	---	**0.11**
	SS-42 (1-1.5)	6/10/2020			---	**7.2**
	SS-42 (2-2.5)	11/17/2021			---	**1.3** [M1]
	SS-42 N (0-0.5)	11/17/2021			---	**0.11**
	SS-42 N (1-1.5)	11/17/2021			---	**5.1**
	SS-42 S (0-0.5)	11/17/2021			---	**0.37**
	SS-42 S (1-1.5)	11/17/2021			---	**0.66**
	SS-43 (0-0.5)	6/9/2020	13th Hole	Tee Box	---	**2.7**
	SS-43 (1-1.5)	6/9/2020			---	**0.16**
	SS-44 (0-0.5)	6/10/2020	15th Hole	Tee Box	---	**11.7**
	SS-44 (1-1.5)	6/10/2020			---	**0.13**
	SS-45 (0-0.5)	6/10/2020	17th Hole	Tee Box	---	**0.069**
	SS-45 (1-1.5)	6/10/2020			---	**0.028**
	SS-46 (0-0.5)	6/10/2020	18th Hole	Tee Box	---	**1.3**
	SS-46 (1-1.5)	6/10/2020			---	**0.043**
	SS-47 (0-0.5)	6/10/2020		Tee Box	---	**0.054**
	SS-47 (1-1.5)	6/10/2020			---	**0.025**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					**9**	**2.7**
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					**9**	**3.1**
Screening Soil Leaching Value (SLV) (mg/kg)					**5.8**	**3.3**

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV

Exceeds Commercial/Industrial SRV

Table 10
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
CAS No.					7440-38-2	7439-97-6
Sample Identifier, Date Collected, and Location Description	SS-1I (0-0.5)	6/7/2020	8th Hole	Fairway	---	**6.7** [M6]
	SS-1I (1-1.5)	6/7/2020			---	**0.2**
	SS-1IE (0-0.5)	11/16/2021			---	**7.1**
	SS-1IN (0-0.5)	11/16/2021			---	**2.4**
	SS-1IS (0-0.5)	11/16/2021			---	**4.6** [P6]
	SS-1IW (0-0.5)	11/16/2021			---	**4.4**
	SS-3J (0-0.5)	6/9/2020	13th Hole	Fairway	---	**4.0**
	SS-3J (1-1.5)	6/9/2020			---	**0.14**
	SS-3 J N (0-0.5)	11/17/2021			---	**2.5**
	SS-3 J E (0-0.5)	11/17/2021			---	**3.8**
	SS-3 J S (0-0.5)	11/17/2021			---	**3.9**
	SS-3 J W (0-0.5)	11/17/2021			---	**3.7**
	Dup-4-06092020 (SS-3M (0-0.5)	6/9/2020		Fairway	---	**1.2**
	SS-3M (1-1.5)	6/9/2020			---	**0.043**
	SS-4B (0-0.5)	6/11/2020		Fringe of Green	---	**46.0**
	SS-4B (1-1.5)	6/11/2020			---	**0.27**
	SS-4D (0-0.5)	6/11/2020		Fringe of Fairway	---	**3.6**
	SS-4D (1-1.5)	6/11/2020			---	**0.046**
	SS-4E (0-0.5)	6/11/2020		Fairway	---	**3.4**
	SS-4E (1-1.5)	6/11/2020			---	**0.12**
	SS-4F (0-0.5)	6/11/2020		Fringe of Fairway	---	**0.13**
	SS-4F (1-1.5)	6/11/2020			---	<0.023
	SS-5D (0-0.5)	6/12/2020	5th Hole	Fairway	---	**5.6**
	SS-5D (1-1.5)	6/12/2020			---	**0.035**
	SS-5E (0-0.5)	6/12/2020		Fairway	---	**2.3**
	SS-5E (1-1.5)	6/12/2020			---	**0.053**
	SS-10 (0-0.5)	05/01/2019	13th Hole	Fairway - Low Area	---	**4.7**
	SS-10B (0-0.5)	6/9/2020		Fairway	---	**3.7**
	SS-10B (1-1.5)	6/9/2020			---	**0.04**
	SS-10C (0-0.5)	6/9/2020		Fringe of Fairway	---	**1.7**
	SS-10C (1-1.5)	6/9/2020			---	<0.023
	SS-10F (0-0.5)	6/9/2020	10th Hole	Fringe of Fairway	---	**2.3**
	SS-10F (1-1.5)	6/9/2020			---	**0.22**
	Dup-5-06092020 (SS-10F (1-1.5)	6/9/2020			---	**0.61**
	SS-10G (0-0.5)	6/9/2020		Fairway	---	**2.8**
	SS-10G (1-1.5)	6/9/2020			---	**0.57**
	SS-10H (0-0.5)	6/9/2020		Fairway	---	**3.5**
	SS-10H (1-1.5)	6/9/2020			---	<0.023
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV

Exceeds Commercial/Industrial SRV

Table 10
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
CAS No.					7440-38-2	7439-97-6
Sample Identifier, Date Collected, and Location Description	SS-12 (0-0.5)	5/10/2019	18th Hole	Fairway	---	**5.0**
	SS-13 (0-0.5)	5/10/2019	11th Hole	Fairway	---	**5.1**
	SS-13B (0-0.5)	6/9/2020	13th Hole	Fairway	---	**3.0**
	SS-13B (1-1.5)	6/9/2020			---	**0.08**
	SS-14 (0-0.5)	5/10/2019		Fairway - Low Area	---	**4.4**
	SS-14B (0-0.5)	6/9/2020	11th Hole	Fairway	---	**4.0**
	SS-14B (1-1.5)	6/9/2020			---	**0.14**
	SS-14C (0-0.5)	6/9/2020		Fringe of Fairway	---	**1.7**
	SS-14C (1-1.5)	6/9/2020			---	**0.2**
	SS-16 (0-0.5)	5/10/2019	5th Hole	Fringe of Fairway		**4.5**
	SS-16B (0-0.5)	6/11/2020			---	**1.1**
	SS-16B (1-1.5)	6/11/2020			---	**0.2**
	SS-16C (0-0.5)	6/11/2020		Fringe of Fairway	---	**1.2**
	SS-16C (1-1.5)	6/11/2020			---	<0.023
	SS-17E (0-0.5)	6/10/2020	15th Hole	Fairway	---	**2.4**
	SS-17E (1-1.5)	6/10/2020			---	**0.022**
	SS-17G (0-0.5)	6/10/2020	12th Hole	Fairway	---	**16.5**
	SS-17G (1-1.5)	6/10/2020			---	**0.21**
	SS-17G N (0-0.5)	11/17/2021			---	**0.77**
	SS-17G E (0-0.5)	11/17/2021			---	**1.3**
	SS-17G S (0-0.5)	11/17/2021			---	**0.098**
	SS-17G W (0-0.5)	11/17/2021			---	**0.44**
	SS-17I (0-0.5)	6/10/2020	11th Hole	Fringe of Fairway	---	**3.3**
	SS-17I (1-1.5)	6/10/2020			---	**0.56**
	SS-17J (0-0.5)	6/10/2020		Fairway	---	**3.8**
	SS-17J (1-1.5)	6/10/2020			---	**0.16**
	SS-18B (0-0.5)	6/7/2020	1st Hole	Fringe of Fairway	---	**3.1**
	SS-18B (1-1.5)	6/7/2020			---	**2.7**
	SS-18C (0-0.5)	6/7/2020		Fairway	---	**4.1**
	Dup-1-06072020 (SS-18C (0-0.5)	6/7/2020			---	**0.85**
	SS-18C (1-1.5)	6/7/2020			---	**0.11**
	SS-18D (0-0.5)	6/7/2020		Fringe of Fairway	---	**0.8**
	SS-18D (1-1.5)	6/7/2020			---	**0.042**
	SS-19 (0-0.5)	6/10/2020	3rd Hole	Rough adjacent to Fairway	---	**1.1**
	SS-19 (1-1.5)	6/10/2020			---	**0.12**
	SS-19B (0-0.5)	6/10/2020		Rough adjacent to Fairway	---	**3.1**
	SS-19B (1-1.5)	6/10/2020			---	**0.65**
	SS-19BE (0-0.5)	11/16/2021			---	**2.3**
	SS-19BN (0-0.5)	11/16/2021			---	**2.9**
	SS-19BS (0-0.5)	11/16/2021			---	**2.8**
	SS-19C (0-0.5)	6/10/2020		Fairway	---	**3.0**
	SS-19C (1-1.5)	6/10/2020			---	**0.3**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes
Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.
mg/kg = Milligrams per kilogram.
< = Not detected at or above the laboratory reporting limit indicated.
--- = Not analyzed or calculated for this parameter or not applicable.
[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.
[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

Table 10
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Sample Identifier, Date Collected, and Location Description				Compound/Parameter	Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
				CAS No.	7440-38-2	7439-97-6
	SS-19D (0-0.5)	6/10/2020	3rd Hole	Fairway	---	**2.0**
	SS-19D (1-1.5)	6/10/2020			---	**0.092**
	SS-19E (0-0.5)	6/10/2020		Fringe of Fairway	---	**0.67**
	SS-19E (1-1.5)	6/10/2020			---	<0.021
	SS-21 (0-0.5)	6/11/2020	15th Hole	Fairway	---	**4.5**
	SS-21 (1-1.5)	6/11/2020			---	**0.031**
	SS-22E (0-0.5)	6/9/2020	13th Hole	Rough Adjacent to Fairway	---	**2.2**
	SS-22E (1-1.5)	6/9/2020			---	**0.15**
	SS-22F (0-0.5)	6/9/2020		Fairway	---	**3.0**
	SS-22F (1-1.5)	6/9/2020			---	**0.072**
	SS-22G (0-0.5)	6/9/2020		Fairway	---	**4.7**
	SS-22G (1-1.5)	6/9/2020			---	**0.073**
	SS-22H (0-0.5)	6/9/2020		Fringe of Fairway	---	**1.8**
	SS-22H (1-1.5)	6/9/2020			---	**0.08**
	SS-23J (0-0.5)	6/10/2020	17th Hole	Fairway		**0.49**
	SS-23J (1-1.5)	6/10/2020			---	**0.39**
	SS-23K (0-0.5)	6/10/2020		Fairway	---	**1.4**
	SS-23K (1-1.5)	6/10/2020			---	**0.029**
	SS-24C (0-0.5)	6/12/2020	Driving Range	Fairway	---	**0.033**
	SS-24C (1-1.5)	6/12/2020			---	<0.020
	SS-24E (0-0.5)	6/12/2020		Fairway	---	**0.25**
	SS-24E (1-1.5)	6/12/2020			---	<0.021
	SS-24F (0-0.5)	6/12/2020		Fairway	---	**0.024**
	Dup-15-06122020 (SS-24F (0-0.5)	6/12/2020			---	<0.023
	SS-24F (1-1.5)	6/12/2020			---	<0.021
	SS-48 (0-0.5)	6/7/2020	2nd Hole	Fairway	---	**8.2**
	SS-48 (1-1.5)	6/7/2020			---	**0.073**
	SS-48N (0-0.5)	11/16/2021			---	**4.7**
	SS-48S (0-0.5)	11/16/2021			---	**3.7**
	SS-50 (0-0.5)	6/7/2020	7th Hole	Fairway	---	**3.5**
	SS-50 (1-1.5)	6/7/2020			---	**0.047**
	SS-51 (0-0.5)	6/10/2020	16th Hole	Rough adjacent to Fairway	---	**2.8**
	SS-51 (1-1.5)	6/10/2020			---	**0.21**
	FW1-DU1 (0-0.5)	11/12/2021	1st Fairway		---	**3.1**
	FW1-DU2 (0-0.5)	11/12/2021			---	**4.1**
	DUP-8 (FW1-DU2(0-0.5)	11/12/2021			---	**5.4**
	FW2-DU1 (0-0.5)	11/11/2021	2nd Fairway		---	**2.6**
	FW3-DU1 (0-0.5)	11/11/2021	3rd Fairway		---	**3.2**
	FW3-DU2 (0-0.5)	11/11/2021			---	**3.6**
	FW3-DU3 (0-0.5)	11/11/2021			---	**3.1**
	DUP-5 (FW3-DU3(0-0.5)	11/11/2021			---	**3.3**
	FW4-DU1 (0-0.5)	11/09/2021	4th Fairway		---	**2.5**
	DUP-3 (FW4-DU1(0-0.5))	11/09/2021			---	**3.0**
	FW4-DU2 (0-0.5)	11/09/2021			---	**2.4**
	FW4-DU3 (0-0.5)	11/09/2021			---	**1.9**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes
Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.
mg/kg = Milligrams per kilogram.
< = Not detected at or above the laboratory reporting limit indicated.
--- = Not analyzed or calculated for this parameter or not applicable.
[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.
[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

Table 10
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter				Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
CAS No.				7440-38-2	7439-97-6
Sample Identifier, Date Collected, and Location Description	FW5-DU1 (0-0.5)	11/08/2021	5th Fairway	---	**2.2**
	FW5-DU2 (0-0.5)	11/08/2021		---	**2.4**
	DUP-2 (FW5-DU2 (0-0.5))	11/08/2021		---	**2.4**
	FW5-DU3 (0-0.5)	11/08/2021		---	**6.8**
	FW6-DU1 (0-0.5)	11/08/2021	6th Fairway	---	**4.4** [1]
	FW6-DU2 (0-0.5)	11/08/2021		---	**6.8**
	DUP-1 (FW6-DU2 (0-0.5))	11/08/2021		---	**20.2**
	FW6-DU3 (0-0.5)	11/08/2021		---	**1.9**
	FW7-DU1 (0-0.5)	11/11/2021	7th Fairway	---	**2.8**
	FW7-DU2 (0-0.5)	11/11/2021		---	**3.0**
	FW7-DU3 (0-0.5)	11/11/2021		---	**2.9**
	FW8-DU1 (0-0.5)	11/12/2021	8th Fairway	---	**5.2**
	FW8-DU2 (0-0.5)	11/12/2021		---	**5.4**
	FW8-DU3 (0-0.5)	11/12/2021		---	**1.8**
	DUP-7 (FW8-DU3(0-0.5))	11/12/2021		---	**3.5**
	FW9-DU1 (0-0.5)	11/12/2021	9th Fairway	---	**0.31**
	FW10-DU1 (0-0.5)	11/10/2021	10th Fairway	---	**11.9**
	FW10-DU2 (0-0.5)	11/10/2021		---	**3.4**
	FW10-DU3 (0-0.5)	11/10/2021		---	**2.8**
	FW11-DU1 (0-0.5)	11/09/2021	11th Fairway	---	**3.3**
	FW11-DU2 (0-0.5)	11/09/2021		---	**2.3**
	FW11-DU3 (0-0.5)	11/10/2021		---	**2.7** [1]
	FW12-DU1 (0-0.5)	11/09/2021	12th Fairway	---	**1.1**
	FW13-DU1 (0-0.5)	11/10/2021	13th Fairway	---	**15.1**
	FW13-DU2 (0-0.5)	11/10/2021		---	**2.9**
	DUP-4 (FW13-DU2(0-0.5))	11/10/2021		---	**2.6**
	FW13-DU3 (0-0.5)	11/10/2021		---	**2.9**
	FW14-DU1 (0-0.5)	11/10/2021	14th Fairway	---	**3.5**
	FW14-DU2 (0-0.5)	11/10/2021		---	**3.1**
	FW14-DU3 (0-0.5)	11/10/2021		---	**3.5**
	FW15-DU1 (0-0.5)	11/09/2021	15th Fairway	---	**1.9**
	FW15-DU2 (0-0.5)	11/09/2021		---	**4.7**
	FW16-DU1 (0-0.5)	11/09/2021	16th Fairway	---	**3.3**
	FW17-DU1 (0-0.5)	11/11/2021	17th Fairway	---	**1.4**
	FW17-DU2 (0-0.5)	11/11/2021		---	**2.7**
	FW17-DU3 (0-0.5)	11/11/2021		---	**1.2**
	FW18-DU1 (0-0.5)	11/11/2021	18th Fairway	---	**7.6**
	DUP-6 (FW18-DU1(0-0.5)	11/11/2021		---	**3.4**
	FW18-DU2 (0-0.5)	11/11/2021		---	**3.6**
	FW18-DU3 (0-0.5)	11/11/2021		---	**1.7**
	3rd Green C (0-0.5)	11/18/2021	3rd Green	---	**89.2**
	6th Green C (0-0.5)	11/18/2021	6th Green	---	**18.6**
	7th Green C (0-0.5)	11/18/2021	7th Green	---	**102.0**
	10th Green C (0-0.5)	11/18/2021	10th Green	---	**79.0**
	11th Green C (0-0.5)	11/18/2021	11th Green	---	**161.0**
	12th Green C (0-0.5)	11/18/2021	12th Green	---	**59.8**
	18th Green C (0-0.5)	11/18/2021	18th Green	---	**66.5**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)				9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)				9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)				5.8	3.3

Notes
Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.
mg/kg = Milligrams per kilogram.
< = Not detected at or above the laboratory reporting limit indicated.
--- = Not analyzed or calculated for this parameter or not applicable.
[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.
[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV

Table 11
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Sample Identifier, Date Collected, and Location Description					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
Compound/Parameter						
CAS No.					7440-38-2	7439-97-6
	SS-1C (0-0.5)	6/7/2020	8th Hole	Rough adjacent to Green	**3.2**	**0.08**
	SS-1C (1-1.5)	6/7/2020			**3.7**	**0.057**
	SS-1D (0-0.5)	6/7/2020	9th Hole	Rough near Sidewalk	---	**0.039**
	SS-1D (1-1.5)	6/7/2020			---	**0.028**
	SS-1F (0-0.5)	6/7/2020	8th Hole	Rough near Sidewalk	**7.4**	**6.6**
	SS-1F (1-1.5)	6/7/2020			**2.9**	**0.057**
	SS-1FE (0-0.5)	11/16/2021			---	**0.94**
	SS-1FN (0-0.5)	11/16/2021			---	**0.84**
	SS-1FS (0-0.5)	11/16/2021			---	**0.026**
	SS-1FW (0-0.5)	11/16/2021			---	**16.1**
	SS-1G (0-0.5)	6/7/2020		Sand Trap	---	<0.022
	SS-1G (1-1.5)	6/7/2020			---	**0.028**
	SS-1H (0-0.5)	6/7/2020		Rough adjacent to Sand Trap	---	**0.13**
	SS-1H (1-1.5)	6/7/2020			---	<0.021
	SS-1K (0-0.5)	6/7/2020	9th Hole	Rough adjacent to Tee Box	---	**1.1**
	SS-1K (1-1.5)	6/7/2020			---	**0.1**
	SS-3G (0-0.5)	6/9/2020	13th Hole	Sand Trap	---	**0.15**
	SS-3G (1-1.5)	6/9/2020			---	<0.022
	SS-3I (0-0.5)	6/9/2020		Rough adjacent to Green	---	**0.92**
	SS-3I (1-1.5)	6/9/2020			---	**0.051**
	SS-3K (0-0.5)	6/9/2020		Rough	---	**0.9**
	SS-3K (1-1.5)	6/9/2020			---	**0.1**
	SS-3L (0-0.5)	6/9/2020		Rough	---	**1.4**
	SS-3L (1-1.5)	6/9/2020			---	**0.054**
	SS-4C (0-0.5)	6/11/2020	4th Hole	Rough	---	**2.5** [M1]
	Dup-11-06112020 (SS-4C 0-0.5)	6/11/2020			---	**2.1**
	SS-4C (1-1.5)	6/11/2020			---	**0.24**
	SS-5F (0-0.5)	6/12/2020	5th Hole	Rough	---	**1.9**
	Dup-13-06122020 (SS-5F (0-0.5)	6/12/2020			---	**2.0**
	SS-5F (1-1.5)	6/12/2020			---	<0.019
	SS-5H (0-0.5)	6/12/2020		Sand Trap	---	<0.021
	SS-5H (1-1.5)	6/12/2020			---	**0.025**
	SS-5I (0-0.5)	6/12/2020		Rough	---	**1.3**
	SS-5I (1-1.5)	6/12/2020			---	**0.11**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV

Exceeds Commercial/Industrial SRV

Table 11
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Sample Identifier, Date Collected, and Location Description					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
Compound/Parameter						
CAS No.					7440-38-2	7439-97-6
	SS-5L (0-0.5)	6/12/2020	6th Hole	Rough	---	**0.16**
	SS-5L (1-1.5)	6/12/2020			---	<0.022
	SS-10D (0-0.5)	6/9/2020	13th Hole	Rough	---	**0.87**
	SS-10D (1-1.5)	6/9/2020			---	**0.071**
	SS-10E (0-0.5)	6/9/2020	10th Hole	Rough	---	**0.22**
	SS-10E (1-1.5)	6/9/2020			---	<0.022
	SS-13C (0-0.5)	6/9/2020	13th Hole	Rough	---	<0.023
	SS-13C (1-1.5)	6/9/2020			---	**0.087**
	SS-14 (0-0.5)	5/10/2019		Fairway - Low Area	---	**4.4**
	SS-14B (0-0.5)	6/9/2020	11th Hole	Fairway	---	**4.0**
	SS-14B (1-1.5)	6/9/2020			---	**0.14**
	SS-14C (0-0.5)	6/9/2020		Fringe of Fairway	---	**1.7**
	SS-14C (1-1.5)	6/9/2020			---	**0.2**
	SS-14D (0-0.5)	6/9/2020		Rough	---	**0.093**
	SS-14D (1-1.5)	6/9/2020			---	<0.024
	SS-15 (0-0.5)	5/10/2019	5th Hole	Tee Box	---	**7.0**
	SS-16 (0-0.5)	5/10/2019		Fairway	---	**4.5**
	SS-16B (0-0.5)	6/11/2020			---	**1.1**
	SS-16B (1-1.5)	6/11/2020			---	**0.2**
	SS-16C (0-0.5)	6/11/2020		Fringe of Fairway	---	**1.2**
	SS-16C (1-1.5)	6/11/2020			---	<0.023
	SS-16D (0-0.5)	6/11/2020		Rough	---	**1.2**
	SS-16D (1-1.5)	6/11/2020			---	**0.13**
	SS-17 (0-0.5)	6/10/2020	16th Hole	Rough next to sand trap	---	**0.65**
	SS-17 (1-1.5)	6/10/2020			---	**10.0**
	SS-17 (2-2.5)	11/17/2021			---	**0.035**
	SS-17 N (0-0.5)	11/17/2021			---	**0.52**
	SS-17 N (1-1.5)	11/17/2021			---	**1.3**
	SS-17 S (0-0.5)	11/17/2021			---	**0.3**
	SS-17 S (1-1.5)	11/17/2021			---	**1.6**
	SS-17B (0-0.5)	6/10/2020		Sand Trap	---	**0.05**
	SS-17B (1-1.5)	6/10/2020			---	**0.023**
	SS-17C (0-0.5)	6/10/2020		Rough	---	**0.088**
	SS-17C (1-1.5)	6/10/2020			---	**0.041**
	SS-17D (0-0.5)	6/10/2020	15th Hole	Rough	---	**0.39**
	SS-17D (1-1.5)	6/10/2020			---	**0.028**
	SS-17E (0-0.5)	6/10/2020		Fairway	---	**2.4**
	SS-17E (1-1.5)	6/10/2020			---	**0.022**
	SS-17F (0-0.5)	6/10/2020		Rough	---	**0.16**
	SS-17F (1-1.5)	6/10/2020			---	<0.023
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV

Exceeds Commercial/Industrial SRV

Table 11
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Sample Identifier, Date Collected, and Location Description					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
Compound/Parameter						
CAS No.					7440-38-2	7439-97-6
	SS-17H (0-0.5)	6/10/2020	12th Hole	Rough near Sidewalk	---	**1.0**
	SS-17H (1-1.5)	6/10/2020			---	**0.12**
	Dup-9-06102020 (SS-17H (1-1.5)	6/10/2020			---	**0.12**
	SS-18 (0-0.5)	6/7/2020	1st Hole	Rough	---	**0.48**
	SS-18 (1-1.5)	6/7/2020			---	**0.054**
	SS-18B (0-0.5)	6/7/2020		Fringe of Fairway	---	**3.1**
	SS-18B (1-1.5)	6/7/2020			---	**2.7**
	SS-18E (0-0.5)	6/7/2020		Rough	---	**0.13**
	SS-18E (1-1.5)	6/7/2020			---	<0.021
	SS-19 (0-0.5)	6/10/2020	3rd Hole	Rough adjacent to Fairway	---	**1.1**
	SS-19 (1-1.5)	6/10/2020			---	**0.12**
	SS-19B (0-0.5)	6/10/2020		Rough adjacent to Fairway	---	**3.1**
	SS-19B (1-1.5)	6/10/2020			---	**0.65**
	SS-19BE (0-0.5)	11/16/2021			---	**2.3**
	SS-19BN (0-0.5)	11/16/2021			---	**2.9**
	SS-19BS (0-0.5)	11/16/2021			---	**2.8**
	SS-19F (0-0.5)	6/10/2020		Rough	---	**0.35**
	Dup-8-06102020 (SS-19F (0-0.5)	6/10/2020			---	**0.35**
	SS-19F (1-1.5)	6/10/2020			---	**0.047**
	SS-20B (0-0.5)	6/9/2020	14th Hole	Rough adjacent to Tee Box	---	**0.33**
	Dup-3-06092020 (SS-20B (0-0.5)	6/9/2020			---	**0.26**
	SS-20B (1-1.5)	6/9/2020			---	**0.11**
	SS-20D (0-0.5)	6/9/2020		Rough adjacent to Tee Box	---	**2.8**
	SS-20D (1-1.5)	6/9/2020			---	**0.068** [M1]
	SS-21B (0-0.5)	6/11/2020	15th Hole	Rough	---	**0.1**
	SS-21B (1-1.5)	6/11/2020			---	<0.023
	SS-21G (0-0.5)	6/11/2020	16th Hole	Rough adjacent to Tee Box	---	**0.56**
	SS-21G (1-1.5)	6/11/2020			---	**0.051**
	SS-22 (0-0.5)	6/9/2020	11th Hole	Rough adjacent to Tee Box	---	**1.4**
	SS-22 (1-1.5)	6/9/2020			---	**0.038**
	SS-22D (0-0.5)	6/9/2020		Rough	---	**0.077**
	SS-22D (1-1.5)	6/9/2020			---	**0.023**
	SS-22E (0-0.5)	6/9/2020	13th Hole	Rough Adjacent to Fairway	---	**2.2**
	SS-22E (1-1.5)	6/9/2020			---	**0.15**
	SS-22I (0-0.5)	6/9/2020		Rough	---	**0.066**
	SS-22I (1-1.5)	6/9/2020			---	<0.023
	SS-23B (0-0.5)	6/10/2020	2nd Hole	Sand Trap	---	**0.029**
	SS-23B (1-1.5)	6/10/2020			---	**0.025**
	SS-23C (0-0.5)	6/10/2020		Rough	---	**1.3**
	SS-23C (1-1.5)	6/10/2020			---	**0.086**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV

Exceeds Commercial/Industrial SRV

Table 11
Soil Arsenic and Mercury Analytical Results - All Data
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Sample Identifier, Date Collected, and Location Description					Arsenic, Total (mg/kg)	Mercury, Total (mg/kg)
CAS No.					7440-38-2	7439-97-6
	SS-23B (0-0.5)	6/10/2020	2nd Hole	Sand Trap	---	**0.029**
	SS-23B (1-1.5)	6/10/2020			---	**0.025**
	SS-23C (0-0.5)	6/10/2020		Rough	---	**1.3**
	SS-23C (1-1.5)	6/10/2020			---	**0.086**
	SS-23D (0-0.5)	6/10/2020	3rd Hole	Rough adjacent to Tee Box	---	**2.3**
	SS-23D (1-1.5)	6/10/2020			---	**0.091**
	SS-23H (0-0.5)	6/10/2020		Rough	---	**0.33**
	SS-23H (1-1.5)	6/10/2020			---	<0.022
	SS-23I (0-0.5)	6/10/2020	17th Hole	Rough	---	**1.4**
	SS-23I (1-1.5)	6/10/2020			---	**0.042**
	SS-49 (0-0.5)	6/15/2020	5th Hole	Rough	---	**0.96**
	SS-49 (1-1.5)	6/15/2020			---	<0.022 [M1]
	SS-51 (0-0.5)	6/10/2020	16th Hole	Rough adjacent to Fairway	---	**2.8**
	SS-51 (1-1.5)	6/10/2020			---	**0.21**
	ST-6 (2-4)	04/12/2019	Between 13th Hole and 11th Hole	Rough	**1.7**	<0.020
	ST-10 (1-3)	04/12/2019	16th Hole	Rough East of Hole	**2.0**	**0.027**
Residential/Recreational Soil Reference Value (SRV) (mg/kg)					9	2.7
Commercial/Industrial Soil Reference Value (SRV) (mg/kg)					9	3.1
Screening Soil Leaching Value (SLV) (mg/kg)					5.8	3.3

Notes

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

[a] = Samples SS-21C (0-0.5) and SS-21C (1-1.5) were mislabeled by the lab as SS-21K (0-0.5) and SS-21K (1-1.5), respectively.

[M1] Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

[M6] Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

Exceeds Residential/Recreational SRV

Exceeds Commercial/Industrial SRV

Table 12
Soil Analytical Results - Soil Borrow Area
Former Hillcrest Golf Course
St Paul, Minnesota
Project B1903316.00

Compound/Parameter	CAS No.	Sample Identifier and Date Collected					Residential/ Recreational SRV (mg/kg)	Commercial/ Industrial SRV (mg/kg)	SLV (mg/kg)
		Borrow-N (0-0.5)	Borrow-N (1-1.5)	Borrow-S (0-0.5)	Borrow-S (1-1.5)	Trip Blank			
		11/15/2021	11/15/2021	11/15/2021	11/15/2021	11/15/2021			
Volatile Organic Compounds (VOCs) (mg/kg)									
All other reported VOCs	---	<RL	<RL	<RL	<RL	<RL	---	---	---
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)									
Acenaphthene	83-32-9	<0.0121	<0.0113	<0.0110	<0.0116	---	450	6,800	81
Acenaphthylene	208-96-8	<0.0121	<0.0113	<0.0110	<0.0116	---	NE	NE	NE
Anthracene	120-12-7	**0.0148**	**0.0118**	<0.0110	<0.0116	---	2,800	42,000	1,300
Benz(a)anthracene	56-55-3	**0.0754**	**0.0387**	<0.0110	<0.0116	---	cPAH	cPAH	cPAH
Benzo(b)fluoranthene	205-99-2	**0.125**	**0.0553**	<0.0110	<0.0116	---	cPAH	cPAH	cPAH
Benzo(k)fluoranthene	207-08-9	**0.0547**	**0.0238**	<0.0110	<0.0116	---	cPAH	cPAH	cPAH
Benzo(a)pyrene	50-32-8	**0.0894**	**0.0398**	<0.0110	<0.0116	---	cPAH	cPAH	cPAH
Benzo(g,h,i)perylene	191-24-2	**0.0687**	**0.0281**	<0.0110	<0.0116	---	NE	NE	NE
Chrysene	218-01-9	**0.0978**	**0.0459**	<0.0110	<0.0116	---	cPAH	cPAH	cPAH
Dibenz(a,h)anthracene	53-70-3	**0.0142**	<0.0113	<0.0110	<0.0116	---	cPAH	cPAH	cPAH
Fluoranthene	206-44-0	**0.178**	**0.101**	<0.0110	<0.0116	---	200	2,700	670
Fluorene	86-73-7	<0.0121	<0.0113	<0.0110	<0.0116	---	390	5,800	110
Indeno(1,2,3-cd)pyrene	193-39-5	**0.0721**	**0.0303**	<0.0110	<0.0116	---	cPAH	cPAH	cPAH
2-Methyl naphthalene	91-57-6	---	---	---	---	---	39	580	NE
Naphthalene	91-20-3	<0.0121	<0.0113	<0.0110	<0.0116	---	81	280	4.5
Phenanthrene	85-01-8	**0.0581**	**0.0488**	<0.0110	<0.0116	---	NE	NE	NE
Pyrene	129-00-0	**0.131**	**0.0731**	<0.0110	<0.0116	---	220	3,200	440
All other reported PAHs	---	<RL	<RL	<RL	<RL	<RL	---	---	---
BaP Equivalent[c]	---	**0.13**	**0.1**	**0.0**	**0.0**	**0.0**	2^{BTV}	23	1.4
Metals (mg/kg)									
Arsenic, Total	7440-38-2	**4.1**	**3.5**	**3.3**	**3.3**	---	9^{BTV}	9^{BTV}	5.8
Barium, Total	7440-39-3	**68.6**	**57.7**	**64.6**	**59.0**	---	3,000	41,000	1,700
Cadmium, Total	7440-43-9	**0.49**	**0.34**	**0.17**	**0.18**	---	1.6	23	8.8
Chromium, Total[e]	7440-47-3	**29.6**	**20.9**	**19.9**	**18.4**	---	23,000/11[e]	100,000/62[e]	1,000,000,000/36[e]
Lead, Total	7439-92-1	**15.1**	**8.0**	**8.4**	**10.1**	---	300	700	2,700
Mercury, Total	7439-97-6	**1.2**	**1.0**	**0.51**	**0.11**	---	3.1	3.1	3.3
Selenium, Total	7782-49-2	<0.56	<0.52	<0.52	<0.53	---	77	1,200	2.6
Silver, Total	7440-22-4	**0.67**	<0.52	<0.52	<0.53	---	77	1,200	7.9
Organochlorine Pesticides (mg/kg)									
Aldrin	309-00-2	<0.0101	<0.0019	<0.0093	<0.0097	---	0.45	2.6	NE
alpha-BHC	319-84-6	<0.0101	<0.0019	<0.0093	<0.0097	---	0.69	3.8	NE
beta-BHC	319-85-7	<0.0101	<0.0019	<0.0093	<0.0097	---	2.5	14	NE
gamma-BHC (Lindane)	58-89-9	<0.0101	<0.0019	<0.0093	<0.0097	---	4.3	25	NE
delta-BHC	319-86-8	<0.0101	<0.0019	<0.0093	<0.0097	---	NE	NE	NE
Chlordane (Technical)	57-74-9	<0.101	<0.0188	<0.0927	<0.0970	---	NE	NE	NE
alpha-Chlordane	5103-71-9	<0.0101	<0.0019	<0.0093	<0.0097	---	NE	NE	NE
gamma-Chlordane	5103-74-2	<0.0101	<0.0019	<0.0093	<0.0097	---	NE	NE	NE
4,4'-DDD	72-54-8	<0.0201	<0.0037	<0.0185	<0.0193	---	19	100	NE
4,4'-DDE	72-55-9	**0.0809**	**0.0886**	**0.024**	<0.0193	---	22	130	NE
4,4'-DDT	50-29-3	<0.0201	**0.0128**	<0.0185	<0.0193	---	7.3	87	NE
Dieldrin	60-57-1	<0.0201	<0.0037	<0.0185	<0.0193	---	0.11	1.5	NE
Endosulfan I	959-98-8	<0.0101	<0.0019	<0.0093	<0.0097	---	NE	NE	NE
Endosulfan II	33213-65-9	<0.0201	<0.0037	<0.0185	<0.0193	---	NE	NE	NE
Endosulfan sulfate	1031-07-8	<0.0201	<0.0037	<0.0185	<0.0193	---	NE	NE	NE
Endrin	72-20-8	<0.0201	<0.0037	<0.0185	<0.0193	---	4	54	NE
Endrin aldehyde	7421-93-4	<0.0201	<0.0037	<0.0185	<0.0193	---	NE	NE	NE
Endrin ketone	53494-70-5	<0.0201	<0.0037	<0.0185	<0.0193	---	NE	NE	NE
Heptachlor	76-44-8	<0.0101	<0.0019	<0.0093	<0.0097	---	1.6	8.9	NE
Heptachlor epoxide	1024-57-3	<0.0101	<0.0019	<0.0093	<0.0097	---	0.28	4.2	NE
Methoxychlor	72-43-5	<0.101	<0.0188	<0.0927	<0.0970	---	NE	NE	NE
Toxaphene	8001-35-2	<0.302	<0.0563	<0.277	<0.290	---	4.1	23	NE
All other reported organochlorine p	---	<RL	<RL	<RL	<RL	<RL	---	---	---
Petroleum Parameters (mg/kg)							**MPCA Unreg. Fill Criterion**		
DRO with Silica Gel Clean-up	---	<10.2	<8.9	<8.9	**37.2** [1]	---	100[f]		
Gasoline Range Organics (GRO)	---	<14.4	<12.7	<12.7	<13.4	<10.0	100[f]		

Notes

Minnesota Pollution Control Agency (MPCA) Soil Reference Values (SRVs) updated in May 2021 and Soil Leaching Values (SLVs) updated in June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

BTV = Background Threshold Value. BTVs are not calculated health based SRVs. The MPCA calculated SRVs were determined to be below background values (MPCA guidance document c-r1-05, April 2021).

cPAH = Individual regulatory limit not established for this carcinogenic PAH; included in BaP equivalent calculation.

NE = Regulatory limit not established for this parameter.

RL = Reporting limits for other parameters that are not listed individually in this table because their concentrations were below reporting limits provided in the laboratory report.

[c] = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of cPAHs; MPCA; 2009. If no cPAHs were detected above reasonable laboratory reporting limits the BaP equivalent is reported as 0 mg/kg per MPCA Remediation Division Policy; June 2011.

