WGMGROUP

DRAFT Analysis of Brownfields Cleanup Alternative (ABCA)

Opportunity Resources Inc.

WGM Project Number: 21-11-15.12

11.15.2023

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REPORT DATE:
11.15.2023

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The City of Missoula

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APPENDICES

1.0 INTRODUCTION

WGM Group, Inc (WGM), on behalf of the City of Missoula (City), prepared this Analysis of Brownfields Cleanup Alternatives (ABCA) for cleanup and redevelopment of Opportunity Resources Inc. (ORI) located at 901 South 3rd St West, Missoula, Montana (Site). ORI intends to clear the Site of any remaining improvements to allow for Site redevelopment. Site cleanup activities will be considered for funding via a subgrant from the City's Brownfields Revolving Loan Fund. The Site will be subdivided. The northern portion of the Site adjacent to South 3rd Street West will remain in the ownership of ORI. ORI plans to donate the southern portion of the Site to a new Low-Income Housing Tax Credit (LIHTC) partnership, in which ORI will serve as a general partner. It is anticipated that current ORI wood shop operations and jobs will relocate to a new location in Missoula under new ownership. The anticipated Site redevelopment includes a new commercial space on the ORI property to be used by ORI as a storefront to sell the products to raise funds to support their organization, or possibly as a storefront by a commercial tenant. This plan optimally preserves the current wood shop jobs offered by ORI to disabled adults and creates new ones at the commercial storefront. On the property owned by the LIHTC partnership, a new, approximate 24-unit affordable housing complex will be built to provide housing for disabled adults, the ORI workforce, and other individuals in need of affordable housing options if ORI is able to secure LIHCT funding from the State of Montana in 2024.

Data used to develop this ABCA is based on a Phase I Environmental Site Assessment (ESA) conducted in December of 1991 by Shannon Environmental (Shannon, 1992); a Phase I ESA conducted by WGM in May of 2017 (WGM, 2017a); and a Phase II ESA and Building Materials Inspection (BMI) conducted by WGM in October of 2017 (WGM, 2018). The ABCA provides cleanup alternatives based on site-specific conditions, technical feasibility, and estimated costs.

1.1 SITE DESCRIPTION AND USE

The Site is located at 901 South 3rd St West, Missoula, Missoula County, Montana. Refer to **Appendix A** for vicinity and site location maps. The Site is made up of one L-shaped parcel. There are five structures on the Site: a warehouse/office building constructed in 1974, a former truck scale building (referred to as the main warehouse) that is used for storage, a small work building, a Quonset hut, and a storage shed.

1.2 SITE ASSESSMENT FINDINGS

A Phase I ESA was conducted on the Site on December 16, 1991, with an amendment date January 8, 1992, by Shannon Environmental Management. The 1991-1992 amended ESA report identified "evidence that a moderate risk of significant environmental liability [was] associated with the subject property." That evidence included stained soils, corroded 55-gallon drums, vent pipes, sumps, waste liquids in a boiler building, and friable asbestos. That report recommended performing a Phase II ESA, but no Phase II report from that time has been found.

The City conducted a Phase I ESA of the Site in May of 2017 to investigate the potential for soil and groundwater impacts from former industrial activities at the Site and for hazardous building materials in the structures on the property. Many of the concerns identified in the 1992 amended report appeared to have been addressed in the interim. No stained soils or corroded drums were observed, and the boiler building where waste liquids had been observed was no longer present. The 2017 Phase I ESA identified three Recognized Environmental Conditions (RECs) and recommended further investigation to help identify the characteristics and extent of the contamination, if any, at the Site. Those RECs were as follows:

- A former vehicle fueling area previously existed at the southeast corner of the small work building; no secondary containment or spill prevention measures were associated with the vehicle fueling activities.
- Soil contamination located just west of the Quonset hut was identified in a 1991 investigation; no evidence of remediation activities associated with that contamination was identified.
- The location of the leaking and corroded drums that were identified in the 1991 Phase I ESA just east of the former boiler building; no evidence of laboratory analysis or remediation activities associated with that potential contamination was identified.

The 2017 Phase I ESA also identified a subterranean vault located near the two former silo foundations on the southwestern portion of the property. While the 2017 Phase I ESA did not identify the vault as a REC, it was noted as a data gap due to access limitations.

In October of 2017, the City conducted a Phase II ESA and BMI of the Site, as recommended by the 2017 Phase I ESA. The investigation followed the project-specific Phase II ESA: Sampling and Analysis Plan (SAP) for ORI, and the programmatic Quality Assurance Plan (QAPP) for the City of Missoula Brownfields Program (WGM, 2017b; NewFields, 2016). The SAP was developed in accordance with the City of Missoula Building Materials Sampling Guide, which was approved by the Environmental Protection Agency (EPA) and Montana Department of Environmental Quality (DEQ) (NewFields, 2016). The goals of the October 2017 Phase II Investigation were to:

1. Identify and define the vertical and lateral extent of existing petroleum products and other hazardous substances in surface soils, if present, that could adversely affect future construction and site redevelopment.
2. Identify and define the vertical and lateral extent of existing petroleum products and other hazardous substances in subsurface soils, if present, that could adversely affect future construction and site redevelopment.
3. Observe and evaluate the potential for the existence of hazardous substances or petroleum products in or associated with the subterranean vault.
4. Identify hazardous building materials within the buildings, if any.

The findings of the Phase II ESA and BMI are listed below:

- Lead, the sole contaminant of potential concern (CoPC), was identified in surface soils at the Site in the area west of the Quonset hut – see Table 1 from *Phase II ESA: Environmental Site Assessment and Building Materials Inventory, Opportunity Industries, Inc.* (WGM, 2018) in **Appendix B**.
- Asbestos containing building materials (ACBM) were assumed and/or identified in the main warehouse – see Table 2 from *Phase II ESA: Environmental Site Assessment and Building Materials Inventory, Opportunity Industries, Inc.* (WGM, 2018) in **Appendix C**.
- No petroleum products or other hazardous substances were identified as CoPCs in the surface or subsurface soils.
- No evidence of petroleum products or other hazardous substances was identified in the subterranean vault.
- The gray floor tiles and associated mastic in the lunchroom in the main warehouse were the only building materials identified as containing asbestos. Several fluorescent lights in the main warehouse and large storage shed were identified as containing ballasts with polychlorinated biphenyls (PCBs).

