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Draft 2022 Residential Metals Abatement Program (RMAP) Field Sampling Plan (FSP) – Indoor Dust – Group 1

Aware Early Head Start, Lincoln Head Start,
Highland View Christian School, Silver Bow
Montessori, and Small World Day Care

23 March 2022

Project No.: 0612471

Signature Page

23 March 2022

Draft 2022 Residential Metals Abatement Program (RMAP) Field Sampling Plan (FSP) – Indoor Dust – Group 1

Aware Early Head Start, Head Start (Lincoln), Highland View Christian School, Silver Bow Montessori, and Small World Day Care



Elsie King
Senior Chemist



Christopher Berg
Project Manager



Thomas J. Beckman
Partner

ERM-West, Inc.
1 Ninth Street Island Drive
Livingston, MT 59047

T: +1 406 222 7600

F: +1 406 222 7677

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FIELD SAMPLING PLAN (FSP) – INDOOR DUST – GROUP 1

Aware Early Head Start, Lincoln Head Start, Highland View Christian School, Silver Bow Montessori, and Small World Day Care

Acronyms and Abbreviations

Name	Description
Agencies	U.S. Environmental Protection Agency and Montana Department of Environmental Quality
BPSOU	Butte Priority Soils Operable Unit
DEQ	Montana Department of Environmental Quality
FSP	Field Sampling Plan
ICP-MS	inductively coupled plasma mass spectrometry
QC	quality control
QAPP	Quality Assurance Project Plan
RMAP	Residential Metals Abatement Program
SOP	standard operating procedure
USEPA	U.S. Environmental Protection Agency

APPROVAL PAGE

**Butte Priority Soils Operable Unit Residential Metals Abatement Program
Field Sampling Plan
Aware Early Head Start, Lincoln Head Start, Highland View Christian School, Silver Bow
Montessori, and Small World Day Care – Indoor Dust**

Approved: _____ Date: _____
Nikia Greene, Remedial Project Manager
U.S. Environmental Protection Agency, Region 8
Quality Assurance Approval Official

Approved: _____ Date: _____
Daryl Reed, Project Officer
Montana Department of Environmental Quality

Approved: _____ Date: _____
Eric Hassler, Director
Department of Reclamation and Environmental Services
Butte-Silver Bow County

Approved: _____ Date: _____
Mike McAnulty, Liability Manager
Atlantic Richfield Company

The Field Sampling Plan is effective on date of approval.

FIELD SAMPLING PLAN (FSP) – INDOOR DUST – GROUP 1

Aware Early Head Start, Lincoln Head Start, Highland View Christian School, Silver Bow Montessori, and Small World Day Care

DISTRIBUTION LIST

Butte Priority Soils Operable Unit Residential Metals Abatement Program Field Sampling Plan

Aware Early Head Start, Lincoln Head Start, Highland View Christian School, Silver Bow Montessori, and Small World Day Care – Indoor Dust

QAPP Recipients	Title	Organization	Telephone Number	E-mail Address
Nikia Greene	Remedial Project Manager	U. S. Environmental Protection Agency	(406) 457-5019	Greene.Nikia@epa.gov
Daryl Reed	State Project Officer	Montana Department of Environmental Quality	(406) 444-6433	dreed@mt.gov
Eric Hassler	Director	Montana Department of Environmental Quality	(406) 497-5042	ehassler@bsb.mt.gov
Julia Crain	Assistant Director	Butte-Silver Bow County (Department of Reclamation and Environmental Services)	(406) 497-6264	crain@bsb.mt.gov
Chad Anderson	Manager of Human Health/RMAP Division	Butte-Silver Bow County (Department of Reclamation and Environmental Services)	(406) 497-6278	canderson@bsb.mt.gov
Abigail Peltoma	Manager of Data Management Division/Quality Assurance Manager	Butte-Silver Bow County (Department of Reclamation and Environmental Services)		apeltomaa@bsb.mt.gov
Mike McAnulty	Liability Manager	Atlantic Richfield Company	(406) 723-1822	mcanumc@bp.com
Christopher Berg	Project Manager	ERM for Atlantic Richfield Company	(612) 347-7169	Christopher.Berg@erm.com
Jennifer Anderson	Analytical Laboratory Project Manager	Pace Analytical Services for Atlantic Richfield Company	(612) 607-6436	Jennifer.Anderson@pacelabs.com
Kenneth Miller	Field Team Leader	ERM for Atlantic Richfield Company	(907) 250-4475	Kenneth.Miller@erm.com
Lester Dupes	Data Quality Assurance Manager	Environmental Standards, Inc. for Atlantic Richfield Company	(610) 935-5577 Ext.416	ldupes@envstd.com
Thomas Beckman	Project Oversight	ERM for Atlantic Richfield Company	(925) 482-8202	thomas.beckman@erm.com

A complete list of personnel to receive this document is provided on the associated cover letter distribution list. Atlantic Richfield Company will distribute the original Agency approved document.