[e] = Reported result is total chromium, regulatory limit for chromium III and chromium VI are provided.

[f] = DRO/GRO concentrations greater than 100 mg/kg are not suitable for reuse as unregulated fill per MPCA Guidance Document c-rem1-01 "Best Management Practices for the Off-Site Reuse of Unregulated Fill" (February 2012).

[1] [T6] High boiling point hydrocarbons are present in the sample.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV
Exceeds 100 mg/kg for DRO/GRO

BRAUN INTERTEC

Table 13
Water Analytical Results
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Compound/Parameter	CAS No.	Sample Identifier, Depth to Groundwater, and Date Collected																			Drinking Water Criteria (µg/L)	Source-Date
		MW-1		MW-2	DUP (MW-2)	MW-2	MW-3		Dup (MW-3)	SW-1	Irrigation Well	Maintenance Well	SW-1	SW-2	SW-3	SW-4	Duplicate 5008172020	Equipment Blank	Trip Blank	Trip Blank		
		07/10/2020	12/3/2021	07/10/2020	07/10/2020	12/3/2021	07/10/2020	12/3/2021	12/3/2021	07/10/2020	07/09/2020	07/09/2020	08/17/2020	08/17/2020	08/17/2020	08/17/2020	08/17/2020	07/09/2020	07/09/2020	07/10/2020		
		North Parking Lot		Maintenance Area			South End of Site			Drainage Swale adjacent to Maintenance Area	Center of Site	Maintenance Area	Wetland Area East of 8th Hole	Central Irrigation Shed Pond	2nd Hole Pond	9th Hole Pond	9th Hold Pond	QAQC	QAQC	QAQC		
Volatile Organic Compounds (VOCs) (µg/L)																						
All reported VOCs	---	<RL	---	<RL	<RL	---	<RL	---	---	<RL	<RL	<RL	<RL	---	---	---	---	<RL	<RL	<RL	---	---
Semi-Volatile Organic Compounds (SVOCs) (µg/L)																						
All reported SVOCs	---	<RL	---	<RL	<RL	---	<RL	---	---	<RL	<RL	<RL	---	---	---	---	---	<RL	---	---	---	---
BaP Equivalent[c]	---	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	---	---	---	---	---	**0.0**	---	---	0.1	HBV-18
Metals (µg/L)																						
Arsenic, Dissolved	7440-38-2	<20.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	<20.0	---	---	10	MCL
Barium, Dissolved	7440-39-3	**156**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	<10.0	---	---	2,000	HRL-93
Cadmium, Dissolved	7440-43-9	<3.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	<3.0	---	---	0.5	HRL-15
Chromium, Dissolved[d]	7440-47-3	<10.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	<10.0	---	---	20,000/100[d]	HRL-94
Lead, Dissolved	7439-92-1	<10.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	<10.0	---	---	15	MCL
Mercury, Dissolved	7439-97-6	<0.20	<0.20	---	---	<0.20	---	<0.20	<0.20	---	---	---	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	---	---	2	MCL
Mercury, Total	7439-97-6	---	---	---	---	---	---	---	---	---	---	---	<0.20	<0.20	<0.20	<0.20	<0.20	---	---	---		
Selenium, Dissolved	7782-49-2	<20.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	<20.0	---	---	30	HRL-93
Silver, Dissolved	7440-22-4	<10.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	<10.0	---	---	30	HRL-93
List 2 Pesticides (µg/L)																						
2,4-D	94-75-7	---	---	<0.024	**0.074** [J]	---	---	---	---	<0.024	---	<0.24	---	---	---	---	---	<0.24	---	---	30	HRL-18
2,4-DB	94-82-6	---	---	<0.032	**0.073** [J]	---	---	---	---	<0.032	---	<0.032	---	---	---	---	---	<0.032	---	---	NE[e]	---
2,4,5-T	93-76-5	---	---	<0.030	**0.071** [J]	---	---	---	---	<0.030	---	<0.030	---	---	---	---	---	<0.030	---	---	70	
2,4,5-TP (Silvex)	93-72-1	---	---	<0.016	**0.07** [J]	---	---	---	---	<0.016	---	<0.016	---	---	---	---	---	<0.016	---	---	50	MCL
Bentazon	25057-89-0	---	---	<0.012	**0.022** [J]	---	---	---	---	<0.012 [M]	---	<0.012	---	---	---	---	---	<0.012	---	---	30	HRL15
Dicamba	1918-00-9	---	---	<0.058	<0.059	---	---	---	---	<0.058 [M,X]	---	<0.058	---	---	---	---	---	<0.058	---	---	200	HRL93
MCPA	94-74-6	---	---	<0.022	**0.082** [J]	---	---	---	---	<0.022	---	<0.022	---	---	---	---	---	<0.022	---	---	3	HRL93
Picloram	1918-02-1	---	---	<0.048	**0.15** [J]	---	---	---	---	<0.048	---	<0.048	---	---	---	---	---	<0.048	---	---	500	HRL93
Triclopyr	55335-06-3	---	---	<0.031	**0.058** [J]	---	---	---	---	<0.031	---	<0.031	---	---	---	---	---	<0.031	---	---	NE[e]	---
Chlorothalonil	1897-45-6	---	---	<0.05	<0.05	---	---	---	---	<0.05	---	<0.05	---	---	---	---	---	<0.05	---	---	30	HRL94
Iprodione	36934-19-7	---	---	<0.10	<0.10	---	---	---	---	<0.10	---	<0.10	---	---	---	---	---	<0.10	---	---	NE[e]	---
Propiconazole	60207-90-1	---	---	<0.05	<0.05	---	---	---	---	<0.05	---	<0.05	---	---	---	---	---	<0.05	---	---	NE[e]	---
Other Parameters (µg/L)																						
Diesel Range Organics (DRO)	---	---	---	<100	<100	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	NE[e]	---
Gasoline Range Organics (GRO)	---	---	---	<100	<100	---	---	---	---	---	---	---	---	---	---	---	---	---	---	<100	NE[e]	---
Nitrate (as Nitrogen)	14797-55-8	---	---	**0.41**	**0.49**	---	---	---	---	**0.12**	<0.10	<0.10	---	---	---	---	---	<0.10	---	---	10,000	MCL
Nitrogen, Kjeldahl, Total	7727-37-9	---	---	<0.50	**0.8**	---	---	---	---	**2.9**	**0.84**	<0.80	---	---	---	---	---	<0.80	---	---	NE[e]	---
m&p-Xylene	179601-23-1	<0.0020	---	<0.0020	<0.0020	---	<0.0020	---	---	---	<0.0020	<0.0020	---	---	---	---	---	<0.0020	<0.0020	<0.0020	NE[e]	---
o-Xylene	95-47-6	<0.0010	---	<0.0010	<0.0010	---	<0.0010	---	---	---	<0.0010	<0.0010	---	---	---	---	---	<0.0010	<0.0010	<0.0010	NE[e]	---

Notes

Drinking Water Criteria = The most conservative value for chronic or cancer exposures provided from the following sources including the Minnesota Department of Health (MDH) Health Risk Limit (HRL), MDH Health Based Value (HBV), MDH Risk Assessment Advice (RAA) or Maximum Contaminant Level (MCL). The date of promulgation is provided, if available. Values updated April 2019.

µg/L = Micrograms per liter.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

RL = Reporting limits for other parameters that are not listed individually in this table because their concentrations were below reporting limits provided in the laboratory report.

NE = Regulatory limit not established for this parameter.

cPAH = Individual regulatory limit not established for this carcinogenic PAH; included in BaP equivalent calculation.

[a] = Regulatory limit for combination of cis- and trans-1,3-dichloropropene.

[b] = Regulatory limit for 4-methylphenol only.

[c] = Benzo[a]pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of cPAHs; Minnesota Pollution Control Agency; 2009. If no cPAHs were detected above reasonable laboratory reporting limits the BaP equivalent is reported as 0 mg/kg per MPCA Remediation Division Policy; June 2011.

[d] = Reported result is total chromium, criteria for chromium III and chromium VI are provided.

[e] = No applicable standard exists. When sampling water directly from drinking water wells, refer to the Minnesota Department of Health's (MDH's) document entitled *Guidance for Evaluating Health Risks for Gasoline and Diesel Contaminated Drinking Water,* dated November 2018.

[1] The continuing calibration for this analyte exceeded 20% difference acceptance criteria for EPA method. Analyte presence below reporting limits in associated samples. No impact to data.

[2] The continuing calibration for this analyte is below 20% difference acceptance criteria for EPA method 8260D but within 50% of the true value. Instrument sensitivity verified with reporting limit check.

[J] Analyte was detected but is below the reporting limit. The concentration is estimated.
[M] The matrix spike and/or matrix spike duplicate recovery was outside of the laboratory control limits.
[X] Precision for the matrix spike duplicate, laboratory control sample duplicate or lab duplicate was outside of control limits.

Exceeds Drinking Water Criteria

BRAUN INTERTEC

Table 14
Soil Analytical Results - 2022 Addiitonal Soil Sampling
Former Hillcrest Golf Course
St. Paul, Minnesota
Project B19003316.00

Compound/Parameter	CAS No.	Sample Identifier and Date Collected											Residential/ Recreational SRV (mg/kg)	Commercial/ Industrial SRV (mg/kg)	SLV (mg/kg)
		PW-6C (1-1.5')	PW-6C N (0-0.5')	PW-6C W (0-0.5')	PW-6D (1-1.5')	PW-6D S (0-0.5')	PW-6D W (0-0.5')	SED-6 (0-0.5')	SED-6 (1-1.5')	SED-6 E (0-0.5')	SED-6 S (0-0.5')	SED-6 W (0-0.5')			
		07/13/2022	07/13/2022	07/13/2022	07/13/2022	07/13/2022	07/13/2022	07/13/2022	07/13/2022	07/13/2022	07/13/2022	07/13/2022			
Metals (mg/kg)															
Mercury, Total	7439-97-6	**2.9**	**4.0**	**2.4**	**0.68**	**2.5**	**0.24**	**0.29**	<0.027	**0.069**	**1.6**	**0.56**	2.7	3.1	3.3

Notes
Minnesota Pollution Control Agency (MPCA) Soil Reference Values (SRVs) updated in April 2022 and Soil Leaching Values (SLVs) updated in June 2013.
mg/kg = Milligrams per kilogram.
< = Not detected at or above the laboratory reporting limit indicated.

Exceeds Residential/Recreational SRV
Exceeds Commercial/Industrial SRV
Exceeds SLV
Exceeds 100 mg/kg for DRO/GRO

BRAUN INTERTEC

Appendix A

Development Plan

Larpenteur Ave E
McKnight Rd N
Hoyt Ave
Montana Ave E
Hoyt Ave E
Nebraska Ave E
N Winthrop St
Arlington Ave E
Sherwood Ave
Cottage Ave E
Ivy Ave E
Hawthorne Ave E

- Lower Density Residential Building
- Higher Density Residential Building
- Light Industrial Building
- Passive Open Space
- Active Park Space
- Wetlands
- Stormwater Feature
- Site Boundaries

0 150 300 600 Feet

N

BULIDINGS & LAND USE

190781 | The Heights Redevelopment

April 25, 2022

Larpenteur Ave E
Hoyt Ave E
Nebraska Ave E
Arlington Ave E
Sherwood Ave
Cottage Ave E
Ivy Ave E
Hawthorne Ave E
N Winthrop St
McKnight Rd N
Hoyt Ave
Montana Ave E
Nebraska Ave E
Arlington Ave E

Parcel Boundaries
Passive Open Space
Active Park Space
Wetlands
Stormwater Feature
Site Boundaries

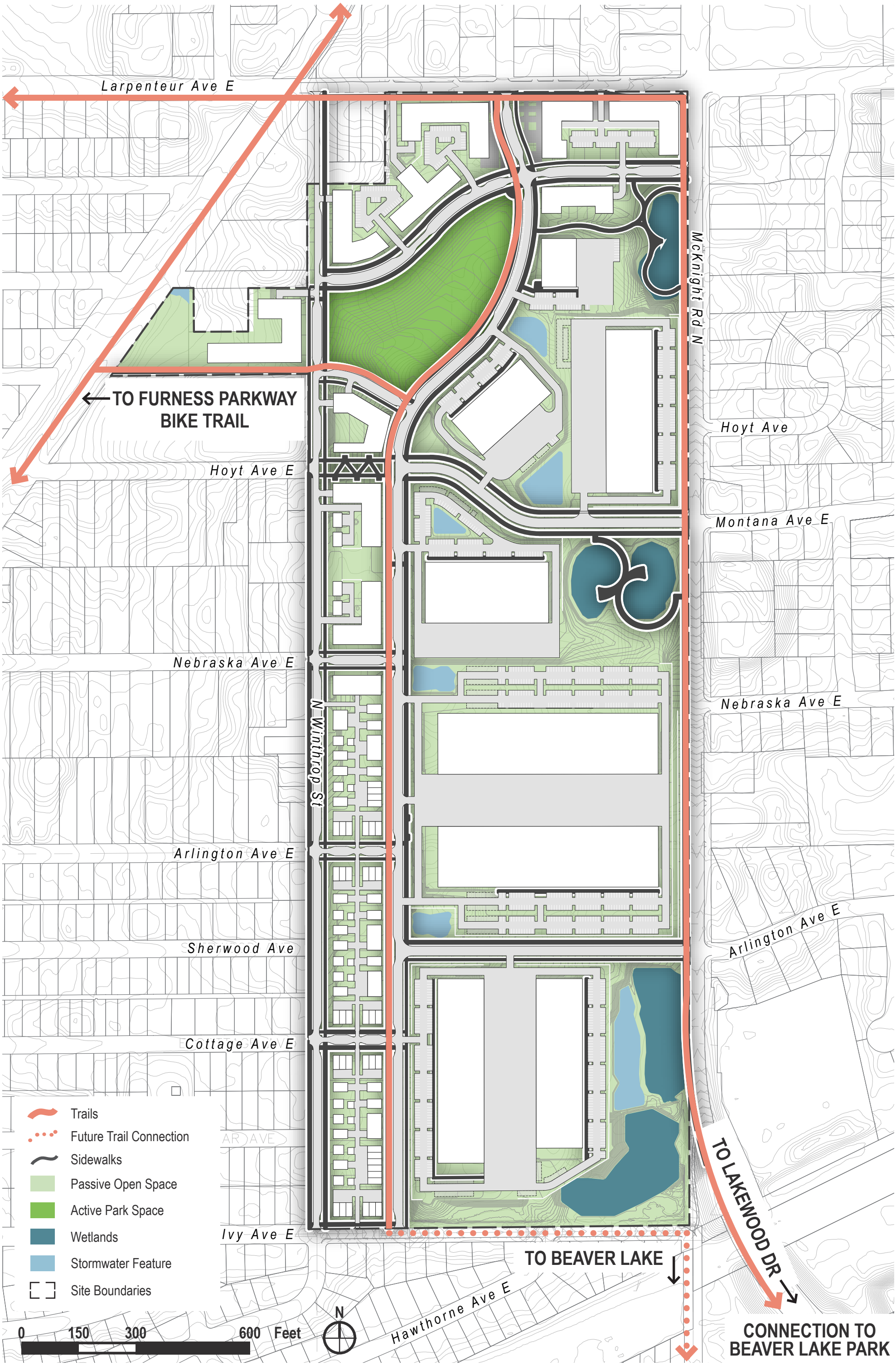
0 150 300 600 Feet

N

PARCEL BOUNDARIES

190781 | The Heights Redevelopment

April 25, 2022



TRAILS & SIDEWALKS

190781 | The Heights Redevelopment

April 25, 2022

Appendix B

Additional Sampling Laboratory report/MDH checklist– South Wetland Area

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

July 19, 2022

Mark Keefer
Braun Intertec
11001 Hampshire Ave S
Bloomington, MN 55438

RE: Project: B1903316.00
Pace Project No.: 10616781

Dear Mark Keefer:

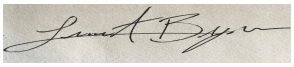
Enclosed are the analytical results for sample(s) received by the laboratory on July 13, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Linley Byrnes
linley.byrnes@pacelabs.com
(612)607-1700
Project Manager

Enclosures

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: B1903316.00
Pace Project No.: 10616781

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414
1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab
A2LA Certification #: 2926.01*
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009*
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014*
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605*
Georgia Certification #: 959
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: AI-03086*
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064*
Maryland Certification #: 322
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137*
Minnesota Dept of Ag Approval: via MN 027-053-137
Minnesota Petrofund Registration #: 1240*
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081*
New Jersey Certification #: MN002
New York Certification #: 11647*
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification (A2LA) #: R-036
North Dakota Certification (MN) #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification (1700) #: CL101
Ohio VAP Certification (1800) #: CL110*
Oklahoma Certification #: 9507*
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001*
Pennsylvania Certification #: 68-00563*
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192*
Utah Certification #: MN00064*
Vermont Certification #: VT-027053137
Virginia Certification #: 460163*
Washington Certification #: C486*
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01
USDA Permit #: P330-19-00208
*Please Note: Applicable air certifications are denoted with an asterisk (*).