1.3 THREATS TO PUBLIC HEALTH &/OR THE ENVIRONMENT

ACBMs that have been identified within the building could pose a potential threat to public health during renovation or deconstruction of onsite structures, because asbestos fibers can be released during these activities. Exposure to airborne asbestos has been linked to illnesses, including asbestosis (scaring of the lungs), lung cancer, and mesothelioma (a rare cancer of the plural linings of the lung and/or stomach). Federal and state regulations may require air monitoring and controls to limit generation of dust during activities such as sawing, grinding, or sanding. Such activities should be avoided, where possible, to limit potential inhalation of asbestos fibers.

Lead exposure can pose a threat to public health, particularly for children. When ingested, lead quickly enters the bloodstream and can be stored in bones. Documented effects of lead exposure in children include damage to the brain and nervous system, slowed growth and development, learning and behavior problems, and hearing and speech problems.

1.4 PROJECT GOAL

The Phase II ESA identified assumed and/or potential asbestos in building material in the main warehouse. If ACBM is not properly handled prior to the planned deconstruction, asbestos could be released into the environment and inhaled by individuals working or visiting the building. Asbestos abatement would remove this concern and the general threat to public health and/or the environment.

The lead identified in the surface soil near the Quonset hut poses a potential threat to public health and would prevent redevelopment of that area of the Site were it to remain in place. Excavation and proper disposal of surface soils from the area identified would alleviate the risk of human or environmental exposure and allow for unrestricted redevelopment of the Site for the intended use.

2.0 APPLICABLE REGULATIONS & CLEANUP STANDARDS

2.1 ASBESTOS IN BUILDING MATERIALS

Asbestos abatement activities on the Site will be subject to DEQ's Asbestos Control Program, and remediation performed by an abatement contractor will be conducted under an asbestos project permit. Asbestos abatement will also conform to EPA 40 Code of Federal Regulations (CFR) Asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP), and Occupational Safety and Health Administration (OSHA) Asbestos Construction Standard 29 CFR 1926.1101. The DEQ defines ACBM as material containing more than one percent asbestos based on laboratory analysis of the material. Three categories of ACBM have been defined in the NESHAP standard, which is established in Title 40 Section 61.141 of the Code of Federal Regulations (40 CFR 61.141) and adopted by DEQ in Title 17, Chapter 74, Subchapter 3 of the Administrative Rules of Montana (ARM 17.74.351). The NESHAP category definitions are as follows:

- **Category I non-friable ACBM** includes any asbestos-containing packing, gasket, resilient floor covering, or asphalt roofing product that contains more than one percent (>1%) asbestos.
- **Category II non-friable ACBM** includes any material, excluding Category I nonfriable ACBM, containing more than one percent (>1%) asbestos, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure; such as cement asbestos board, asbestos-cement pipe, and window glazing materials.
- **Regulated Asbestos-Containing Materials (RACBM)** includes friable materials, Category I non-friable ACBM that will or may be subjected to sanding, grinding, cutting, or abrading, and Category II non-friable ACBM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by forces acting on it or expected to act upon it during the course of renovations and/or deconstruction activities.

The definition of RACBM includes all ACBM associated with a structure or space that will be impacted by renovation and/or deconstruction activities. An "asbestos project," as defined by Montana Code Annotated (MCA) 75-2-502, means the encapsulation, enclosure, removal, repair, renovation, placement in new construction, or deconstruction of asbestos in a building or other structure, or the transportation or disposal of asbestos-containing waste. A NESHAP permit application must be completed by a Montana-accredited Asbestos Project Designer and submitted to the DEQ at least 10 days prior to the scheduled project. The project must be conducted by personnel holding current Montana accreditation as Asbestos Workers and/or Asbestos Contractor/Supervisors.

RACBM abatement is not considered complete until the project area has passed visual and air clearance monitoring. Clearance air monitoring must be completed for all abatement projects except where deconstruction will commence immediately following completion of abatement and the location has successfully passed visual clearance. During the cleanup and demolition process, a Qualified Environmental Professional (QEP) will document cleanup activities and verify that activities are performed in accordance with applicable regulations. A Cleanup Completion Report summarizing the cleanup activities will be submitted to EPA and DEQ. The report will demonstrate applicable cleanup standards were obtained and request a liability assurance for the Site for applicable media.

2.2 LEAD IN SOIL

Lead in soil can pose a threat to human health and the environment. For lead in soil, DEQ issued a memorandum, "Evaluating Lead in Soil" on June 14, 2021, that was an update to the April 2017 and October 2018 Lead Screening Memorandums. The memorandum describes how lead exposure is evaluated differently than other non-carcinogenic contaminants and defines the process by which a soil concentration protective of residential exposure calculated using EPA default exposure assumptions for an exposed child aged 0 to 7 years includes a target blood lead concentration (PbB) of 5 µg/dL, which translates to a soil concentration of 200 mg/kg. The memorandum goes on to describe the soil concentration protective of commercial/industrial and construction worker exposure is 696 mg/kg and that 696 mg/kg will be used for surface and subsurface soil where construction workers are a current or potential receptor.

Waste that contains lead may be considered a hazardous waste, depending on the leachability of the lead. Lead that is leachable above a concentration of five milligrams/liter (mg/L) as determined using TCLP analysis is subject to Resource Conservation and Recovery Act (RCRA) hazardous waste handling and disposal requirements (40 CFR 261, Subpart C). Composite samples representative of the overall anticipated lead-containing waste streams (lead-contaminated soil) for the project must be collected and analyzed via the TCLP method for lead to assess whether these regulations are applicable.