1. INTRODUCTION

This Field Sampling Plan (FSP) was developed for Group 1 of the 2022 Residential Metals Abatement Program (RMAP) school indoor dust sampling plan for Butte, Montana area schools and non-residential daycares. Indoor dust sampling decisions, procedures, data quality objectives (DQOs), standard operating procedures (SOPs), sampling analytical methods, sampling equipment, quality control (QC) samples, and data validation and assessment will be in accordance with the Draft Residential Metals Abatement Program Quality Assurance Project Plan (QAPP) (Non-Residential Parcels) (Atlantic Richfield Company, 2022)

2. SCHOOL INDOOR DUST SAMPLING SCOPE

Table 2-1 lists the schools and daycares covered in this FSP with the applicable sampling decision criteria.

Table 2-1 Group 1 Sampling Decision Criteria

School / Daycare Name	Constructed Before 1980	Remodeled After 1980	Attics or Crawlspace Exposure Pathways Present	Exterior Surface Soil Impacts Present
Aware Early Head Start	No	No	No	Yes
Lincoln Head Start	Yes	Yes	No	Yes
Highland View Christian School	No	No	No	No
Silver Bow Montessori	Yes	No	No	No
Small World Day Care	Yes	No	No	No

Figure 1 shows the locations of Group 1 schools and daycares. The areas to be sampled for each school/daycare are shown in Figures 2 through 6. Table 1 lists the school and daycare properties (along with Resident ID's, geocodes, ownership information, and age of school), and Tables 2 through 6 show the anticipated sampling quantities for the school/daycares(s) covered by this FSP.

3. SCHOOL INDOOR DUST SAMPLING SCHEDULE

Sampling schedules will be finalized through ongoing conversations with U.S. Environmental Protection Agency (USEPA), Montana Department of Environmental Quality (DEQ) (the Agencies), and the appropriate school representatives. Sampling efforts are tentatively scheduled to begin during April of 2022. Schools and daycares with lead, arsenic, or mercury impacts above action levels in exterior surface soils will be prioritized.

4. FIELD SAMPLING PLAN

Indoor dust sampling will be performed in accordance with the Butte Priority Soils Operable Unit (BPSOU) Non-Residential School/Daycare Indoor Dust Sampling Decision Framework provided in Figure 5 of the QAPP (Atlantic Richfield Company, 2022), and the sampling procedures discussed below. The dust sampling decision framework includes:

- Step One: Collection of indoor dust samples from entrance floor mats and floor surfaces in accessible areas at all schools and daycares;
- Step Two: Collection of dust samples from inaccessible surfaces in schools and daycares (or portions of schools and daycares) constructed or remodeled before 1980; and
- Step Three: Collection of dust samples from attics or crawlspaces where an exposure pathway to interior spaces exists.

4.1 Sampling Delineation

Representatives from Atlantic Richfield, USEPA, Butte Silver Bow County, and the Group 1 schools/daycares conducted inspections of the buildings in October and November 2021. The inspections and ensuing discussions among the field personnel led to the selection of location of the dust samples, as discussed below. The planned number, type, and location description of samples to be collected at each school are shown in Tables 2 through 6. The steps for collecting indoor dust samples are provided in Section 3.5 of the QAPP (Atlantic Richfield Company, 2022). Opportunistic sampling or deviations from the sampling plan will be confirmed with USEPA in advance.

4.1.1 *Aware Early Head Start*

Aware Early Head Start was constructed in 2001, and has not been remodeled. Exposure pathways from building attics or crawlspaces to interior spaces are not complete. Exterior surface soils contain metals at concentrations above action levels requiring soil remediation. Sampling locations for Aware Early Head Start are subdivided into three location groups described below.

- Decision Unit 1 – West wing classrooms, offices
- Decision Unit 2 – East wing classrooms, offices
- Inaccessible Areas – Closets, boiler room, storage

As defined in the QAPP, inaccessible areas are areas that are not commonly accessed or occupied by students or daycare children. Due to the extent of exterior soil impacts present, indoor dust sampling will include Step One (floor sampling) and Step Two (inaccessible surface sampling) as specified in Section 4.0 above.

4.1.1.1 *Floor Mats*

Floor mats will be placed and sampled at two entrances to the building shown in Figure 2. Floor mat samples will be collected 1 week after placement.

4.1.1.2 *Floor Samples*

Two floor samples will be collected as shown in Figure 2: one in the hallway in the open area between Decision Unit 1 and Decision Unit 2; and one in the furnace/laundry room.