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: B1903316.00
Pace Project No.: 10616781

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10616781001	**SED-6 (1-1.5')**	Solid	07/13/22 12:00	07/13/22 16:20
10616781002	**SED-6 (0-0.5')**	Solid	07/13/22 12:00	07/13/22 16:20
10616781003	**SED-6 (1-1.5')**	Solid	07/13/22 12:00	07/13/22 16:20
10616781004	**SED-6 W (0-0.5')**	Solid	07/13/22 12:00	07/13/22 16:20
10616781005	**SED-6 E (0-0.5')**	Solid	07/13/22 12:00	07/13/22 16:20
10616781006	**SED-6 S (0-0.5')**	Solid	07/13/22 12:00	07/13/22 16:20
10616781007	**PW-6C (1-1.5')**	Solid	07/13/22 12:00	07/13/22 16:20
10616781008	**PW-6C N (0-0.5')**	Solid	07/13/22 12:00	07/13/22 16:20
10616781009	**PW-6C W (0-0.5')**	Solid	07/13/22 12:00	07/13/22 16:20
10616781010	**PW-6D (1-1.5')**	Solid	07/13/22 12:00	07/13/22 16:20
10616781011	**PW-6D W (0-0.5')**	Solid	07/13/22 12:00	07/13/22 16:20
10616781012	**PW-6D S (0-0.5')**	Solid	07/13/22 12:00	07/13/22 16:20

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: B1903316.00
Pace Project No.: 10616781

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10616781001	**SED-6 (1-1.5')**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10616781002	**SED-6 (0-0.5')**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10616781003	**SED-6 (1-1.5')**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10616781004	**SED-6 W (0-0.5')**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10616781005	**SED-6 E (0-0.5')**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10616781006	**SED-6 S (0-0.5')**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10616781007	**PW-6C (1-1.5')**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10616781008	**PW-6C N (0-0.5')**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10616781009	**PW-6C W (0-0.5')**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10616781010	**PW-6D (1-1.5')**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10616781011	**PW-6D W (0-0.5')**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10616781012	**PW-6D S (0-0.5')**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M

PASI-M = Pace Analytical Services - Minneapolis

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

SUMMARY OF DETECTION

Project: B1903316.00
Pace Project No.: 10616781

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
10616781001	**SED-6 (1-1.5')**					
ASTM D2974	Percent Moisture	28.7	%	0.10	07/14/22 10:13	N2
10616781002	**SED-6 (0-0.5')**					
EPA 7471B	Mercury	0.29	mg/kg	0.098	07/19/22 16:24	
ASTM D2974	Percent Moisture	80.0	%	0.10	07/14/22 10:13	N2
10616781003	**SED-6 (1-1.5')**					
ASTM D2974	Percent Moisture	33.3	%	0.10	07/14/22 10:14	N2
10616781004	**SED-6 W (0-0.5')**					
EPA 7471B	Mercury	0.56	mg/kg	0.049	07/19/22 16:28	
ASTM D2974	Percent Moisture	63.5	%	0.10	07/14/22 10:14	N2
10616781005	**SED-6 E (0-0.5')**					
EPA 7471B	Mercury	0.069	mg/kg	0.038	07/19/22 16:29	
ASTM D2974	Percent Moisture	51.4	%	0.10	07/14/22 10:14	N2
10616781006	**SED-6 S (0-0.5')**					
EPA 7471B	Mercury	1.6	mg/kg	0.085	07/19/22 16:31	
ASTM D2974	Percent Moisture	76.6	%	0.10	07/14/22 10:14	N2
10616781007	**PW-6C (1-1.5')**					
EPA 7471B	Mercury	2.9	mg/kg	0.11	07/19/22 16:53	
ASTM D2974	Percent Moisture	14.2	%	0.10	07/14/22 10:14	N2
10616781008	**PW-6C N (0-0.5')**					
EPA 7471B	Mercury	4.0	mg/kg	0.22	07/19/22 16:55	
ASTM D2974	Percent Moisture	10.7	%	0.10	07/14/22 10:46	N2
10616781009	**PW-6C W (0-0.5')**					
EPA 7471B	Mercury	2.4	mg/kg	0.097	07/19/22 16:56	
ASTM D2974	Percent Moisture	13.8	%	0.10	07/14/22 10:47	N2
10616781010	**PW-6D (1-1.5')**					
EPA 7471B	Mercury	0.68	mg/kg	0.023	07/19/22 16:41	
ASTM D2974	Percent Moisture	24.4	%	0.10	07/14/22 10:47	N2
10616781011	**PW-6D W (0-0.5')**					
EPA 7471B	Mercury	0.24	mg/kg	0.044	07/19/22 16:42	
ASTM D2974	Percent Moisture	57.9	%	0.10	07/14/22 10:47	N2
10616781012	**PW-6D S (0-0.5')**					
EPA 7471B	Mercury	2.5	mg/kg	0.12	07/19/22 17:03	
ASTM D2974	Percent Moisture	29.0	%	0.10	07/14/22 10:47	N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: B1903316.00
Pace Project No.: 10616781

Method: **EPA 7471B**
Description: 7471B Mercury
Client: Braun Intertec Corporation
Date: July 19, 2022

General Information:
12 samples were analyzed for EPA 7471B by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7471B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: B1903316.00
Pace Project No.: 10616781

Sample: SED-6 (1-1.5') **Lab ID: 10616781001** Collected: 07/13/22 12:00 Received: 07/13/22 16:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis							
Mercury	ND	mg/kg	0.027	1	07/18/22 17:01	07/19/22 16:16	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis							
Percent Moisture	**28.7**	%	0.10	1		07/14/22 10:13		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: B1903316.00
Pace Project No.: 10616781

Sample: SED-6 (0-0.5') **Lab ID: 10616781002** Collected: 07/13/22 12:00 Received: 07/13/22 16:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis							
Mercury	**0.29**	mg/kg	0.098	1	07/18/22 17:01	07/19/22 16:24	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis							
Percent Moisture	**80.0**	%	0.10	1		07/14/22 10:13		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: B1903316.00
Pace Project No.: 10616781

Sample: SED-6 (1-1.5') **Lab ID: 10616781003** Collected: 07/13/22 12:00 Received: 07/13/22 16:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis							
Mercury	ND	mg/kg	0.025	1	07/18/22 17:01	07/19/22 16:26	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis							
Percent Moisture	**33.3**	%	0.10	1		07/14/22 10:14		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: B1903316.00
Pace Project No.: 10616781

Sample: SED-6 W (0-0.5') **Lab ID: 10616781004** Collected: 07/13/22 12:00 Received: 07/13/22 16:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis							
Mercury	**0.56**	mg/kg	0.049	1	07/18/22 17:01	07/19/22 16:28	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis							
Percent Moisture	**63.5**	%	0.10	1		07/14/22 10:14		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: B1903316.00
Pace Project No.: 10616781

Sample: SED-6 E (0-0.5') **Lab ID: 10616781005** Collected: 07/13/22 12:00 Received: 07/13/22 16:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis							
Mercury	**0.069**	mg/kg	0.038	1	07/18/22 17:01	07/19/22 16:29	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis							
Percent Moisture	**51.4**	%	0.10	1		07/14/22 10:14		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: B1903316.00
Pace Project No.: 10616781

Sample: SED-6 S (0-0.5') **Lab ID: 10616781006** Collected: 07/13/22 12:00 Received: 07/13/22 16:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis							
Mercury	**1.6**	mg/kg	0.085	1	07/18/22 17:01	07/19/22 16:31	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis							
Percent Moisture	**76.6**	%	0.10	1		07/14/22 10:14		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: B1903316.00
Pace Project No.: 10616781

Sample: PW-6C (1-1.5') **Lab ID: 10616781007** Collected: 07/13/22 12:00 Received: 07/13/22 16:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis							
Mercury	**2.9**	mg/kg	0.11	5	07/18/22 17:01	07/19/22 16:53	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis							
Percent Moisture	**14.2**	%	0.10	1		07/14/22 10:14		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: B1903316.00
Pace Project No.: 10616781

Sample: PW-6C N (0-0.5') **Lab ID: 10616781008** Collected: 07/13/22 12:00 Received: 07/13/22 16:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis							
Mercury	**4.0**	mg/kg	0.22	10	07/18/22 17:01	07/19/22 16:55	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis							
Percent Moisture	**10.7**	%	0.10	1		07/14/22 10:46		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: B1903316.00
Pace Project No.: 10616781

Sample: PW-6C W (0-0.5') **Lab ID: 10616781009** Collected: 07/13/22 12:00 Received: 07/13/22 16:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis							
Mercury	**2.4**	mg/kg	0.097	5	07/18/22 17:01	07/19/22 16:56	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis							
Percent Moisture	**13.8**	%	0.10	1		07/14/22 10:47		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: B1903316.00
Pace Project No.: 10616781

Sample: PW-6D (1-1.5') **Lab ID: 10616781010** Collected: 07/13/22 12:00 Received: 07/13/22 16:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis							
Mercury	**0.68**	mg/kg	0.023	1	07/18/22 17:01	07/19/22 16:41	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis							
Percent Moisture	**24.4**	%	0.10	1		07/14/22 10:47		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: B1903316.00
Pace Project No.: 10616781

Sample: PW-6D W (0-0.5') **Lab ID: 10616781011** Collected: 07/13/22 12:00 Received: 07/13/22 16:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis							
Mercury	**0.24**	mg/kg	0.044	1	07/18/22 17:01	07/19/22 16:42	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis							
Percent Moisture	**57.9**	%	0.10	1		07/14/22 10:47		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: B1903316.00
Pace Project No.: 10616781

Sample: PW-6D S (0-0.5') **Lab ID: 10616781012** Collected: 07/13/22 12:00 Received: 07/13/22 16:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis							
Mercury	**2.5**	mg/kg	0.12	5	07/18/22 17:01	07/19/22 17:03	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis							
Percent Moisture	**29.0**	%	0.10	1		07/14/22 10:47		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: B1903316.00
Pace Project No.: 10616781

QC Batch: 828064 — Analysis Method: EPA 7471B
QC Batch Method: EPA 7471B — Analysis Description: 7471B Mercury Solids
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10616781001, 10616781002, 10616781003, 10616781004, 10616781005, 10616781006, 10616781007, 10616781008, 10616781009, 10616781010, 10616781011, 10616781012

METHOD BLANK: 4387221 — Matrix: Solid
Associated Lab Samples: 10616781001, 10616781002, 10616781003, 10616781004, 10616781005, 10616781006, 10616781007, 10616781008, 10616781009, 10616781010, 10616781011, 10616781012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.017	07/19/22 16:08	

LABORATORY CONTROL SAMPLE: 4387222

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	0.5	0.51	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 4387223 4387224

Parameter	Units	10616781001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	ND	0.67	0.66	0.68	0.66	98	97	80-120	3	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: B1903316.00
Pace Project No.: 10616781

QC Batch: 827863
QC Batch Method: ASTM D2974
Analysis Method: ASTM D2974
Analysis Description: Dry Weight / %M by ASTM D2974
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10616781001, 10616781002, 10616781003, 10616781004, 10616781005, 10616781006, 10616781007

SAMPLE DUPLICATE: 4386482

Parameter	Units	10616781007 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	14.2	13.9	2	30	N2

SAMPLE DUPLICATE: 4386702

Parameter	Units	10615790002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	27.9	27.1	3	30	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: B1903316.00
Pace Project No.: 10616781

QC Batch: 827941
QC Batch Method: ASTM D2974
Analysis Method: ASTM D2974
Analysis Description: Dry Weight / %M by ASTM D2974
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10616781008, 10616781009, 10616781010, 10616781011, 10616781012

SAMPLE DUPLICATE: 4386735

Parameter	Units	10616781008 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	10.7	11.1	4	30	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: B1903316.00
Pace Project No.: 10616781

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

N2	The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: B1903316.00
Pace Project No.: 10616781

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10616781001	**SED-6 (1-1.5')**	EPA 7471B	828064	EPA 7471B	828837
10616781002	**SED-6 (0-0.5')**	EPA 7471B	828064	EPA 7471B	828837
10616781003	**SED-6 (1-1.5')**	EPA 7471B	828064	EPA 7471B	828837
10616781004	**SED-6 W (0-0.5')**	EPA 7471B	828064	EPA 7471B	828837
10616781005	**SED-6 E (0-0.5')**	EPA 7471B	828064	EPA 7471B	828837
10616781006	**SED-6 S (0-0.5')**	EPA 7471B	828064	EPA 7471B	828837
10616781007	**PW-6C (1-1.5')**	EPA 7471B	828064	EPA 7471B	828837
10616781008	**PW-6C N (0-0.5')**	EPA 7471B	828064	EPA 7471B	828837
10616781009	**PW-6C W (0-0.5')**	EPA 7471B	828064	EPA 7471B	828837
10616781010	**PW-6D (1-1.5')**	EPA 7471B	828064	EPA 7471B	828837
10616781011	**PW-6D W (0-0.5')**	EPA 7471B	828064	EPA 7471B	828837
10616781012	**PW-6D S (0-0.5')**	EPA 7471B	828064	EPA 7471B	828837
10616781001	**SED-6 (1-1.5')**	ASTM D2974	827863		
10616781002	**SED-6 (0-0.5')**	ASTM D2974	827863		
10616781003	**SED-6 (1-1.5')**	ASTM D2974	827863		
10616781004	**SED-6 W (0-0.5')**	ASTM D2974	827863		
10616781005	**SED-6 E (0-0.5')**	ASTM D2974	827863		
10616781006	**SED-6 S (0-0.5')**	ASTM D2974	827863		
10616781007	**PW-6C (1-1.5')**	ASTM D2974	827863		
10616781008	**PW-6C N (0-0.5')**	ASTM D2974	827941		
10616781009	**PW-6C W (0-0.5')**	ASTM D2974	827941		
10616781010	**PW-6D (1-1.5')**	ASTM D2974	827941		
10616781011	**PW-6D W (0-0.5')**	ASTM D2974	827941		
10616781012	**PW-6D S (0-0.5')**	ASTM D2974	827941		

CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical®

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields

LAB USE ONLY- Affix Workorder/L
MTJ

WO# : 10616781

10616781

ALL SHADED AI

Company: Braun Intertec	Billing Information: SAME
Address: 11001 Hampshire Ave S. Minneapolis MN	
Report To: Mark Keefer	Email To: MKeefer@braunintertec.com
Copy To: —	Site Collection Info/Address: 2200 Carpenter Ave E
Customer Project Name/Number: B1903316.00	State: MN County/City: St. Paul Time Zone Collected: [ ] PT [ ] MT [X] CT [ ] ET
Phone: Email:	Site/Facility ID #: Compliance Monitoring? [ ] Yes [ ] No
Collected By (print): Rose Kraus	Purchase Order #: Quote #: DW PWS ID #: DW Location Code:
Collected By (signature): Rose Kraus	Turnaround Date Required: Standard Immediately Packed on Ice: [X] Yes [ ] No
Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: _____ [ ] Hold: _____	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply) Field Filtered (if applicable): [ ] Yes [ ] No Analysis: _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Container Preservative Type **

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

Analyses

Lab Profile/line: 34125

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	Mercury	Lab Sample # / Comments:
SED-6 (1-1.5')	SL	Grab	7-13-22	12:00					X	001
SED-6 (0-0.5')									X	002
SED-6 (1-1.5')									X	003
SED-6 W (0-0.5')									X	004
SED-6 E (0-0.5')									X	005
SED-6 S (0-0.5')									X	006
PW-6C (1-1.5')									X	007
PW-6C N (0-0.5')									X	008
PW-6C W (0-0.5')									X	009
										010

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y N NA
Custody Signatures Present	Y N NA
Collector Signature Present	Y N NA
Bottles Intact	Y N NA
Correct Bottles	Y N NA
Sufficient Volume	Y N NA
Samples Received on Ice	Y N NA
VOA - Headspace Acceptable	Y N NA
USDA Regulated Soils	Y N NA
Samples in Holding Time	Y N NA
Residual Chlorine Present	Y N NA
Cl Strips: _____	
Sample pH Acceptable	Y N NA
pH Strips: _____	
Sulfide Present	Y N NA
Lead Acetate Strips: _____	

LAB USE ONLY:

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 2797600

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: _____
Cooler 1 Temp Upon Receipt: 4.5 oC
Cooler 1 Therm Corr. Factor: _____ oC
Cooler 1 Corrected Temp: _____ oC
Comments: Temp 4.5

Relinquished by/Company: (Signature) Rose Kraus/Braun Intertec	Date/Time: 7/13/22 1515	Received by/Company: (Signature) Pace	Date/Time: 7/13/22 1515
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature) Pace	Date/Time: 7/13/22 1653
Relinquished by/Company: (Signature) Pace	Date/Time: 7/13/22 1620	Received by/Company: (Signature) PACE	Date/Time: 7/13/22 1620

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: _____ of: _____

Page 4 of 22

CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical®

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

ALL SHADED AREAS are for LAB USE ONLY

Company: Braun Intertec	Billing Information: SAME
Address: 11001 Hampshire Ave S. Minneapolis MN	
Report To: Mark Keefer	Email To: MKeefer@braunintertec.com
Copy To: —	Site Collection Info/Address: 2200 Carpenter Ave E
Customer Project Name/Number: BI 9031600	State: MN County/City: St. Paul Time Zone Collected: [ ] PT [ ] MT [X] CT [ ] ET
Phone: Email:	Site/Facility ID #:
Collected By (print): Rose Kraus	Purchase Order #: Quote #:
Collected By (signature): Rose Kraus	Turnaround Date Required: Standard
Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: _____ [ ] Hold: _____	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply)

Compliance Monitoring? [ ] Yes [ ] No

DW PWS ID #: DW Location Code:

Immediately Packed on Ice: [X] Yes [ ] No

Field Filtered (if applicable): [ ] Yes [ ] No

Analysis: _____

Container Preservative Type **

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

Lab Profile/Line: 34125

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	Mercury	Lab Sample # / Comments
PW-6D (1-1.5')	SL	Grab	7-13-22	12:00					X	010
PW-6D W (0-0.5)	↓	↓	↓	↓					X	011
PW-6D S (0-0.5)	↓	↓	↓	↓					X	012

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y N NA
Custody Signatures Present	Y N NA
Collector Signature Present	Y N NA
Bottles Intact	Y N NA
Correct Bottles	Y N NA
Sufficient Volume	Y N NA
Samples Received on Ice	Y N NA
VOA - Headspace Acceptable	Y N NA
USDA Regulated Soils	Y N NA
Samples in Holding Time	Y N NA
Residual Chlorine Present	Y N NA
Cl Strips: _____	
Sample pH Acceptable	Y N NA
pH Strips: _____	
Sulfide Present	Y N NA
Lead Acetate Strips: _____	

LAB USE ONLY:

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 2797599

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: _____
Cooler 1 Temp Upon Receipt: 4.5 oC
Cooler 1 Therm Corr. Factor: _____ oC
Cooler 1 Corrected Temp: _____ oC
Comments: Temps 4.5

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
Rose Kraus / Braun Intertec	7/13/22 1515	Aaron / Pace	7/13/22 1515
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
		Charles B / Pace	7/13/22 1530
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
Charles B / Pace	7/13/22 1620	PACE	7/13/22 1620

MTJL LAB USE ONLY

Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: _____ of: _____

Page 5 of 25

DC#_Title: ENV-FRM-MIN4-0150 v05_Sample Condition Upon Receipt (SCUR)

Effective Date: 04/12/2022

Sample Condition Upon Receipt

Client Name: Braun Intertec

Project #:

WO#: 10616781

PM: LAB1 **Due Date: 07/20/22**

CLIENT: Braun-BLM

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☑ Client ☐ Pace ☐ SpeeDee ☐ Commercial

See Exceptions ☐ ENV-FRM-MIN4-0142

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☑ Yes ☐ No

Thermometer: ☐ T1(0461) ☐ T2(1336) ☐ T3(0459) ☐ T4(0254) ☐ T5(0489) ☐ T6(0235) ☑ T7 (0042) ☐ 01339252/1710 ☐ 122639816 ☐ 140792808

Type of Ice: ☑ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Did Samples Originate in West Virginia? ☐ Yes ☑ No **Were All Container Temps Taken?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 4.5 °C

Correction Factor: TO add **Cooler Temp Corrected w/temp blank:** 4.5 °C

Average Corrected Temp (no temp blank only): ____ °C ☐ See Exceptions ENV-FRM-MIN4-0142 ☐ 1 Container

USDA Regulated Soil: (☐ N/A, water sample/Other:)

Date/Initials of Person Examining Contents: 7/13/22 NF

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

If Yes to either question, fill out a Regulated Soil Checklist ENV-FRM-MIN4-0154 and include with SCUR/COC paperwork.