2.3 CLIMATE CHANGE & CLEAN REMEDIATION

Cleanup alternatives that utilize active remediation strategies will adhere to EPA's Clean Remediation Best Management Practices: Clean Fuel & Emission Technologies for Site Cleanup (EPA 2010). This may include, but is not limited to, reducing idling of construction vehicles while onsite, ensuring equipment is well maintained to minimize excess fuel use and discharge of uncombusted fuel products, and ensuring that vehicles are using the proper lubricants and fuels to ensure efficient operation. Additionally, in accordance with EPA's Green Remediation Best Management Practices: Excavation and Surface Restoration, remedial alternatives utilizing dust suppression techniques will use tarps to cover spoils piles where possible, thereby reducing water use at the Site (EPA, 2019). Disposal locations will be selected as close to the Site as possible, to minimize transport time, distance, and expenditure of fuels in trucking. Backfill will be acquired from sources as close as practicable to the Site, to minimize fossil fuel expenditure. Loads will be covered to prevent disposition of waste and/or backfill soils along the trucking route.

3.0 HAZARDOUS BUILDING MATERIALS ALTERNATIVES EVALUATION

This ABCA was developed to evaluate remedial alternatives for implementation of remedial actions to address hazardous building materials and lead in soils at the Site. When applicable, the alternatives evaluation will consider the resilience of remedial options to address potential adverse impacts caused by extreme weather events (e.g., sea level rise, increased frequency and intensity of flooding, etc.).

3.1 ALTERNATIVES EFFECTIVENESS, IMPLEMENTABILITY, & COST ANALYSIS

Three cleanup alternatives were considered for the Site based on their comparative effectiveness, ease of implementation, and cost, including:

Alternative 1: No Action – Included for comparison purposes.

Alternative 2: Removal and disposal of lead-contaminated soils, ACBM abatement of the main warehouse prior to deconstruction, disposal of PCB-containing light ballasts.

Alternative 3: Placement of a cap of clean soil over the area of lead-contaminated soils and implementation of institutional controls on the Site, ACBM abatement of the main warehouse prior to deconstruction, disposal of PCB-containing light ballasts.

CRITERIA	ALTERNATIVE 1: No Action	ALTERNATIVE 2: Soil Removal & Disposal, Abatement & Disposal Prior to Deconstruction	ALTERNATIVE 3: Cap Placement over Contaminated Area, Implementation of Institutional Controls, Abatement & Disposal Prior to Deconstruction
EFFECTIVENESS	Not Effective	Effective	Partially Effective
IMPLEMENTABILITY	Implementable	Implementable	Implementable
COST	**None**	**$10,950***	**$11,950***

*Refer to **Appendix D** for a full cost breakdown for each alternative.

EFFECTIVENESS

- **Alternative 1:** No Action is not effective at mitigating potential hazards that would need to be addressed for any reuse of the Site.
- **Alternative 2:** Removing and disposing of contaminated soils is an effective method for preventing lead exposure. Disposal of PCB-containing light ballasts and abatement of ACBM associated with the main warehouse prior to deconstruction is an effective method for preventing receptors from coming into direct contact with hazardous material related to deconstruction.
- **Alternative 3:** Placing a soil cap over the area contaminated with lead and implementing institutional controls would decrease the likelihood of exposure only if institutional controls are followed and no subsequent disturbance of the area takes place. Allowing contamination to remain in place is less effective than removal, because it does not eliminate the risk of exposure by future users at the Subject Property. Disposal of PCB-containing light ballasts and abatement of ACBM associated with the main warehouse prior to deconstruction is an effective method for

preventing receptors from coming into direct contact with hazardous material related to deconstruction.

IMPLEMENTABILITY

- **Alternative 1:** No Action is easy to implement since no actions would be conducted.
- **Alternative 2:** Removal and disposal of contaminated soils, ACBM abatement of the main warehouse prior to deconstruction, and disposal of PCB-containing light ballasts is implementable.
- **Alternative 3:** Placement of a cap of clean soil over the area of contaminated soils and implement institutional controls on the Site, ACBM abatement of the main warehouse prior to deconstruction, and disposal of PCB-containing light ballasts is implementable.

COST

- **Alternative 1:** No Action would have no associated costs.
- **Alternative 2:** Removal and disposal of lead-contaminated soils, ACBM abatement of the main warehouse prior to deconstruction, disposal of PCB-containing light ballasts is estimated to be $10,950 and includes asbestos and PCB-containing ballasts abatement and disposal; lead-contaminated soil sampling, excavation, analysis (both characterization and confirmation sampling), transportation and disposal; and required documentation and reporting. This alternative is considered cost effective because abatement of the main warehouse and removal of the lead-contaminated soils allows the Site to be redeveloped without restrictions.
- **Alternative 3:** Placement of a cap over the lead-contaminated soils, implementation of institutional controls, ACBM abatement of the main warehouse prior to deconstruction, and disposal of PCB-containing light ballasts is estimated to be $11,950. This alternative is not considered cost effective because if the contaminated soils remain in place and institutional controls are implemented, an environmental lien will be placed on the Site and it cannot be redeveloped without restrictions.

3.2 ALTERNATIVES ANALYSIS & RECOMMENDATION

ALTERNATIVE #1: The advantage of Alternative #1 is there is no immediate cost. The disadvantages of this alternative are that the lead-contaminated soils and ACBM remain in place; the risk to human health remains for people entering the main warehouse; as the main warehouse deteriorates, health and safety threats could migrate outside of the main warehouse; and the main warehouse cannot be safely deconstructed.

Alternative #1 is not the recommended cleanup alternative since it does not address Site risks.

ALTERNATIVE #2: Alternative #2 would abate ACBM in the main warehouse (for an area 1,031 square feet in size); dispose of PCB-containing light ballasts; and remove and dispose of lead-contaminated soils (for a triangular shaped area 750 ft square feet in size). The advantages of this alternative include removal of the health hazards of lead-contaminated soils; removal of ACBM associated with the deconstruction of the main warehouse; and relatively low cost. The disadvantages of this alternative include the potential for distribution of contaminated dust due to excavation and transportation activities.