Location (check one): ☐ Duluth ☑ Minneapolis ☐ Virginia

				COMMENTS:
Chain of Custody Present and Filled Out?	☑ Yes	☐ No		1.
Chain of Custody Relinquished?	☑ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	3.
Samples Arrived within Hold Time?	☑ Yes	☐ No		4. If Fecal: ☐ <8 hrs ☐ >8hr, <24 hrs, ☐ >24 hrs
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other
Rush Turn Around Time Requested?	☐ Yes	☑ No		6.
Sufficient Volume?	☑ Yes	☐ No		7.
Correct Containers Used?	☑ Yes	☐ No		8. 003 and 001 Have same ID on COC 003 logged in as SED-6 N (1-15')
-Pace Containers Used?	☑ Yes	☐ No		
Containers Intact?	☑ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☐ Water ☑ Soil ☐ Oil ☐ Other-	☑ Yes	☐ No		11. **If no, write ID/ Date/Time on Container Below:** Dry Weights **See Exception** ☐ **ENV-FRM-MIN4-0142**
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>10 Cyanide)	☐ Yes	☐ No	☑ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐ Yes	☐ No	☑ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No **pH Paper Lot#** **See Exception** ☐ **ENV-FRM-MIN4-0142**
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Headspace in Methyl Mercury Container?	☐ Yes	☐ No	☑ N/A	
Extra labels present on soil VOA or WIDRO containers?	☐ Yes	☐ No	☑ N/A	13. **See Exception** ☐ **ENV-FRM-MIN4-0140**
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☐ No	☑ N/A	
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	14. Pace Trip Blank Lot # (if purchased):
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 07.14.2022

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e.,, out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: NF (2)

Qualtrax ID: 52742

Service Center Transfer Checklist

Service Center: MPLS ☐ BLM ☒ AZ ☐ MT ☐

Client: Braun Intertec

Destination Lab:

MPLS ☒ Duluth ☐ National ☐ Other ☐

Received w/ Custody Seal? Yes ☐ No ☒

Custody Seal Intact? Yes ☐ No ☒

Temperature °C:	Temp Read	Corr. Factor	Corr. Temp
	6.4	TRUE	6.4

IR Gun: G87A9205200235 (T6) ☒ Samples on ice, in cool down

Rush ☐ **Short Hold** ☐ **N/A** ☒

Containers Intact? Yes ☒ No ☐

Repacked and Re-Iced? Yes ☐ No ☒

Notes:

No Temp Blank Section

Read Temp	Corr. Temp	Avg. Temp

7/13/22
AF

MINNESOTA

Minnesota Department of Agriculture 651-201-6148
Minnesota Department of Health 651-201-5357
Minnesota Pollution Control Agency 651-757-2560

Laboratory Data Review Checklist

ATTACHMENT: LABORATORY DATA REVIEW GUIDANCE

INSTRUCTIONS

The following is the informal checklist that should be used to review data for the Minnesota Department of Agriculture, Minnesota Pollution Control Agency and Minnesota Department of Health. The information follows the general format of the National Functional Guidelines, which is the primary data review tool used in the U.S. Environmental Protection Agency's Contract Laboratory Program for Superfund analytical work. Refer to the appropriate guidance document for each agency for instructions.

PROJECT INFORMATION

Project Name	Laboratory	
Former Hillcrest Golf Course	Pace Analytical Services	
Work Order Number / Lab Report ID	Report Date	Review Date
10616781	7/19/2022	7-19-2022
	Reviewer's Signature: Mark Keefer	Digitally signed by Mark Keefer Date: 2022.08.24 16:07:08 -05'00'

1. CHAIN OF CUSTODY, PRESERVATION AND HOLDING TIMES

	QUESTION	YES	NO	N/A	COMMENTS
A	Is there a chain of custody (COC) with the report?	✓			
B	Is there a sample condition form with the report?	✓			
C	Were the samples preserved according to program requirements?	✓			
D	Were samples received in the correct containers?	✓			
	i. Was there enough sample volume/weight to complete all requested analyses?	✓			
	ii. Was there enough sample collected to complete required batch QC?	✓			
E	Were samples received within holding time for sample prep for all requested analyses?	✓			
F	Are there notes about sample condition or holding time issues on the COC? Explain the data impact.		✓		
G	Are there narration or data qualifiers with the report about sample condition or holding time issues? Explain the data impact.		✓		
H	Are the lab IDs cross-referenced correctly with the field IDs?	✓			

2. CALIBRATION

	QUESTION	YES	NO	N/A	COMMENTS
A	Do the report narrative or data qualifiers indicate calibration problems for any analyses? If yes, explain the data impact.		✓		See below.

3. BLANKS

	QUESTION	YES	NO	N/A	COMMENTS
	Do any of the analyses contain samples for field or trip blanks?		✓		
A	i. If yes, are there target analytes present above the reporting limit in the blanks?			✓	
	ii. If yes, are the same compounds also present in the samples? Explain the possible data impact.			✓	
	Do method blanks for any analyses contain target analytes above the reporting limit?		✓		
B	i. If yes, are the same compounds present in the samples?			✓	
	ii. Is the amount of target analyte in the method blank more than 1/10th of that in the sample(s)? Explain the possible impact on the sample results.			✓	
C	Do instrument blanks contain analytes above the reporting limit?		✓		

4. SURROGATES - ORGANIC ANALYSIS

	QUESTION	YES	NO	N/A	COMMENTS
A	Are the lab recovery limits for surrogates specified on the report?			✓	
	Are the surrogates outside lab QC limits? (These should have a data qualifier.)			✓	
	i. If yes, are the surrogates above the lab QC limits?			✓	
B	ii. Below the lab QC limits?			✓	
	iii. Were the affected samples re-analyzed? Discuss in the case narrative.			✓	
	iv. Explain what this could mean for the affected samples. Include in narrative.			✓	

5. LABORATORY CONTROL SAMPLE (LCS) LABORATORY CONTROL SAMPLE DUPLICATE (LCSD)

	QUESTION	YES	NO	N/A	COMMENTS
A	Are there LCS/LCSD samples present for the reported analyses?	✓			
B	Are there LCS/LCSD compounds outside lab limits? If the LCS/LCSD fails, the LCS/LCSD and samples must be re-analyzed.		✓		
	i. If yes, are there compounds above the lab QC limits? If yes, an explanation is required. Include in narrative.			✓	
	ii. Below the lab QC limits? If yes, an explanation is required. Include in narrative.			✓	

6. MATRIX SPIKE (MS) MATRIX SPIKE DUPLICATE (MSD) SAMPLE DUPLICATE (DUP)

	QUESTION	YES	NO	N/A	COMMENTS
A	Do the analytical methods used require an MS and/or MSD? If no, skip to 6 B.	✓			
	i. Have the required matrix spikes been prepared and reported?	✓			
	ii. If no, is there an explanation in the report as to why?			✓	
	iii. Did the lab process an alternate spiked sample such as an LCSD instead?			✓	
	iv. Are the lab QC limits specified in the report?	✓			
	v. Are there compounds outside the lab QC limits?		✓		
	vi. If yes, did the lab re-run an MS/MSD?			✓	
	1. Did the re-run MS/MSD pass? Discuss in the case narrative.			✓	
	2. Did the re-run MS/MSD fail? Discuss in the case narrative.			✓	
	3. Is the source sample flagged for MS/MSD compounds outside the lab QC limits?			✓	
B	Was a duplicate sample submitted for the analytical method(s)?		✓		
	i. Is the Relative Percentage Difference (RPD) within 20%* for the duplicate pair? If no, explain possible causes and data impact. *Other RPD's may be acceptable. Check with regulatory agency.			✓	.

7. REPORTING LIMITS

	QUESTION	YES	NO	N/A	COMMENTS
A	Are reporting limits clearly listed on the report for all analyses?	✓			
B	Do the reporting limits meet the program required limits listed? If not, an explanation is required.	✓			

8. SAMPLE INFORMATION

	QUESTION	YES	NO	N/A	COMMENTS
A	Are sample numbers cross-referenced correctly with the associated QC?	✓			
B	Are soil samples reported in dry weight basis?	✓			
C	Are percent moisture results reported?	✓			
D	Are positive detections reported?	✓			
E	Are sample analytes appropriately flagged if the QC failed?	✓			

9. REPORT NARRATIVE

	QUESTION	YES	NO	N/A	COMMENTS
A	Is a narrative provided with the laboratory report which describes all problems with the analyses and all corrective actions taken to address these problems?	✓			

10. ADDITIONAL COMMENTS ABOUT THE LAB REPORT

Based upon the review of the laboratory data, the identified QAQC occurrences above do not affect the usability of the data for evaluating inorganic concentration results.

Appendix C

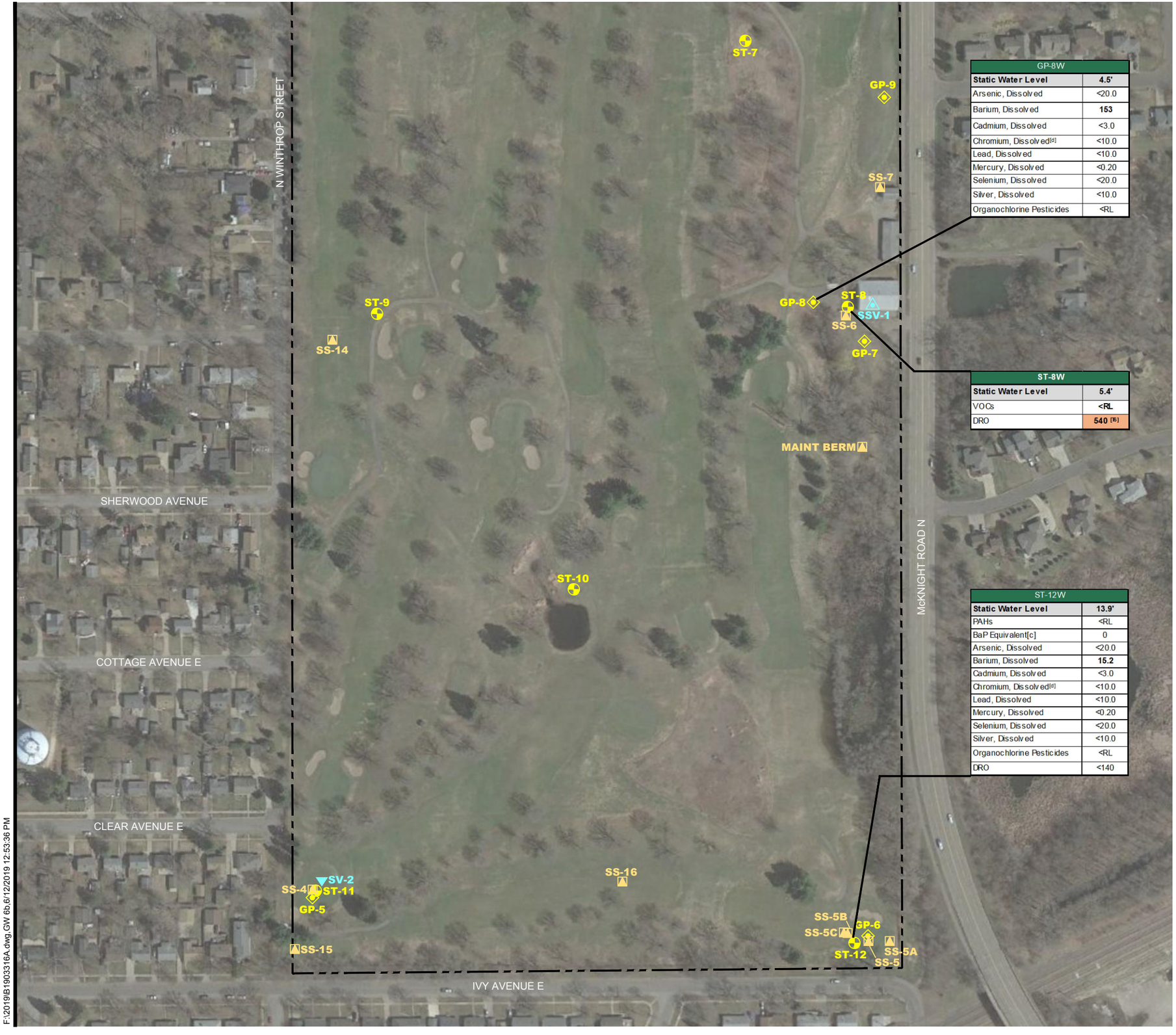
Well Construction Details Table

Table
Monitoring well Construction Details
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Well Number	MDH unique well number	X coordinate	Y coordinate	Date Installed	Surface Elevation (ft asml)	Top of Riser elevation (ft asml)	Bottom of well elevation (ft asml)	Depth to top of screen from surface (ft)	Depth to bottom of screen from surface (ft)	Screen slot size (ft)	Depth to Water	Water level elevation (ft msl)	Depth to Water	Water level elevation (ft msl)
											12/3/2021		7/10/2020	
MW-1	849084	499377.238	4982034.25	6/25/2020	1030	1033	1005	15	25	10	24.08	1008.92	18.9	1014.1
MW-2	849085	499575.123	4981316.604	6/25/2020	1011	1012	991	10	20	10	9.51	1002.49	4	1008
MW-3	849086	499402.78	4980925.108	6/25/2020	1014	1019	994	20	30	10	29.9	989.1	22.7	996.3

Appendix D

Figure 6B – Groundwater Exceedances



GP-8W	
Static Water Level	**4.5'**
Arsenic, Dissolved	<20.0
Barium, Dissolved	**153**
Cadmium, Dissolved	<3.0
Chromium, Dissolved[d]	<10.0
Lead, Dissolved	<10.0
Mercury, Dissolved	<0.20
Selenium, Dissolved	<20.0
Silver, Dissolved	<10.0
Organochlorine Pesticides	<RL

ST-8W	
Static Water Level	**5.4'**
VOCs	**<RL**
DRO	**540** [T6]

ST-12W	
Static Water Level	**13.9'**
PAHs	<RL
BaP Equivalent[c]	0
Arsenic, Dissolved	<20.0
Barium, Dissolved	**15.2**
Cadmium, Dissolved	<3.0
Chromium, Dissolved[d]	<10.0
Lead, Dissolved	<10.0
Mercury, Dissolved	<0.20
Selenium, Dissolved	<20.0
Silver, Dissolved	<10.0
Organochlorine Pesticides	<RL
DRO	<140

Drinking Water Notes

Drinking Water Criteria = The most conservative value for chronic or cancer exposures provided from the following sources including the Minnesota Department of Health (MDH) Health Risk Limit (HRL), MDH Health Based Value (HBV), MDH Risk Assessment Advice (RAA) or Maximum Contaminant Level (MCL). The date of promulgation is provided, if available. Values updated 7/27/16.
µg/L = Micrograms per liter.
< = Not detected at or above the laboratory reporting limit indicated.
--- = Not analyzed or calculated for this parameter or not applicable.
RL = Reporting limits for other parameters that are not listed individually in this table because their concentrations were below reporting limits provided in the laboratory report.
NE = Regulatory limit not established for this parameter.
cPAH = Individual regulatory limit not established for this carcinogenic PAH; included in BaP equivalent calculation.
[c] = Benzo[a]pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of cPAHs; Minnesota Pollution Control Agency; 2009. If no cPAHs were detected above reasonable laboratory reporting limits the BaP equivalent is reported as 0 mg/kg per MPCA Remediation Division Policy; June 2011.
[d] = Reported result is total chromium, criteria for chromium III and chromium VI are provided.
[e] = Provisional MDH Health Based Value for total petroleum hydrocarbons (sum of DRO and GRO).
[T6] = High boiling point hydrocarbons are present in the sample.

Drinking Water Criteria
BaP Equivalent[c] HBV-12 = 0.06
Arsenic, Dissolved MCL = 10 µg/L
Barium, Dissolved HRL-93 = 2,000 µg/L
Cadmium, Dissolved HRL-15 = 0.5 µg/L
Chromium, Dissolved[d] HRL-94 = 20,000/100[d] µg/L
Lead, Dissolved MCL = 15 µg/L
Mercury, Dissolved MCL = 2 µg/L
Selenium, Dissolved HRL-93 = 30 µg/L
Silver, Dissolved HRL-93 = 30 µg/L
Diesel Range Organics (DRO) HBV[e] = 200 µg/L
Gasoline Range Organics (GRO) HBV[e] = 200 µg/L
Exceeds Drinking Water Criteria

HOLLOW STEM AUGER BORING LOCATION
SOIL VAPOR PROBE LOCATION
SUB SLAB VAPOR PROBE LOCATION
PUSH PROBE BORING LOCATION
SURFACE SOIL SAMPLE LOCATION

100' 0 200'
SCALE: 1" = 200'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Drawing Information

Project No: B1903316
Drawing No: B1903316A
Drawn By: BJB
Date Drawn: 5/23/19
Checked By: MK
Last Modified: 6/12/19

Project Information

Former Hillcrest Golf Course

2200 Larpenteur Avenue E

Saint Paul, Minnesota

Groundwater Exceedances

Figure 6b

F:\2019\B1903316A.dwg,GW 6b,6/12/2019 12:53:36 PM

Appendix E

Contaminant Impact Survey Documents

F:\2019\B1903316_00\GIS\B1903316_00.aprx

BRAUN INTERTEC
The Science You Build On.

11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Project No:	B1903316_00
Drawing No:	B1903316_00_Nearby Wells
Drawn By:	ZS
Date Drawn:	6/2/2022
Checked By:	PAO
Last Modified:	6/28/2022

Hillcrest Redevelopment Site

McKnight Road N and Larpenteur Avenue E

St. Paul, Minnesota

Nearby Wells Map

Figure 1

Table 1 - Published Wells
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Unique Number/Identifier	Well Name	Address	City	County	Township	Range	Section	Depth(ft)	Elevation(ft)	Casing Depth(ft)	Casing Diameter
280699	BACCHUS, KEN	1595 MYRTLE ST	null	Ramsey	29	22	24	189	1034	147	4
256956	null	1759 HOWARD ST N	MAPLEWOOD	Ramsey	29	22	14	160	1016	136	4.5
849086	MW-3 ST PAUL PORT AUTHORITY	2200 LARPENTEUR AV E	ST PAUL	Ramsey	29	22	23	30	1014	20	2
249773	BERRY, WAYNE	1600 MYRTLE ST	MAPLEWOOD	Ramsey	29	22	24	154	1034	150	4
849084	MW-1 ST PAUL PORT AUTHORITY	2200 LARPENTEUR AV E	ST PAUL	Ramsey	29	22	23	25	1030	15	2
233715	null	BEEBEE RD	null	Ramsey	29	22	14	137	998	null	null
603061	HILLCREST COUNTRY CLUB	2200 LARPENTEUR AV E	ST PAUL	Ramsey	29	22	23	486	1034	354	10
242944	PETERSON	1702 HOWARD ST	MAPLEWOOD	Ramsey	29	22	14	166	1020	147	6
244951	null	2345 MARYLAND	null	Ramsey	29	22	24	107	981	null	3
247124	null	1709 MCKNIGHT RD	MAPLEWOOD	Ramsey	29	22	14	176	1022	152	3
849085	MW-2 ST PAUL PORT AUTHORITY	2200 LARPENTEUR AV E	ST PAUL	Ramsey	29	22	23	20	1011	10	2
272001	null	2169 LARPENTEUR AV E	MAPLEWOOD	Ramsey	29	22	14	256	1021	229	4
1000025701	WOJTOWICZ, L.	null	null	Ramsey	29	22	14	null	1024	null	null
280572	WOJTOWICZO, LOUIS	1714 HOWARD N	null	Ramsey	29	22	14	161	1024	148	4
280700	DEMARS, CY	1633 MYRTLE	null	Ramsey	29	22	24	149	1027	142	4
208231	HILLCREST GOLF CLUB	null	null	Ramsey	29	22	23	550	1040	325	8
200876	YAEGER	STILLWATER RD	ST PAUL	Ramsey	29	22	24	103	1015	96	4.5
801672	HARMS, JESSE	2100 IDAHO AV E	ST PAUL	Ramsey	29	22	23	200	1004	168	4
225684	H. H. WITTE	2044 LARPENTEUR AV E	null	Ramsey	29	22	23	194	1007	134	4.5
249742	OLSEN, BRUCE & SANDY	2444 LARPENTEUR AV E	MAPLEWOOD	Ramsey	29	22	24	117	1022	117	4
278585	SIZER, JEREMY	2100 IDAHO AV E	ST PAUL	Ramsey	29	22	23	185	1001	124	4
233597	null	1605 MYRTLE ST	null	Ramsey	29	22	24	148	1037	null	null
233838	null	1641 MYRTLE ST	ST PAUL	Ramsey	29	22	24	137	1024	null	null
249752	JUNEK, ED	2436 LARPENTEUR AV E	MAPLEWOOD	Ramsey	29	22	24	151	1017	138	4
200875	ACORN GREEN HOUSE	null	null	Ramsey	29	22	24	561	1020	null	null
280508	BULK SERVICE CORPORATION	1300 MCKNIGHT	null	Ramsey	29	22	24	111	null	96	4
544043	ROSEWOOD ESTATES	null	null	Ramsey	29	22	24	34	null	null	null
544049	ROSEWOOD ESTATES	LAKEWOOD DR	MAPLEWOOD	Ramsey	29	22	24	25	null	25	16
279811	KROISS, STEVE	1950 KINGSTON	MAPLEWOOD	Ramsey	29	22	14	151	null	null	4
568241	MW-9 RAMSEY COUNTY	1759 WHITE BEAR AV	MAPLEWOOD	Ramsey	29	22	14	35	null	20	2
598974	IDS #625	1863 CLEAR AV	ST PAUL	Ramsey	29	22	23	49	null	51	16
532687	HAYDEN HEIGHTS BAP CHRCH	1298 VAN DYKE ST	ST PAUL	Ramsey	29	22	23	13	null	13	16
279810	JENNING, WEYEN	1926 PRISE ST	RAMSEY	Ramsey	29	22	14	190	null	null	null
320171	HARMS, JESSE	2100 IDAHO AV E	ST PAUL	Ramsey	29	22	23	140	1004	null	null
1580 MCKNIGHT RD N	WENDT, MARY JO	1580 MCKNIGHT RD N	ST PAUL	Ramsey	29	22	14	null	1027	null	null
1635 WINTHROP ST N	RICHARDSON, EUGENE	1635 WINTHROP ST N	ST PAUL	Ramsey	29	22	23	null	1024	null	null
1652 WINTHROP ST N	BARRETT, KENNETH	1652 WINTHROP ST N	ST PAUL	Ramsey	29	22	23	null	1034	null	null

Table 2 - Results of Property Owen Survey
Former Hillcrest Golf Course
Saint Paul, Minnesota
Project B1903316.00

Owner	Address	City	Zip	Property Address	Property City	Property Zip	Is there a water well on your property, or has a well been located on your property in the past?	If yes, what was/is use?	Was well sealed?	seal date	Specific details on construction of well	Basement	Sump	Other (description)	Petroleum Sources?	Unique Well Number
Mary Jo Wendt	1580 McKnight Rd N	Maplewood	55119	1580 McKnight Rd N	Maplewood	55119	YES	All household water	NO	NA	90 years old	YES	NO	NO	NO	Not listed
Eugene E Richardson	1635 Winthrop St N	St Paul	55119	1635 Winthrop St N	St Paul	55119	YES	Irrigation	NO	NA	Pump in basement under outdoor deck	YES	NO	NA	NO	Not listed
Kenneth Barrett	1652 Winthrop St N	St Paul	55119	1652 Winthrop St N	St Paul	55119	YES	Irrigation	NO	NA	Drilled in 1920s, submersible pump insta	YES	YES	NA	NO	Not listed
Thor James Sohlstrom	2139 Cottage Ave E	St Paul	55119	2139 Cottage Ave E	St Paul	55119	NO	NA	NA	NA	NA	YES	NO	NO	NO	NA
Bruce Jerome	1637 Currie St	Maplewood	55119	1637 Currie St	Maplewood	55119	NO	NA	NA	NA	NA	YES	YES	NA	NO	NA
Jesse Harms	2100 Idaho St	St Paul	55119	2100 Idaho St	St Paul	55119	YES (2 wells)	All household water	YES	2014	Old well sealed in 2014 (140 ft deep), ne	NA	NA	NA		OLD 320171, NEW 801672
Jake Johnson Stokman	2225 Larpenteur Ave	Maplewood	55109	2225 Larpenteur Ave E	Maplewood	55109	NO	NA	NA	NA	NA	YES	NO	NA	NO	NA
John Posus	2142 E Arlington Ave	Saint Paul	55119	2142 E Arlington Ave	Saint Paul	55119	NO	NA	NA	NA	NA	YES	NO	NO	NO	NA
Marcia C Kircher Truste	2139 Clear Ave	Saint Paul	55119	2139 Clear Ave	Saint Paul	55119	NO	NA	NA	NA	NA	YES	NO	NO	NO	NA
Gary A Mohrlant Truste	23030 Montana Ave	Maplewood	55119	23030 Montana Ave E	Maplewood	55119	NO	NA	NA	NA	NA	YES	NO	NO	NO	NA
Carol A Soderberg	2156 Larpenteur Ave	Saint Paul	55109	2156 Larpenteur Ave E	Saint Paul	55109	NO	NA	NA	NA	NA	YES	NO	NO	NO	NA
Monica R Moriarty	PO BOX 154	Lake Elmo	55042	2140 Nebraska Ave E	Saint Paul	55119	NO	NA	NA	NA	NA	YES	NO	NO	NO	NA
John J Crea	2139 Ivy Ave E	Saint Paul	55119	2139 Ivy Ave E	Saint Paul	55119	NO	NA	NA	NA	NA	YES	YES	YES (fish pond)	NO	NA
Jay T Kelly	1643 Currie St N	Maplewood	55119	1643 Currie St N	Maplewood	55119	NO	NA	NA	NA	NA	YES	NO	NO	NO	NA
Aung Than	2152 Larpenteur Ave	Maplewood	55109	2152 Larpenteur Ave E	Maplewood	55109	NO	NA	NA	NA	NA	YES	NO	NO	NO	NA
Jillian Tegdesch	2140 Clear Ave	Saint Paul	55119	2140 Clear Ave	Saint Paul	55119	NO	NA	NA	NA	NA	YES	NO	NO	NO	NA
Mary A Crandall	2142 Cottage Ave E	Saint Paul	55119	2142 Cottage Ave E	Saint Paul	55119	NO	NA	NA	NA	NA	YES	YES	NO	NO	NA
Property Owner	400 Wabasha St N ST	Saint Paul	55102	2200 Larpenteur Ave E	Saint Paul	55109	YES	Irrigation	NO	NA	metal casing, in well head pumphouse	YES	YES	YES (in vacant clubhous	NO	Not Listed
Robert Christenson	2196 Ivy Ave E	Saint Paul	55119	2196 Ivy Ave E	Saint Paul	55119	NO	NA	NA	NA	NA	YES	NO	NO	NO	NA
Brianna C Frisch	2148 Larpenteur Ave	Saint Paul	55109	2148 Larpenteur Ave E	Saint Paul	55109	NO	NA	NA	NA	NA	YES	YES	NO	NO	NA
Thomas P Stephanie	1628 McKnight Rd N	Saint Paul	55119	1628 McKnight Rd N	Saint Paul	55119	NO	NA	NA	NA	NA	YES	YES	NO	NO	NA
Gary L Williams	2133 Nebraska Ave E	Saint Paul	55119	2133 Nebraska Ave E	Saint Paul	55119	NO	NA	NA	NA	NA	YES	YES	NO	NO	NA

Minnesota Unique Well Number

200875

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 08/14/1991
Update Date 03/03/2022
Received Date

Well Name	Township	Range	Dir	Section	Subsection
ACORN GREEN	29	22	W	24	BCBDB

Elevation 1020 **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

C/W MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
DRIFT	0	148		
PLATTEVILLE	148	184		
SOAPSTONE	184	189		
SANDSTONE	189	280		
SOAPSTONE	280	282		
SANDSTONE	282	346		
SHAKOPEE	346	474		
SANDSTONE	474	560		
ST LAWRENCE	560	561		

Remarks

Well Depth 561 ft. **Depth Completed** 561 ft. **Date Well Completed**

Drill Method **Drill Fluid**

Use domestic **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Platteville Formation Aquifer

Last Strat St.Lawrence Formation Depth to Bedrock 148 ft

Located by Minnesota Geological Survey

Locate Method Digitized - scale 1:24,000 or larger (Digitizing Table)

System UTM - NAD83, Zone 15, Meters X 499737 Y 4981568

Unique Number Verification Input Date 01/01/1990

Angled Drill Hole

Well Contractor

Hoge Well Co. HOGE

Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

200876

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 08/14/1991
Update Date 03/03/2022
Received Date

Well Name	Township	Range	Dir	Section	Subsection
YAEGER	29	22	W	24	CCACA

Elevation 1015 **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

C/W STILLWATER RD ST PAUL MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
DRIFT, MOSTLEY CLAY	0	96		
LIMEROCK	96	103		

Remarks

ABANDONED

Well Depth	Depth Completed	Date Well Completed
103 ft.	103 ft.	09/23/1931

Drill Method **Drill Fluid**

Use domestic **Status** Unknow

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below**

Casing Diameter **Weight**
4.5 in. To 96 ft. lbs./ft.

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level
39 ft. top of casing Measure 09/23/1931

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP 0 Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Platteville Formation Aquifer Platteville
Last Strat Platteville Formation Depth to Bedrock 96 ft
Located by Minnesota Geological Survey
Locate Method Digitized - scale 1:24,000 or larger (Digitizing Table)
System UTM - NAD83, Zone 15, Meters X 499896 Y 4980758
Unique Number Verification Input Date 01/01/1990

Angled Drill Hole

Well Contractor
Keys Well Co. 62012
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

208231

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 08/14/1991
Update Date 03/03/2022
Received Date

Well Name	Township	Range	Dir	Section	Subsection
HILLCREST	29	22	W	23	AABACD

Elevation 1040 **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact 2200 LARPENTEUR AV ST PAUL MN 55109

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
DRIFT	0	165		
PLATTEVILLE	165	190		
ST. PETER	190	350		
SHAKOPEE	350	382		
NEW RICHMOND	382	395		
ONEOTA	395	490		
JORDAN	490	550		

Remarks

WELL SEALED 9-13-1999. BY KEYS WELL CO. H-141981.
LOG IN MGS BULL. NO. 28 P. 252.
WELL SEALED 09-13-1999 BY 62012

Well Depth 550 ft. **Depth Completed** 550 ft. **Date Well Completed**

Drill Method Cable Tool **Drill Fluid**

Use commercial **Status** Sealed

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter **Weight**
8 in. To 325 ft. lbs./ft.

Open Hole From 325 ft. To 550 ft.

Screen? ☐ **Type** **Make**

Static Water Level
205 ft. land surface Measure 09/13/1999

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Platteville Formation Aquifer St.Peter-Jordan
Last Strat Jordan Sandstone Depth to Bedrock 165 ft
Located by Minnesota Geological Survey
Locate Method Digitized - scale 1:24,000 or larger (Digitizing Table)
System UTM - NAD83, Zone 15, Meters X 499340 Y 4981941
Unique Number Verification Information from Input Date 01/01/1990

Angled Drill Hole

Well Contractor
Renner Max Well Co. 27246
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

225684

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 08/14/1991
Update Date 03/03/2022
Received Date

Well Name	Township	Range	Dir	Section	Subsection
H. H. WITTE	29	22	W	23	ABBBAA

Elevation 1007 **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

C/W 2044 LARPENTEUR AV E MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
STONE & CLAY	0	10		
CLAY	10	36		
MUDDY WATER &	36	44		
CLAY	44	53		
HARDPAN	53	85		
CLAY WITH GRAVEL	85	129		
QUICK SAND	129	131		
ROTTEN LIMEROCK	131	134		
ROTTEN LIMEROCK	134	160		
SOAPSTONE	160	164		
SANDSTONE	164	194		

Remarks

Well Depth 194 ft. **Depth Completed** 194 ft. **Date Well Completed** 12/12/1936

Drill Method **Drill Fluid**

Use unknown **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter **Weight**
4.5 in. To 134 ft. lbs./ft.

Open Hole From 134 ft. To 194 ft.

Screen? ☐ **Type** **Make**

Static Water Level
54 ft. land surface Measure 12/12/1936

Pumping Level (below land surface)
67 ft. hrs. Pumping at 7 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP 0 Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Platteville Formation Aquifer Platteville-St.
Last Strat St.Peter Sandstone Depth to Bedrock 131 ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or
System UTM - NAD83, Zone 15, Meters X 498909 Y 4982041
Unique Number Verification Address verification Input Date 01/01/1990

Angled Drill Hole

Well Contractor
Keys Well Co. 62012
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Well Index Report | **225684** | Printed on 06/01/2022 HE-01205-15

Minnesota Unique Well Number

233597

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 08/14/1991
Update Date 03/03/2022
Received Date

Well Name	Township	Range	Dir	Section	Subsection
	29	22	W	24	BBDBCA

Elevation 1037 **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

C/W 1605 MYRTLE ST MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
DRIFT	0	148		
LIMESTONE	148	148		

Remarks

Well Depth 148 ft. **Depth Completed** 148 ft. **Date Well Completed**

Drill Method **Drill Fluid**

Use domestic **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Platteville Formation Aquifer
Last Strat Platteville Formation Depth to Bedrock 148 ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or
System UTM - NAD83, Zone 15, Meters X 499834 Y 4981801
Unique Number Verification Address verification Input Date 01/01/1990

Angled Drill Hole

Well Contractor
Mccullough & Sons 82054
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

233715

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 05/20/1991
Update Date 02/25/2022
Received Date

Well Name	Township	Range	Dir	Section	Subsection
	29	22	W	14	DCDDCC

Elevation 998 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

C/W BEEBEE RD MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
DRIFT	0	137		
LIMESTONE	137	137		

Remarks

LARPENTAR & BEEBEE RD.

Well Depth 137 ft. **Depth Completed** 137 ft. **Date Well Completed**

Drill Method **Drill Fluid**

Use domestic **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type **Joint**

Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below**

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade

☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Platteville Formation Aquifer

Last Strat Platteville Formation Depth to Bedrock 137 ft

Located by Minnesota Geological Survey

Locate Method Digitized - scale 1:24,000 or larger (Digitizing Table)

System UTM - NAD83, Zone 15, Meters X 499108 Y 4982071

Unique Number Verification Input Date 01/01/1990

Angled Drill Hole

Well Contractor

Hoge Well Co. HOGE

Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

233838

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 05/20/1991
Update Date 03/03/2022
Received Date

Well Name	Township	Range	Dir	Section	Subsection
	29	22	W	24	BBACAB

Elevation 1024 **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

C/W 1641 MYRTLE ST ST PAUL MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
DRIFT	0	120		
LIMESTONE	120	137		

Remarks

Well Depth 137 ft. **Depth Completed** 137 ft. **Date Well Completed**

Drill Method **Drill Fluid**

Use domestic **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type **Joint**
Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below**

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP 0 Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Platteville Formation Aquifer
Last Strat Platteville Formation Depth to Bedrock 120 ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or
System UTM - NAD83, Zone 15, Meters X 499859 Y 4981947
Unique Number Verification Address verification Input Date 01/01/1990

Angled Drill Hole

Well Contractor
Hoge Well Co. HOGE
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

242944

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 10/12/1990
Update Date 02/25/2022
Received Date

Well Name	Township	Range	Dir	Section	Subsection
PETERSON	29	22	W	14	DDDCBC

Elevation 1020 **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

C/W 1702 HOWARD ST MAPLEWOOD MN 55109

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
GLACIAL DRIFT	0	144		
PLATTEVILLE	144	162		
GLENWOOD SHALE	162	166		

Remarks

GAMMA LOGGED 8-15-1990.

Well Depth 166 ft. **Depth Completed** 166 ft. **Date Well Completed**

Drill Method **Drill Fluid**

Use domestic **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter **Weight**
6 in. To 147 ft. lbs./ft.

Open Hole From 147 ft. To 166 ft.

Screen? ☐ **Type** **Make**

Static Water Level
35 ft. land surface Measure 08/15/1990

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Platteville Formation Aquifer Platteville
Last Strat Glenwood Formation Depth to Bedrock 144 ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or
System UTM - NAD83, Zone 15, Meters X 499426 Y 4982137
Unique Number Verification Information from Input Date 01/01/1990

Angled Drill Hole

Well Contractor
Minnesota Geological Survey MGS
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

244951

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 11/20/1992
Update Date 03/03/2022
Received Date

Well Name	Township	Range	Dir	Section	Subsection
	29	22	W	24	CCDCDD

Elevation 981 ft. **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

C/W 2345 MARYLAND MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
GLACIAL DRIFT	0	99		
GLENWOOD SHALE	99	107		

Remarks

GAMMA LOGGED 8-26-91.

Well Depth 107 ft. **Depth Completed** 107 ft. **Date Well Completed**

Drill Method **Drill Fluid**

Use domestic **Status** Inactive

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below** 0 ft.

Casing Diameter **Weight**
3 in. To ft. lbs./ft.