Alternative #2 is the recommended cleanup alternative for the Site because it is cost effective and removes all health hazards with regard to achieving Project goals; removal of the lead-contaminated soils in that area of the property would allow for future construction plans and the property would not be subject to an environmental lien; abatement and removal of the ACBM in the main warehouse would allow for safe deconstruction and redevelopment of the property.

ALTERNATIVE #3: Alternative #3 would abate ACBM in the main warehouse (for an area 1,031 square feet in size); dispose of PCB-containing light ballasts; and cap (i.e., contain-in-place) the lead-contaminated soils (for a triangular shaped area 750 ft square feet in size). The advantages of this alternative are that ACBM is safely removed from the main warehouse; and the building can subsequently be deconstructed. The disadvantages of this alternative include the requirement that institutional controls be imposed on the Site to ensure capped contaminated soils do not pose risk to future users at the Site. This would require an environmental lien be placed on the Site and any proposed redevelopment of the Site could not involve disturbance of the area of lead-contaminated soils.

Alternative #3 is not the recommended cleanup alternative for the Site since it does not allow for the proposed unrestricted redevelopment of the project to take place safely.

3.3 RECOMMENDED CLEANUP ALTERNATIVE:

As described above, **Alternative #2: Soil Removal and Disposal, Abatement and Disposal Prior to Deconstruction** is the recommended cleanup alternative. This remedy includes asbestos abatement and the disposal of PCB-containing light ballasts by a certified asbestos contractor, who would perform abatement activities in accordance with applicable regulations. Under the recommended cleanup alternative, the abatement contractor would be required to obtain a permit from DEQ, mobilize to the Site, remove ACBM, and properly encapsulate and dispose of ACBM. All personnel hired to remove the ACBM must be accredited in accordance with Federal (40 CFR 763.90) and State (MCA 75-2-511) regulations. This includes use of a 40-hour trained Asbestos Contractor Supervisor to oversee removal and handling of asbestos. This individual would oversee abatement to ensure that ACBM is properly segregated from other deconstruction wastes and transported to an appropriate disposal facility. In accordance with OSHA requirements, site workers would be required to use personal air monitoring equipment during abatement of friable asbestos. After abatement, an asbestos inspector would perform visual clearance inspection and sampling of the work areas to confirm each area is free from miscellaneous debris. Clearance sampling would be completed in accordance with 40 CFR 763.90 to ensure asbestos in post-abatement air are not above regulatory thresholds. Following abatement and clearance sampling, a report by a 40-hour accredited third party asbestos Contractor Supervisor will document that clearance sample results and targeted materials are no longer present, and that no debris or dust remains. The contractor will be responsible for providing monitoring and appropriate personal protection.

The recommended alternative would also include removal of lead-contaminated soil by a certified contractor who would perform the removal of the surface soils (from zero to one-foot below ground surface) located in the area behind the Quonset hut where the lead-contaminated soils were identified. The volume of targeted soil is estimated at 40-50 cubic yards. Disposal at the Missoula Landfill may be a viable option; this would likely require a Toxicity Characteristic Leaching Procedure (TCLP) analysis by a certified laboratory (EPA method is SW846-1311). Following the removal of the targeted soils, samples would be taken from the bottom and sidewalls of the excavation and sent for expedited lab analysis to determine if concentrations of lead above the applicable EPA and DEQ screening levels remains. If analyses indicated that contamination above generic screening levels remains, soil would be removed a further six inches from the area the sample(s) was taken from. The area would again be sampled for expedited lab analysis and the process repeated until all samples show lead concentrations below the applicable screening level.

4.0 ADMINISTRATIVE RECORD

For questions or the administrative record regarding the proposed project, please contact:

Tyler Walls
Brownfields Program Specialist
Community Planning, Development and Innovation (CPDI)
City of Missoula | 406-552-6108 | wallst@ci.missoula.mt.us
435 Ryman St, Missoula, MT 59802

5.0 PROJECT INFORMATION CONTACTS

For more information, please contact Tyler Walls (listed above) or the following:

Mike Bouchee
Bouchee Development LLC
Missoula, MT | 406-214-1618 | mike@boucheedevelopment.com

Kurt Mayne
Director of Vocational Services
Opportunity Resources, Inc. (ORI)
Missoula, MT| 406-329-1768 | kurtism@orimt.org

6.0 REFERENCES

Shannon Environmental Management. *Phase 1 Environmental Assessment: Site Assessment Report. Old Missoula Feed Mill, 501 Ash St, Missoula, MT*. December 1991.