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level
30 ft. land surface Measure 08/26/1991

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP 0 Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Glenwood Formation Aquifer Glenwood
Last Strat Glenwood Formation Depth to Bedrock 99 ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or
System UTM - NAD83, Zone 15, Meters X 499878 Y 4980475
Unique Number Verification Information from Input Date 07/19/1996

Angled Drill Hole

Well Contractor
Minnesota Geological Survey MGS
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

247124

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 02/24/1994
Update Date 02/25/2022
Received Date

Well Name	Township	Range	Dir	Section	Subsection
	29	22	W	14	DDDDAC

Elevation 1022 **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

C/W 1709 MCKNIGHT RD MAPLEWOOD MN 55109

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
GLACIAL DRIFT	0	150		
PLATTEVILLE	150	160		
GLENWOOD SHALE	160	167		
ST. PETER	167	176		

Remarks

GAMMA LOGGED 1-8-1992.

Well Depth 176 ft. **Depth Completed** 176 ft. **Date Well Completed**

Drill Method **Drill Fluid**

Use domestic **Status** Inactive

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**

Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter **Weight**

3 in. To 152 ft. lbs./ft.

Open Hole From 152 ft. To 176 ft.

Screen? ☐ **Type** **Make**

Static Water Level

29 ft. land surface Measure 01/08/1992

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade

☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Platteville Formation Aquifer Platteville-St.

Last Strat St.Peter Sandstone Depth to Bedrock 150 ft

Located by Minnesota Geological Survey

Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or

System UTM - NAD83, Zone 15, Meters X 499568 Y 4982120

Unique Number Verification Information from Input Date 07/19/1996

Angled Drill Hole

Well Contractor

Minnesota Geological Survey MGS

Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

249742

County Ramsey
Quad Lake Elmo
Quad ID 102B

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 06/14/1994
Update Date 03/03/2022
Received Date

Well Name	Township	Range	Dir	Section	Subsection
OLSEN, BRUCE	29	22	W	24	BAABCC

Elevation 1022 **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

C/W 2444 LARPENTEUR AV E MAPLEWOOD MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
GLACIAL DRIFT	0	117		

Remarks

GAMMA LOGGED 6-7-1994.

Well Depth 117 ft. **Depth Completed** 117 ft. **Date Well Completed**

Drill Method Cable Tool **Drill Fluid**

Use domestic **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**

Drive Shoe? Yes ☐ No ☐ **Above/Below** 0 ft.

Casing Diameter	Weight
4 in. To 117 ft.	lbs./ft.

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level

33 ft. land surface Measure 06/07/1994

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☒ 12 in. above grade

☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP 0 Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Aquifer Quaternary

Last Strat Quaternary deposit Depth to Bedrock ft

Located by Minnesota Geological Survey

Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or

System UTM - NAD83, Zone 15, Meters X 500227 Y 4981991

Unique Number Verification Information from Input Date 10/15/1998

Angled Drill Hole

Well Contractor

Minnesota Geological Survey MGS

Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Well Index Report | **249742** | Printed on 06/01/2022 HE-01205-15

Minnesota Unique Well Number

249752

County Ramsey
Quad Lake Elmo
Quad ID 102B

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 06/28/1994
Update Date 03/03/2022
Received Date

Well Name	Township	Range	Dir	Section	Subsection
JUNEK, ED	29	22	W	24	BABAAD

Elevation 1017 **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

C/W 2436 LARPENTEUR AV E MAPLEWOOD MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
GLACIAL DRIFT	0	122		
PLATTEVILLE	122	151		

Remarks

GAMMA LOGGED AND TV 6-21-1994.

Well Depth 151 ft. **Depth Completed** 151 ft. **Date Well Completed**

Drill Method Cable Tool **Drill Fluid**

Use domestic **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**

Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter **Weight**

4 in. To 138 ft. lbs./ft.

Open Hole From 138 ft. To 151 ft.

Screen? ☐ **Type** **Make**

Static Water Level

26 ft. land surface Measure 06/21/1994

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade

☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP 0 Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Platteville Formation Aquifer Platteville

Last Strat Platteville Formation Depth to Bedrock 122 ft

Located by Minnesota Geological Survey

Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or

System UTM - NAD83, Zone 15, Meters X 500198 Y 4982024

Unique Number Verification Information from Input Date 06/02/2000

Angled Drill Hole

Well Contractor

Minnesota Geological Survey MGS

Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

249773

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 08/24/1994
Update Date 03/03/2022
Received Date

Well Name	Township	Range	Dir	Section	Subsection
BERRY, WAYNE	29	22	W	24	BBDADB

Elevation 1034 **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

C/W 1600 MYRTLE ST MAPLEWOOD MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
GLACIAL DRIFT	0	154		

Remarks

GAMMA LOGGED 8-16-1994.

Well Depth 154 ft. **Depth Completed** 154 ft. **Date Well Completed**

Drill Method **Drill Fluid**

Use domestic **Status** Unknow

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter **Weight**
4 in. To 150 ft. lbs./ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** **Make**

Diameter	Slot/Gauze	Length	Set	
0 in.		0 ft.	150 ft.	154 ft.

Static Water Level
43 ft. land surface Measure 08/16/1994

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP 0 Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer Quaternary
Last Strat Quaternary deposit Depth to Bedrock ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or
System UTM - NAD83, Zone 15, Meters X 499965 Y 4981806
Unique Number Verification Information from Input Date 07/19/1996

Angled Drill Hole

Well Contractor
Minnesota Geological Survey MGS
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

256956

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 02/15/2006
Update Date 02/25/2022
Received Date

Well Name	Township	Range	Dir	Section	Subsection
	29	22	W	14	DDBDAC

Elevation 1016 **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Well 1759 HOWARD ST N MAPLEWOOD MN 55109

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
GLACIAL DRIFT	0	130		
PLATTEVILLE	130	160		

Remarks

GAMMA LOGGED 2-15-2006. LOGGED FOR TOM GALLAGHER.

Well Depth 160 ft. **Depth Completed** 160 ft. **Date Well Completed**

Drill Method Cable Tool **Drill Fluid**

Use domestic **Status** Inactive

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter	Weight
4.5 in. To 136 ft.	lbs./ft.

Open Hole From 136 ft. To 160 ft.

Screen? ☐ **Type** **Make**

Static Water Level

49 ft. land surface Measure 02/15/2005

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Platteville Formation Aquifer Platteville
Last Strat Platteville Formation Depth to Bedrock 130 ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or
System UTM - NAD83, Zone 15, Meters X 499370 Y 4982330
Unique Number Verification Information from Input Date 02/15/2006

Angled Drill Hole

Well Contractor

Minnesota Geological Survey MGS
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

272001

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 06/29/2011
Update Date 02/25/2022
Received Date

Well Name	Township	Range	Dir	Section	Subsection
	29	22	W	14	DDCCDA

Elevation 1021 **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Well 2169 LARPENTEUR AV E MAPLEWOOD MN 55109

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
CLAY	0	49	BROWN	
ROCK	49	72	YELLOW	
SOAPSTONE	72	145	GRAY	
LIMEROCK	145	153	GRAY	
LIMEROCK	153	170	GRAY	
LIMEROCK	170	172	GRAY	
SANDROCK	172	175	WHITE	
SANDROCK	175	256	WHITE	

Remarks

GAMMA LOGGED 6-29-2011 FOR MDH.
SEALED 07-31-2011 BY 1506

Well Depth 256 ft. **Depth Completed** 256 ft. **Date Well Completed** 11/07/1962

Drill Method **Drill Fluid**

Use domestic **Status** Sealed

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Telescoping **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter			Weight
4	in. To	229 ft.	lbs./ft.
5	in. To	145 ft.	lbs./ft.

Open Hole From 229 ft. To 256 ft.

Screen? ☐ **Type** **Make**

Static Water Level
180 ft. land surface Measure 06/29/2011

Pumping Level (below land surface)
75 ft. hrs. Pumping at 15 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed 11/07/1962
Manufacturer's name STARITE
Model Number HP 0.75 Volt
Length of drop pipe 190 ft Capacity g.p. Typ Submersible

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Platteville Formation Aquifer St.Peter
Last Strat St.Peter Sandstone Depth to Bedrock 153 ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or
System UTM - NAD83, Zone 15, Meters X 499309 Y 4982097
Unique Number Verification Information from Input Date 06/29/2011

Angled Drill Hole

Well Contractor
Zuercher Well Co. 62028 MCCLELLAN, N.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

278585

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 12/09/2014
Update Date 06/26/2018
Received Date 11/20/2014

Well Name	Township	Range	Dir	Section	Subsection
SIZER, JEREMY	29	22	W	23	ABDBAD

Elevation 1001 **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

C/W 2100 IDAHO AV E ST PAUL MN 55119

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
CLAY	0	38	BROWN	SOFT
SANDY CLAY	38	53	BROWN	SOFT
CLAY ROCKS	53	120	GRAY	MEDIUM
SANDROCK	120	124	GRAY	HARD
LIMESTONE	124	143	GRY/WHT	HARD
S.S SHALE	143	148	TAN/WHT	MEDIUM
S.S. SHALE	148	154	TAN/WHT	MEDIUM
S.S. SHALE	154	185	TAN/WHT	MEDIUM

Remarks

GAMMA LOGGED 2-24-2015. LOGGED FOR MDH.
CASING DETECTOR HAD CASING AT 129 FT. AND SWL AT 136 FT.
THIS WELL ORIGINALLY DRILLED UNDER UNIQUE NO. 801672.

Well Depth 185 ft. **Depth Completed** 185 ft. **Date Well Completed** 10/14/2014

Drill Method Non-specified Rotary **Drill Fluid** Other

Use domestic **Status** Active

Well Hydrofractured? Yes ☐ No ☒ **From** **To**

Casing Type Single casing **Joint** Threaded
Drive Shoe? Yes ☒ No ☐ **Above/Below**

Casing Diameter	Weight	Hole Diameter
4 in. To 124 ft.	2 lbs./ft.	9 in. To 124 ft.
		4 in. To 185 ft.

Open Hole From 124 ft. To 185 ft.

Screen? ☐ **Type** **Make**

Static Water Level

135 ft. land surface Measure 10/14/2014

Pumping Level (below land surface)

148 ft. 3 hrs. Pumping at 33 g.p.m.

Wellhead Completion

Pitless adapter manufacturer BAKER Model SNAPPY
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	50 Sacks	ft.	124 ft.

Nearest Known Source of Contamination

40 feet Northwes Direction Septic tank/drain field Type
Well disinfected upon completion? ☒ Yes ☐ No

Pump ☐ Not Installed Date Installed 11/03/2014
Manufacturer's name GRUNDFOS
Model Number 15SQE15- HP 1.5 Volt 230
Length of drop pipe 140 ft Capacity 15 g.p. Typ Submersible

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☒ No

Miscellaneous

First Bedrock Platteville Formation Aquifer Platteville-St.
Last Strat St.Peter Sandstone Depth to Bedrock 124 ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:12,000) (>15 meters)
System UTM - NAD83, Zone 15, Meters X 499104 Y 4981820
Unique Number Verification Information from Input Date 06/26/2018

Angled Drill Hole

Well Contractor

EH Renner and Sons, Inc. 1431 PRAUGHT, L.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

279810

County Ramsey
Quad
Quad ID

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 09/12/2018
Update Date 09/12/2018
Received Date

Well Name	Township	Range	Dir	Section	Subsection
JENNING,	29	22	W	14	DCC

Elevation **Elev. Method**

Address

C/W 1926 PRISE ST RAMSEY MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
CLAY SAND	0	150		
SANDROCK	150	190		

Remarks

Well Depth 190 ft. **Depth Completed** 190 ft. **Date Well Completed** 07/26/1955

Drill Method **Drill Fluid**

Use domestic **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type **Joint**
Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below**

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level
160 ft. null Measure 07/26/1955

Pumping Level (below land surface)
160 ft. 2.5 hrs. Pumping at 10 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☒ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer
Last Strat Depth to Bedrock ft
Located by
Locate Method
System UTM - NAD83, Zone 15, Meters X Y
Unique Number Verification Input Date

Angled Drill Hole

Well Contractor
Mantyla Well Drilling, Inc. 1394
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

279811

County Ramsey
Quad
Quad ID

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 09/12/2018
Update Date 09/12/2018
Received Date

Well Name	Township	Range	Dir	Section	Subsection
KROISS, STEVE	29	22	W	14	DCB

Elevation **Elev. Method**

Address

C/W 1950 KINGSTON MAPLEWOOD MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
HARDPAN	0	25	BROWN	
SAND	25	40	BROWN	
HARDPAN	40	80	GRAY	
SOAPSTONE	80	120	BLACK	
ROCK	120	151	GRAY	

Remarks

Well Depth	Depth Completed	Date Well Completed
151 ft.	151 ft.	12/07/1960

Drill Method **Drill Fluid**

Use domestic **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type **Joint**
Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below**

Casing Diameter **Weight**
4 in. To ft. lbs./ft.

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level
65 ft. null Measure 12/07/1960

Pumping Level (below land surface)
10 ft. hrs. Pumping at 20 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☒ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer
Last Strat Depth to Bedrock ft
Located by
Locate Method
System UTM - NAD83, Zone 15, Meters X Y
Unique Number Verification Input Date

Angled Drill Hole

Well Contractor
Zuercher Well Drilling, Inc. 1670
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

280508

County Ramsey
Quad
Quad ID

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 04/21/2021
Update Date 04/21/2021
Received Date

Well Name	Township	Range	Dir	Section	Subsection
BULK SERVICE	29	22	W	24	C

Elevation **Elev. Method**

Address

C/W 1300 MCKNIGHT MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
NO RECORD	0	96		
ROCK	96	111		

Remarks

Well Depth 111 ft. **Depth Completed** 111 ft. **Date Well Completed** 04/07/1975

Drill Method **Drill Fluid**

Use unknown **Status** Unknow

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type **Joint**
Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below**

Casing Diameter **Weight**
4 in. To 96 ft. lbs./ft.

Open Hole From 96 ft. To 111 ft.

Screen? ☐ **Type** **Make**

Static Water Level
30 ft. land surface Measure 04/07/1975

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☒ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer
Last Strat Depth to Bedrock ft
Located by
Locate Method
System UTM - NAD83, Zone 15, Meters X Y
Unique Number Verification Input Date

Angled Drill Hole

Well Contractor
Zuercher, Al Well 6202R
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

280572

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 04/02/2021
Update Date 04/07/2021
Received Date

Well Name	Township	Range	Dir	Section	Subsection
WOJTOWICZO,	29	22	W	14	DDDBCB

Elevation 1024 **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

C/W 1714 HOWARD N MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
CLAY	0	14		
HARDPAN	14	135		
SAND	135	143		
ROCK	143	161		

Remarks

Well Depth 161 ft. **Depth Completed** 161 ft. **Date Well Completed** 02/28/1957

Drill Method **Drill Fluid**

Use domestic **Status** Unknow

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter **Weight**
4 in. To 148 ft. lbs./ft.

Open Hole From 148 ft. To 161 ft.

Screen? ☐ **Type** **Make**

Static Water Level
14 ft. land surface Measure 02/28/1957

Pumping Level (below land surface)
72 ft. hrs. Pumping at 10 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name CRANE
Model Number HP Volt
Length of drop pipe 63 ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer
Last Strat Depth to Bedrock 143 ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or
System UTM - NAD83, Zone 15, Meters X 499430 Y 4982184
Unique Number Verification Address verification Input Date 04/02/2021

Angled Drill Hole

Well Contractor
Zuercher, Al Well 6202R
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

280699

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 04/05/2021
Update Date 04/21/2021
Received Date

Well Name	Township	Range	Dir	Section	Subsection
BACCHUS, KEN	29	22	W	24	BBDBDC

Elevation 1034 **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

C/W 1595 MYRTLE ST MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
HARDPAN	0	45		
CLAY	45	135	BLUE	
GRAVEL	135	147		
ROCK	147	170		
SANDROCK	170	189		

Remarks

Well Depth 189 ft. **Depth Completed** 189 ft. **Date Well Completed** 08/16/1957

Drill Method **Drill Fluid**

Use domestic **Status** Unknow

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter **Weight**
4 in. To 147 ft. lbs./ft.

Open Hole From 147 ft. To 189 ft.

Screen? ☐ **Type** **Make**

Static Water Level

Pumping Level (below land surface)
105 ft. hrs. Pumping at 10 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name STA-RITE
Model Number HP 0.5 Volt
Length of drop pipe 105 ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer
Last Strat Depth to Bedrock 147 ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or
System UTM - NAD83, Zone 15, Meters X 499874 Y 4981779
Unique Number Verification Address verification Input Date 04/05/2021

Angled Drill Hole

Well Contractor
Zuercher, Al Well 6202R
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

280700

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 04/05/2021
Update Date 04/21/2021
Received Date

Well Name	Township	Range	Dir	Section	Subsection
DEMARS, CY	29	22	W	24	BBACDB

Elevation 1027 **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

C/W 1633 MYRTLE MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
NO RECORD	0	142		
ROCK	142	149		

Remarks

Well Depth 149 ft. **Depth Completed** 149 ft. **Date Well Completed** 12/01/1955

Drill Method **Drill Fluid**

Use domestic **Status** Unknow

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type **Joint**
Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below**

Casing Diameter **Weight**
4 in. To 142 ft. lbs./ft.

Open Hole From 142 ft. To 149 ft.

Screen? ☐ **Type** **Make**

Static Water Level
48 ft. land surface Measure 12/01/1955

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock indeterminate Aquifer
Last Strat Depth to Bedrock ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or
System UTM - NAD83, Zone 15, Meters X 499876 Y 4981889
Unique Number Verification Address verification Input Date 04/05/2021

Angled Drill Hole

Well Contractor
Zuercher, Al Well 6202R
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

532687

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 08/15/1994
Update Date 02/14/2014
Received Date

Well Name	Township	Range	Dir	Section	Subsection
HAYDEN	29	22	W	23	null

Elevation **Elev. Method**

Address

C/W 1298 VAN DYKE ST ST PAUL MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
CLAY	0	13	RED	MEDIUM

Remarks

PIT 4' BELOW GRADE.

Well Depth	Depth Completed	Date Well Completed
13 ft.	13 ft.	08/18/1993

Drill Method Cable Tool **Drill Fluid**

Use elevator **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Single casing **Joint** Welded
Drive Shoe? **Yes** ☒ **No** ☐ **Above/Below**

Casing Diameter		Weight	
16	in. To 13 ft.	62.5	lbs./ft.

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level

0 ft. land surface Measure 08/18/1993

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	2.5 Sacks	11 ft.	13 ft.

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Aquifer

Last Strat Depth to Bedrock ft

Located by

Locate Method

System UTM - NAD83, Zone 15, Meters X Y

Unique Number Verification Input Date

Angled Drill Hole

Well Contractor

Licensee Business	Lic. or Reg. No.	Name of Driller
Midwest Drilling	L0002	STANGRET, J.