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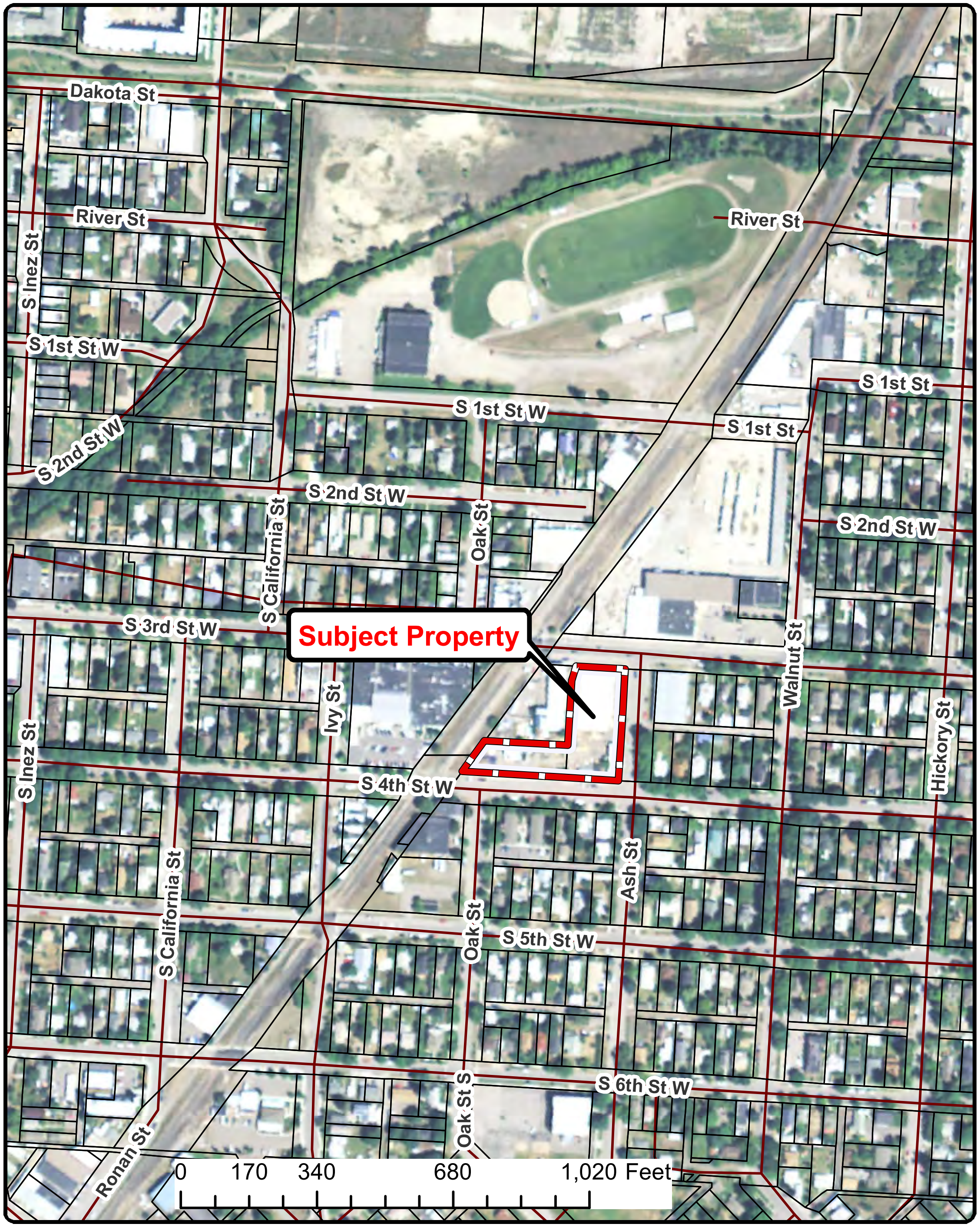
EPA, 2019. *Green Remediation Best Management Practices: Excavation and Surface Restoration. A Fact Sheet About the Concepts and Tools for Using Best Management Practices to Reduce the Environmental Footprint of Activities Associated with Assessing and Remediating Contaminated Sites*. Office of Land and Emergency Management (5203). EPA 542-F-19-002. August 2019 Update.

APPENDIX A

FIGURES

FIGURE 1 – VICINITY MAP
FIGURE 2 – SITE MAP



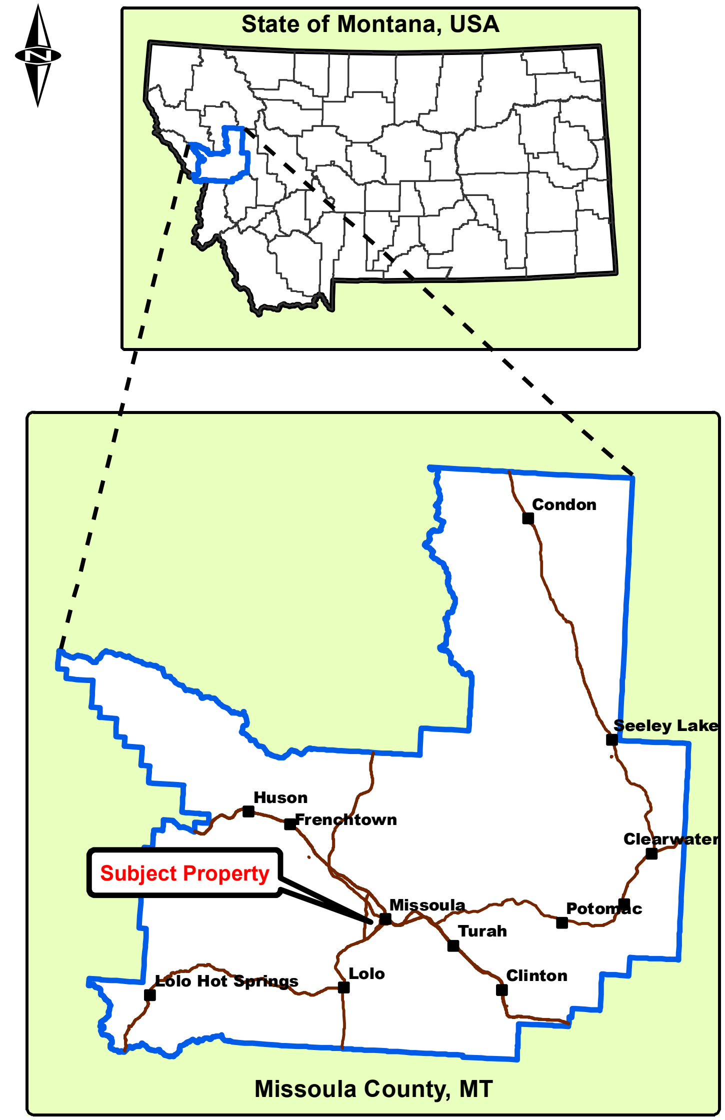


Figure 1 -Location Map

Opportunity Resources Inc.
901 S 3rd St W
Missoula, MT 59801

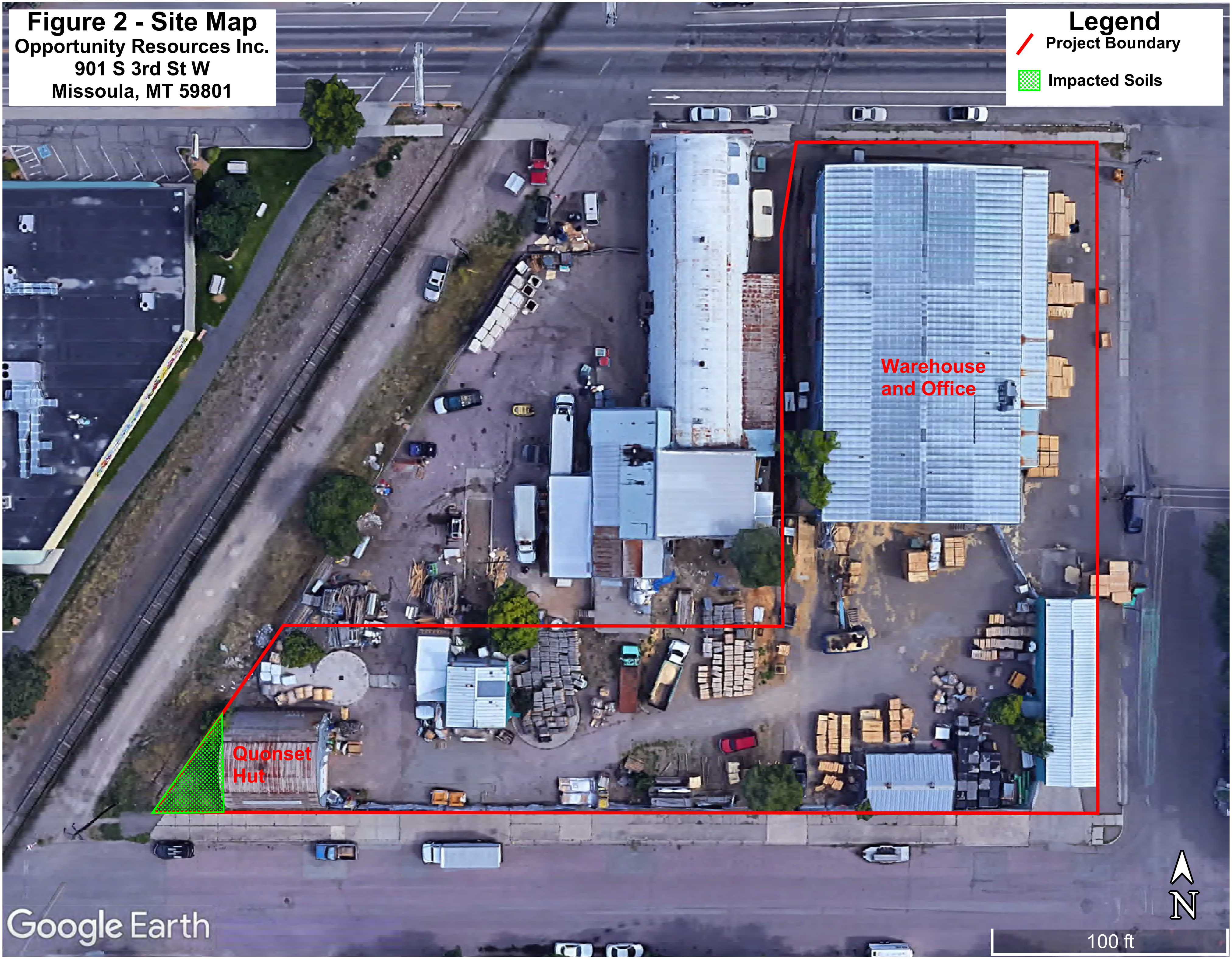


Figure 2 - Site Map
Opportunity Resources Inc.
901 S 3rd St W
Missoula, MT 59801

APPENDIX B

TABLE 1: SOIL SAMPLE ANALYTICAL RESULTS

Table 1: Soil Sample Analytical Results -Opportunity Resources

Volatile Petroleum Hydrocarbons (all units in mg/kg-dry unless otherwise noted)

Field Sample ID	Date Collected	Site Name	Sample Interval (ft)	Field Screen PID (ppm)	MTBE	Benzene	Toluene	Ethylbenzen	Xylenes	Napthalene	C9-C10 Aromatics	C_5-C_8 Aliphatics	C9-C12 Aliphatics	TPH	EPH-Screen
Laboratory Reporting Limit Range					0.10-0.12	0.050-0.058	0.050-0.058	0.050-0.058	0.050-0.058	0.10-0.12	2.0-2.3	2.0-2.3	2.0-2.3	2.0-2.3	10-303
Surface Soils															
ORI-BA-C1-0-6	10/3/2017	Boiler	0-0.5	0.4	ND	ND	0.048	ND	ND	ND	ND	ND	ND	ND	1,470
ORI-FA-C1-0-6	10/3/2017	Fueling	0-0.5	117.0	ND	ND	1.9	0.038	0.19	ND	ND	1.9	ND	4.9	1,090
ORI-QH-C1-0-6	10/3/2017	Quonset	0-0.5	0.6	ND	ND	0.1	ND	0.12	ND	ND	ND	ND	ND	479
ORI-SC(1-5)-0-6	10/3/2017	Yard	0-0.5	2.4	ND	ND	0.12	ND	ND	ND	ND	ND	ND	ND	1,270
Tier 1 RBSLs Surface Soils[1]					0.25	0.33	100	6.4	72	4.3	130	52	77	N/A	200
Subsurface Soils															
ORI-FA-C2-4-8	10/3/2017	Fueling	4-8	0.3	ND	ND	ND	ND	ND	0.22	ND	ND	ND	ND	218
ORI-QH-C2-4-8	10/3/2017	Quonset	4-8	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.6
ORI-BA-C2-6-8	10/3/2017	Boiler	6-8	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.2
Tier 1 RBSLs Subsurface Soils[2]					0.25	0.33	100	130	610	62	720	410	640	N/A	200
QA/QC															
ORI-SCD-0-6	10/3/2017	Yard Dup.	0-0.5	2.4	ND	ND	0.23	ND	ND	ND	ND	ND	ND	ND	930
ORI-FB1	10/3/2017	Equip Blank	0-0.5	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ORI-SC(1-5)-0-6-Jar001A	10/3/2017	Yard Dup.	0-0.5	---	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,540
ORI-SC(1-5)-0-6-Jar002B-2	10/3/2017	Yard Dup.	0-0.5	---	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	704
ORI-SC(1-5)-0-6-Jar003-C	10/3/2017	Yard Dup.	0-0.5	---	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	775
ORI-SC(1-5)-0-6-Jar002B-1	10/3/2017	Yard Dup.	0-0.5	---	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	737