Minnesota Unique Well Number

544043

County Ramsey
Quad Lake Elmo
Quad ID 102B

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 06/14/1996
Update Date 04/08/2014
Received Date

Well Name	Township	Range	Dir	Section	Subsection
ROSEWOOD	29	22	W	24	null

Elevation **Elev. Method**

Address

Contact 1995 OAKCREST AV W ST PAUL MN 55113

Stratigraphy Information

Remarks

LAKEWOOD DRIVE AND MARYLAND IN MAPLEWOOD

Well Depth	Depth Completed	Date Well Completed
34 ft.	32 ft.	05/26/1994

Drill Method **Drill Fluid**

Use elevator **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type **Joint**
Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below**

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level

30 ft. land surface Measure 05/26/1994

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Aquifer

Last Strat Depth to Bedrock ft

Located by

Locate Method

System UTM - NAD83, Zone 15, Meters X Y

Unique Number Verification Input Date

Angled Drill Hole

Well Contractor

Midwest Drilling L0002

Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

544049

County Ramsey
Quad Lake Elmo
Quad ID 102B

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 06/14/1996
Update Date 04/08/2014
Received Date

Well Name	Township	Range	Dir	Section	Subsection
ROSEWOOD	29	22	W	24	null

Elevation **Elev. Method**

Address

Well LAKEWOOD DR MAPLEWOOD MN

Contact 1995 OAKCREST AV W ST PAUL MN 55113

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
CLAY & SAND	0	16	TAN	MEDIUM
SAND	16	20	TAN	SOFT
HARDPAN	20	25	RED	HARD

Remarks

PIT IS 13' BELOW GRADE.

Well Depth 25 ft. **Depth Completed** 25 ft. **Date Well Completed** 05/27/1994

Drill Method Cable Tool **Drill Fluid**

Use elevator **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Single casing **Joint** Welded

Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below**

Casing Diameter		Weight	
16	in. To 25 ft.	62.5	lbs./ft.

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level

30 ft. land surface Measure 05/27/1994

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade

☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	2.5 Sacks	23 ft.	25 ft.

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Aquifer

Last Strat Depth to Bedrock ft

Located by

Locate Method

System UTM - NAD83, Zone 15, Meters X Y

Unique Number Verification Input Date

Angled Drill Hole

Well Contractor

Midwest Drilling L0002 STANGRET, B.

Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

568241

County Ramsey
Quad
Quad ID

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 03/12/2003
Update Date 02/25/2022
Received Date

Well Name	Township	Range	Dir	Section	Subsection
MW-9 RAMSEY	29	22	W	14	DDA

Elevation **Elev. Method**

Address

Well 1759 WHITE BEAR AV MAPLEWOOD MN 55109

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
CLAY	0	1	DK. BRN	
CLAY	1	3	LT. BRN	
CLAY SAND	3	13	RED/BRN	
SILTY CLAY SAND	13	15	RED/BRN	
SANDY SILTY CLAY	15	18	RED/BRN	
SILTY CLAY SAND	18	20	RED/BRN	
SILTY SANDY	20	33	RED/BRN	
SILTY SANDY CLAY	33	35	GRY/BRN	

Remarks

MW-9
WELL SEALED 07-31-2000 BY 27058

Well Depth 35 ft. **Depth Completed** 30 ft. **Date Well Completed** 07/18/1995

Drill Method Auger (non-specified) **Drill Fluid**

Use monitor well **Status** Sealed

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? **Yes** ☐ **No** ☒ **Above/Below**

Casing Diameter **Weight**
2 in. To 20 ft. lbs./ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** plastic **Make** TIMCO

Diameter	Slot/Gauze	Length	Set	
2 in.	10	10 ft.	20 ft.	30 ft.

Static Water Level
23 ft. land surface Measure 07/18/1995

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☒ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement		0 ft.	17 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☒ No

Miscellaneous
First Bedrock Aquifer
Last Strat Depth to Bedrock ft
Located by
Locate Method
System UTM - NAD83, Zone 15, Meters X Y
Unique Number Verification Input Date

Angled Drill Hole

Well Contractor

Thein Well Co.	34050	THEIN, M.
Licensee Business	Lic. or Reg. No.	Name of Driller

Minnesota Well Index Report | **568241** | Printed on 06/01/2022 HE-01205-15

Minnesota Unique Well Number

598974

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 08/12/1999
Update Date 03/14/2022
Received Date

Well Name	Township	Range	Dir	Section	Subsection
IDS #625	29	22	W	23	null

Elevation **Elev. Method**

Address

Well 1863 CLEAR AV ST PAUL MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SANDY CLAY	0	20	BROWN	HARD
SANDY CLAY	20	43	BROWN	MEDIUM
SHALE	43	49	BROWN	MEDIUM

Remarks

PIT ELEVATION IS 20 FEET FROM GRADE.

Well Depth 49 ft. **Depth Completed** 47 ft. **Date Well Completed** 07/21/1997

Drill Method Cable Tool **Drill Fluid**

Use elevator **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint** Welded

Drive Shoe? Yes ☒ No ☐ **Above/Below**

Casing Diameter			Weight	
16	in. To	50 ft.	15.6	lbs./ft.
20	in. To	51 ft.	78.6	lbs./ft.

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level

35 ft. land surface Measure 07/21/1997

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
neat cement	2	Sacks	47 ft.	49 ft.

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☒ No

Miscellaneous

First Bedrock Aquifer

Last Strat Depth to Bedrock ft

Located by

Locate Method

System UTM - NAD83, Zone 15, Meters X Y

Unique Number Verification Input Date

Angled Drill Hole

Well Contractor

Midwest Drilling L0004 STANGRET, S.

Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

603061

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 12/30/1999
Update Date 03/03/2022
Received Date

Well Name	Township	Range	Dir	Section	Subsection
HILLCREST	29	22	W	23	ADACDA

Elevation 1034 **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

C/W 2200 LARPENTEUR AV E ST PAUL MN 55109

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
DRIFT	0	155	TAN	SOFT
LIMESTONE	155	187	GRAY	HARD
SANDSTONE/SHALE	187	343	GRAY	HARD
LIMEROCK	343	476	GRAY	HARD
SANDSTONE	476	486	TAN	MEDIUM

Remarks
M.G.S. NO. 3995.

Well Depth 486 ft. **Depth Completed** 486 ft. **Date Well Completed** 09/00/1999

Drill Method Cable Tool **Drill Fluid** Water

Use irrigation **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Step down **Joint** Welded
Drive Shoe? Yes ☒ No ☐ **Above/Below**

Casing Diameter	Weight	Hole Diameter
10 in. To 354 ft.	46.4 lbs./ft.	16 in. To 354 ft.
16 in. To 155 ft.	62.5 lbs./ft.	10 in. To 486 ft.

Open Hole From 354 ft. To 486 ft.

Screen? ☐ **Type** **Make**

Static Water Level
207 ft. land surface Measure 09/03/1999

Pumping Level (below land surface)
226 ft. 8 hrs. Pumping at 500 g.p.m.

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☒ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	17 Cubic yards	0 ft.	354 ft.

Nearest Known Source of Contamination
75 feet North Direction Body of water Type
Well disinfected upon completion? ☒ Yes ☐ No

Pump ☐ Not Installed Date Installed 09/29/1999
Manufacturer's name GOULD
Model Number 8RJHC HP 60 Volt 460
Length of drop pipe 260 ft Capacity 650 g.p. Typ Submersible

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☒ No

Miscellaneous
First Bedrock Aquifer
Last Strat Depth to Bedrock 155 ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or
System UTM - NAD83, Zone 15, Meters X 499495 Y 4981491
Unique Number Verification Site Plan Input Date 03/03/2022

Angled Drill Hole

Well Contractor
Keys Well Co. 62012 RUSSELL, J.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

801672

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 06/26/2018
Update Date 06/26/2018
Received Date 08/17/2015

Well Name	Township	Range	Dir	Section	Subsection
SIZER, JEREMY	29	22	W	23	ABDABC

Elevation 1004 **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

C/W 2100 IDAHO AV E ST PAUL MN 55119

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
CLAY	0	38	BROWN	SOFT
SANDY CLAY	38	53	BROWN	SOFT
CLAY ROCKS	53	120	GRAY	MEDIUM
SAND ROCK	120	124	GRAY	HARD
LIMEROCK	124	143	GRAY	HARD
SHALE	143	154	BLUE	HARD
S.S. SHALE	154	166	GRAY	HARD
S.S. SHALE	166	200	GRAY	HARD

Remarks

THIS IS THE SECOND WELL DRILLED UNDER THIS UNIQUE NUMBER.
THE FIRST WELL HAS UNIQUE NO. 278585. IT WAS GAMMA LOGGED 2-24-2015.

Well Depth 200 ft. **Depth Completed** 200 ft. **Date Well Completed** 06/23/2015

Drill Method Non-specified Rotary **Drill Fluid**

Use domestic **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below** 2 ft.

Casing Diameter	Weight	Hole Diameter
4 in. To 168 ft.	lbs./ft.	8.7 in. To 166 ft.
		4 in. To 200 ft.

Open Hole From 166 ft. To 200 ft.

Screen? ☐ **Type** **Make**

Static Water Level
119 ft. top of casing Measure 06/23/2015

Pumping Level (below land surface)
148 ft. 4 hrs. Pumping at 30 g.p.m.

Wellhead Completion
Pitless adapter manufacturer BAKER Model SNAPPY
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	65 Sacks	ft.	166 ft.

Nearest Known Source of Contamination
50 feet Northwes Direction Septic tank/drain field Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name GRUNDFOS
Model Number 15SQE15- HP 15 Volt 230
Length of drop pipe 160 ft Capacity 15 g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Platteville Formation Aquifer St.Peter
Last Strat St.Peter Sandstone Depth to Bedrock 124 ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:12,000) (>15 meters)
System UTM - NAD83, Zone 15, Meters X 499121 Y 4981816
Unique Number Verification Info/GPS from data Input Date 06/26/2018

Angled Drill Hole

Well Contractor
EH Renner and Sons, Inc. 1431 RENNER, E
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

849084

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date 11/15/2020
Update Date 03/03/2022
Received Date 07/13/2020

Well Name	Township	Range	Dir	Section	Subsection
MW-1 ST PAUL	29	22	W	23	AABABC

Elevation 1030 **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Well 2200 LARPENTEUR AV E ST PAUL MN
Contact 250 ST PETER ST ST PAUL MN 55102

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SILTY SAND/ GRAVEL	0	17	BLK/RED	HARD
WET SILTY SAND	17	25	RED/BRN	HARD

Remarks

Well Depth	Depth Completed	Date Well Completed
25 ft.	25 ft.	06/25/2020

Drill Method Auger (non-specified) **Drill Fluid**

Use monitor well **Status** Active

Well Hydrofractured? Yes ☐ No ☒ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☒ **Above/Below**

Casing Diameter		Weight
2	in. To 15 ft.	lbs./ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** slotted pipe **Make** JOHNSON

Diameter	Slot/Gauze	Length	Set	
2 in.	10	10 ft.	15 ft.	25 ft.

Static Water Level
17 ft. land surface Measure 06/25/2020

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☒ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
bentonite	2	Sacks	4 ft.	12 ft.
neat cement	2	Sacks	ft.	4 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☒ No

Miscellaneous
First Bedrock Aquifer Quat. Water
Last Strat sand+silt Depth to Bedrock ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or
System UTM - NAD83, Zone 15, Meters X 499325 Y 4982027
Unique Number Verification Info/GPS from data Input Date 11/18/2020

Angled Drill Hole

Well Contractor
Thein Well Co., Inc. 1337 HILBRANDS, B.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

849085

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 11/15/2020
Update Date 03/03/2022
Received Date 07/13/2020

Well Name	Township	Range	Dir	Section	Subsection
MW-2 ST PAUL	29	22	W	23	ADDDAC

Elevation 1011 **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Well 2200 LARPENTEUR AV E ST PAUL MN
Contact 380 ST PETER ST ST PAUL MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SANDY CLAY COBBLES	0	12	RED	HARD
WET SILTY SAND	12	20	RED/BRN	HARD

Remarks

Well Depth 20 ft. **Depth Completed** 20 ft. **Date Well Completed** 06/25/2020

Drill Method Auger (non-specified) **Drill Fluid**

Use monitor well **Status** Active

Well Hydrofractured? Yes ☐ No ☒ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter		Weight
2	in. To 10 ft.	lbs./ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** plastic **Make** JOHNSON

Diameter	Slot/Gauze	Length	Set	
2 in.	0	10 ft.	10 ft.	20 ft.

Static Water Level
12 ft. land surface Measure 06/25/2020

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☒ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
bentonite	1	Sacks	4 ft.	7 ft.
neat cement	2	Sacks	ft.	4 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☒ No

Miscellaneous
First Bedrock Aquifer Quat. Water
Last Strat sand+silt Depth to Bedrock ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or
System UTM - NAD83, Zone 15, Meters X 499578 Y 4981319
Unique Number Verification Info/GPS from data Input Date 11/18/2020

Angled Drill Hole

Well Contractor

Thein Well Co., Inc.	1337	HILBRANDS, B.
Licensee Business	Lic. or Reg. No.	Name of Driller

Minnesota Unique Well Number

849086

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031

Entry Date
Update Date 03/03/2022
Received Date 07/13/2020

Well Name	Township	Range	Dir	Section	Subsection
MW-3 ST PAUL	29	22	W	23	DADCBB

Elevation 1014 **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Well 2200 LARPENTEUR AV E ST PAUL MN
Contact 308 ST PETER ST ST PAUL MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SANDY CLAY GRAVEL	0	23	BLK/RED	HARD
SILTY SAND	23	30	RED/BRN	HARD

Remarks

Well Depth 30 ft. **Depth Completed** 30 ft. **Date Well Completed** 06/25/2020

Drill Method Auger (non-specified) **Drill Fluid**

Use monitor well **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Single casing **Joint**
Drive Shoe? Yes ☐ No ☒ **Above/Below**

Casing Diameter		Weight
2	in. To 20 ft.	lbs./ft.

Open Hole From ft. To ft.

Screen? ☒ **Type** plastic **Make** JOHNSON

Diameter	Slot/Gauze	Length	Set	
2 in.	0	10 ft.	20 ft.	30 ft.

Static Water Level
23 ft. land surface Measure 06/25/2020

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☒ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
bentonite	2	Sacks	4 ft.	17 ft.
neat cement	2	Sacks	ft.	4 ft.

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☒ No

Pump ☒ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☒ No

Miscellaneous
First Bedrock Aquifer Quat. Water
Last Strat sand+silt Depth to Bedrock ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or
System UTM - NAD83, Zone 15, Meters X 499412 Y 4980929
Unique Number Verification Info/GPS from data Input Date 11/18/2020

Angled Drill Hole

Well Contractor
Thein Well Co., Inc. 1337 HILBRANDS, B.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

1000025701

County Ramsey
Quad St Paul East
Quad ID 103A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 04/07/2021
Update Date 04/07/2021
Received Date

Well Name	Township	Range	Dir	Section	Subsection
WOJTOWICZ, L.	29	22	W	14	DDDBCB

Elevation 1024 **Elev. Method** LiDAR 1m DEM (MNDNR)

Address

Stratigraphy Information

Remarks
WORK ON EXISTING WELL

Well Depth	Depth Completed	Date Well Completed
null	null	09/00/1956

Drill Method **Drill Fluid**

Use **Status** Unknow

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type **Joint**
Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below**

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☒ Not Specified

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer
Last Strat Depth to Bedrock ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or
System UTM - NAD83, Zone 15, Meters X 499430 Y 4982184
Unique Number Verification Address verification Input Date 04/07/2021

Angled Drill Hole

Well Contractor
Zuercher, Al Well 6202R
Licensee Business Lic. or Reg. No. Name of Driller

Appendix F

RAP Implementation forms

DUST MONITORING LOG

Project Name ____

Page ___ of ___

Project Number and Task No.: _________________________

Project Location:____

Date	Time	Wind Direction/Speed/Weather	Dust Meter Reading (mg/m^2)			Work Zone Location	Record By	Comments
			Upwind	Work Zone	Downwind			

BRAUN INTERTEC

Field Report Form

Project No.:

Date:

Project Name:

Personnel:

Location:

Time On Site:

Time Off Site:

☐ Photos taken and documented.

Project Manager:

Other Braun Intertec Staff:

Weather (temperature, wind speed and direction, etc.):

Other Personnel (subcontractors, site superintendent, etc.; include time on site and time off site):

PPE and Field Equipment Used (e.g., PID; include ID numbers, calibration information, etc.):

Work Completed (include field scope, unexpected issues, action items, log of communication, and site sketch):

Signature:

BRAUN INTERTEC

Field Report Form

Project No.:		Date:	
Project Name:		Personnel:	
Location:		Project Manager:	

Work Completed (include field scope, unexpected issues, action items, log of communication, and site sketch):

Signature:

BRAUN INTERTEC

Incident Report Form

Report Number: Report Date: Incident Date:
Project Title and Location:
Project Number:
Location of Incident:
Names of All Personnel Involved: _____

_____

_____

Describe the incident as it occurred (use additional sheets, if necessary):

_____

_____

_____

_____

_____

_____

_____

Names of Witnesses	Relationship to the Incident	Where They Can Be Reached
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Project Implications

What is the cost impact to the project (e.g., lost days, man-hours, equipment)?

_____

_____

What is the schedule impact to the project?

_____

_____

Does the incident impact the scope of the project in other ways? If so, how?

_____

_____

SAMPLE CONTROL LOG

Project Name: _____

Project Number and Activity Number: _____ Page ___ of ___

Sampling Date	Sampling Time	Sample Number (ID)	Analysis Required	Sample location, depth, description, purpose etc.	Date Sent to Lab

DOCUMENT ALL ACTIVITIES WITH PHOTOGRAPHS.

BRAUN INTERTEC

BRAUN INTERTEC

SITE HEALTH AND SAFETY PLAN

ESE PROJECT HEALTH AND SAFETY FIELD MEETING FORM

Date:_____ Time:_____ Project No.:_____

Project Name:_____

Location:_____

Meeting Conducted by:_____

Topics Discussed:

Physical Hazards:_____

Chemical Hazards:_____

Personal Protection:_____

Decontamination:_____

Special Site Considerations:_____

_____

_____

Emergency Information:_____

Hospital Location:_____

Attendees

Name/Company (printed)	Signature
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Meeting Conducted by:_____

Signature

Truck Manifest Log

Project Name: ______________________________ Project #: ______________________

Excavator: ______________________________ Date: ______________________

Braun Personnel: ____

Purpose of Excavation: ____

____

Haul Start Time: ______________________ Haul End Time: ______________________

Load #	Time	Manifest #	Cab Description	License Plate	Truck Type*	Soil Location (STA, depth, etc.)	PID

Observations/Notes:

* Truck Type: SD=Side Dump, Q=Quad, BD=Belly Dump, ED=End Dump

BRAUN INTERTEC