FRACTIONATION & PAH RESULTS (all units in mg/kg-dry)

EPH-Screen	C_{11}-C_{22} Aromatics	C9-C18 Aliphatics	C_{19}-C_{36} Aliphatics	Anthracene	Benz(a)-Anthracene	Benzo(a)-Pyrene	Benzo(b)-flouranthene	Benzo(ghi)-perylene	Benzo(k)-flouranthene	Chrysene	Fluoranthene	Indeno(1,2,3-cd) pyrene	Naphthalene	Phenatherene	Pyrene
Laboratory Reporting Limit Range	10-158	10-158	10-158	0.039-0.91	0.039-0.91	0.039-0.91	0.039-0.91	0.039-0.91	0.039-0.91	0.039-0.91	0.039-0.91	0.039-0.91	0.039-0.91	0.039-0.91	0.039-0.91
Surface Soils															
ORI-BA-C1-0-6	224	ND	329	ND	ND	ND	ND	ND	ND	ND	0.29	ND	0.12	ND	0.19
ORI-QH-C1-0-6	94	ND	161	ND	0.08	0.046	0.12	0.095	0.071	0.079	0.13	0.09	0.049	ND	0.1
ORI-FA-C1-0-6	229	ND	208	ND	0.18	0.11	0.068	0.077	0.077	0.077	0.19	0.043	0.047	0.14	0.19
ORI-SC(1-5)-0-6	303	ND	466	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ORI-SC(1-5)-0-6-Jar001A	147	ND	242	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ORI-SC(1-5)-0-6-Jar002B-2	142	ND	209	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ORI-SC(1-5)-0-6-Jar003-C	140	ND	227	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ORI-SC(1-5)-0-6-Jar002B-1	122	ND	187	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tier 1 RBSLs Surface Soils[1]	490	110	24,000	2,200	1.3	0.13	1.3	n/a	13	130	300	1.3	4.3	n/a	220
Subsurface Soils															
ORI-FA-C2-4-8	38	ND	42	0.17	0.23	0.34	0.26	0.18	0.23	0.48	0.78	0.21	ND	0.7	0.69
Tier 1 RBSLs Subsurface Soils[2]	2,000	900	200,000	14,000	35	12	120	n/a	1,200	3,500	440	380	62	n/a	430

METALS (all units in mg/kg-dry)

	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Zinc	Mercury
Std Laboratory Reporting Limit^	2	1	1	2	1	1	1	5	0.5
Surface Soils									
ORI-BA-C1-0-6	5	148	ND	11	20	ND	ND	124	ND
ORI-QH-C1-0-6	6	250	ND	11	676	ND	ND	215	ND
ORI-FA-C1-0-6	11	382	ND	11	83	ND	ND	128	ND
ORI-SC(1-5)-0-6	6	181	2	9	66	ND	ND	145	ND
Subsurface Soils									
ORI-BA-C2-6-8	5	161	ND	8	7	ND	ND	29	ND
ORI-QH-C2-4-8	3	100	ND	11	5	ND	ND	25	ND
ORI-FA-C2-4-8	9	123	ND	10	38	ND	ND	96	ND
QA/QC									
ORI-SCD-0-6	4	178	1	10	53	ND	ND	121	ND
ORI-FB1	ND	ND	ND	ND	ND	ND	ND	ND	ND
RSLs for Residential Soils[3]	0.68	**1,500**	**7**	**12,000**	**400**	**39**	**39**	**2,300**	**1**
Background Threshold Values[4]	**22.5**	429	0.7	44.4	29.8	0.7	0.3	118	NA

NOTES:

[1]Tier 1 RBSLs for Residential Surface Soils with groundwater >20 feet deep

[2]Tier 1 Construction RBSLs for Subsurface Soils with groundwater >20 feet deep

[3]Regional Screening Levels for Residential soils exposure

[4] Background Concentrations of Inorganic Constituents in Montana Surface Soils

Blue Cells represent samples that failed the EPH-Screen and were further analyzed

Tan Cells represent QA/QC Samples

Yellow Cells represent exceedances of Montana Background Concentrations and RSLs for residential soils

APPENDIX C

TABLE 2: BUILDING MATERIALS SAMPLING REPORT & ANALYSIS RESULTS

Table 2: Building Materials Sampling Report and Analysis Results

Building and Room	Sample ID	Material Description	Quantity	Results[1]	Sample Location	Comments
SWB - Small Work Building						
SWB lunchroom	ORI-SWB-LR-CT01	12"x12" ceiling tile and mastic	184 ft^2	ND	North side of lunchroom	Materials are in this room only
SWB lunchroom	ORI-SWB-LR-CT02	12"x12" ceiling tile and mastic		ND	Middle of lunchroom	
SWB lunchroom	ORI-SWB-LR-CT03	12"x12" ceiling tile and mastic		ND	South side of lunchroom	
WH - Warehouse						
WH Meeting Room	ORI-WH-MR-FT01	12"x12" gray floor tile and mastic	272 ft^2	ND	Under sink in meeting room	Materials are in this room only
WH Meeting Room	ORI-WH-MR-FT02	12"x12" gray floor tile and mastic		ND	Below door stop in meeting room, north door	
WH Meeting Room	ORI-WH-MR-FT03	12"x12" gray floor tile and mastic		ND	By South door entrance in meeting room	
WH Lunchroom	ORI-WH-LR-FT01	12"x12" gray/brown floor tile and mastic	1031 ft^2	7% Chrysotile	Northwest corner of lunchroom	Found in floor tile only, not in mastic.
WH Lunchroom	ORI-WH-LR-FT02	12"x12" gray/brown floor tile and mastic		7% Chrysotile	Beneath thermostat on South wall in lunchroom	
WH Lunchroom	ORI-WH-LR-FT03	12"x12" gray/brown floor tile and mastic		10% Chrysotile	Northeast corner by door to work area in lunchroom	
WH Men's bathroom	ORI-WH-MBR-FT01	12"x12" light gray floor tile and mastic	256 ft2	ND	Beneath sinks on East wall in men's bathroom	Materials are in this room only
WH Men's bathroom	ORI-WH-MBR-FT02	12"x12" light gray floor tile and mastic		ND	Utility room in men's bathroom	
WH Men's bathroom	ORI-WH-MBR-FT03	12"x12" light gray floor tile and mastic		ND	South privacy stall in men's bathroom	
WH Women's bathroom	ORI-WH-WBR-BB01	Gray vinyl baseboard and mastic	30 linear ft	ND	South side of women's bathroom	Materials are in this room only
WH Women's bathroom	ORI-WH-WBR-BB02	Gray vinyl baseboard and mastic		ND	West side of women's bathroom	
WH Women's bathroom	ORI-WH-WBR-BB03	Gray vinyl baseboard and mastic		ND	North side of women's bathroom	
WH Lunchroom	ORI-WH-LR-BB01	White vinyl baseboard and mastic	314 linear ft	ND	North wall of lunchroom	Materials are in meeting room, lunchroom and men's bathroom
WH Lunchroom	ORI-WH-LR-BB02	White vinyl baseboard and mastic		ND	North wall of meeting room	
WH Lunchroom	ORI-WH-LR-BB03	White vinyl baseboard and mastic		ND	West wall of men's bathroom	
WH Meeting Room	ORI-WH-MR-CT01	2'X4' white ceiling tile with small perforations	1700 ft^2	ND	Meeting room above sink	Materials are in meeting room, lunchroom, offices and stored in loft.
WH Meeting Room	ORI-WH-MR-CT02	2'X4' white ceiling tile with small perforations		ND	Meeting room north of pillar	
WH Lunchroom	ORI-WH-BR-CT03	2'X4' white ceiling tile with small perforations		ND	Main east entry to lunchroom	
WH Lunchroom	ORI-WH-BR-CT04	2'X4' white ceiling tile with small perforations		ND	Above clock, west wall of lunchroom	
WH Loft	ORI-WH-LO-CT05	2'X4' white ceiling tile with small perforations		ND	Tiles stored in loft above main warehouse offices	
WH Loft	ORI-WH-LO-CT2-01	2'x4' white ceiling tile w/ elongated fissures & small perforations	120 ft^2	ND	Collected from tiles stored in loft above main warehouse offices, lunchroom etc.	Tiles are stored only and not currently utilized.
WH Loft	ORI-WH-LO-CT2-02	2'x4' white ceiling tile w/ elongated fissures & small perforations		ND		
WH Loft	ORI-WH-LO-CT2-03	2'x4' white ceiling tile w/ elongated fissures & small perforations		ND		
WH Lunchroom	ORI-WH-BR-SM01	Wallboard, joint compound and tape	1832 ft^2	ND	East entry/foyer into lunchroom	Materials are in women's bathroom, men's bathroom and East entrance foyer
WH Men's bathroom	ORI-WH-MBR-SM02	Wallboard, joint compound and tape		ND	By sink in meeting room	
WH Men's bathroom	ORI-WH-MBR-SM03	Wallboard with plastic, joint compound and tape		ND	Utility room in men's bathroom	
WH Men's bathroom	ORI-WH-MBR-SM04	Wallboard, joint compound and tape		ND	Behind main door	
WH Men's bathroom	ORI-WH-MBR-SM05	Wallboard with plastic, joint compound and tape		ND	Under paper towel dispenser	

NOTES: [1]**Analyzed by:** Pace Analytical Services Minneapolis, Minnesota **Method:** Polarized Light Microscopy EPA Method EPS 600/R-93/116
All ACBM Samples were bulk samples collected on 10/4/2017

APPENDIX D
COST BREAKDOWN FOR CLEANUP ALTERNATIVES

Engineer's Estimate of Cost Breakdown for Brownfields Cleanup Alternatives

Project Name: **ORI ABCA**
Project #: **211115**
Date: **10/15/23**

			Estimate
Alternative	**01**		
	1.01	No Action	$ -
		SUBTOTAL FOR ALT 1	**$ -**
Alternative	**02**		
	2.01	Mobilization/Demob	$ 500.00
	2.02	Excavate/load/haul/disposal fees of 50 yds of soil = 50 yds * $80/yd	$ 4,000.00
	2.03	Asbestos Abatement = 1000 ft2 * $5/ft2	$ 5,000.00
	2.04	Other Hazardous Substance Disposal	$ 500.00
	2.05	Reporting/Project Management	$ 950.00
		SUBTOTAL FOR ALT 2	**$ 10,950.00**
Alternative	**03**		
	3.01	Mobilization/Demob	$ 500.00
	3.02	Concrete Cap = 750 ft2 * $20/ft2	$ 1,500.00
	3.03	Asbestos Abatement = 1000 ft2 * 5 $/ft2	$ 5,000.00
	3.04	Other Hazardous Substance Disposal	$ 500.00
	3.05	Reporting/Project Management	$ 950.00
	3.06	Implement Covenant restrictions on Deed	$ 3,500.00
		SUBTOTAL FOR ALT 3	**$ 11,950.00**