4.1.1.3 *Micro-Vacuum Samples*

Micro-vacuum samples will be collected from locations identified in Figure 2 and listed in Table 2. As defined in the QAPP, micro-vacuum samples for Decision Units will be collected from a minimum of two inaccessible surface sub-locations (i.e., window tracts/sills, I-beams, light fixtures, and HVAC vent covers) within the same room or space (e.g., mechanical room) to form a composite sample. Inaccessible Area micro-vacuum samples will not be composited. The availability of dust, the presence of dust accumulation on structures (counter tops, window sills/tracks, suspended lighting, I-beams, HVAC vents, etc.), and the

accessibility of a surface or available infrastructure within the subject area will determine whether a sample can be collected.

4.1.2 Lincoln Head Start

Lincoln Head Start was constructed in 1958, and has been remodeled extensively in 2021 and 2022. An attic is not present, but a crawlspace is present beneath portions of the building. Exposure pathways from the crawlspace to interior spaces are not complete. Exterior surface soils contained metals at concentrations above action levels requiring limited soil remediation. Sampling locations for Lincoln Head Start are subdivided into four location groups described below.

- Decision Unit 1 – Gymnasium, stage
- Decision Unit 2 – East classrooms
- Decision Unit 3 – Southwest classrooms, administration
- Inaccessible Areas – Closets, storage

Indoor dust sampling will include Step One (floor sampling) as specified in Section 4.0 above.

4.1.2.1 Floor Mats

Floor mats will be placed and sampled at three entrances to the building shown in Figure 3. Floor mat samples will be collected 1 week after placement.

4.1.2.2 Floor Samples

Two floor samples will be collected as shown in Figure 3: one in the hallway outside of the L-4 classroom and one in the hallway outside of the restrooms.

4.1.3 Highland View Christian School

Highland View Christian School was constructed in 2010, and has not been remodeled. Building attics and crawlspaces are not present. Exterior surface soils did not contain metals at concentrations above action levels requiring soil remediation. Sampling locations for Highland View Christian School are subdivided into two location groups described below.

- Decision Unit 1 – West classroom
- Inaccessible Areas – Storage areas, basement

Indoor dust sampling will be limited to Step One (floor sampling) as specified in Section 4.0 above.

4.1.3.1 Floor Mats

Floor mats will be placed and sampled at three entrances to the building shown in Figure 4. Floor mat samples will be collected 1 week after placement.

4.1.3.2 Floor Samples

One floor sample will be collected from the hallway outside of the kitchen as shown in Figure 4.

4.1.4 Silver Bow Montessori

Silver Bow Montessori was constructed in 1947, and has not been remodeled. Exposure pathways from building attics to interior spaces are not complete. There are no crawlspaces present. Exterior surface

soils did not contain metals at concentrations above action levels requiring soil remediation. Sampling locations for Silver Bow Montessori are subdivided into four location groups described below.

- Decision Unit 1 – West classroom
- Decision Unit 2 – North building
- Decision Unit 3 – South classroom
- Inaccessible Areas – Storage areas, basement

Indoor dust sampling will be limited to Step One (floor sampling) and Step Two (inaccessible surface sampling) as specified in Section 4.0 above.

4.1.4.1 Floor Mats

Floor mats will be placed and sampled at five entrances to the building shown in Figure 5. Floor mat samples will be collected 1 week after placement.

4.1.4.2 Floor Samples

One floor sample will be collected from the storage closet as shown in Figure 5.

4.1.4.3 Micro-Vacuum Samples

Micro-vacuum samples will be collected from locations identified in Figure 5 and listed in Table 5. As defined in the QAPP, micro-vacuum samples for Decision Units will be collected from a minimum of two inaccessible surface sub-locations (i.e., window tracts/sills, I-beams, light fixtures, and HVAC vent covers) within the same room or space (e.g., mechanical room) to form a composite sample. Inaccessible Area micro-vacuum samples will not be composited. The availability of dust, the presence of dust accumulation on structures (counter tops, window sills/tracks, suspended lighting, I-beams, HVAC vents, etc.), and the accessibility of a surface or available infrastructure within the subject area will determine whether a sample can be collected.

4.1.5 Small World Day Care

Small World Day Care was constructed in 1920, and has not been remodeled after 1980. Exposure pathways from the building attic to interior spaces are not complete. There are no crawlspaces present. Exterior surface soils did not contain metals at concentrations above action levels requiring soil remediation. Sampling locations for Small World Day Care are subdivided into three location groups described below.

- Decision Unit 1 – First floor offices, kitchen, cafeteria
- Decision Unit 2 – Second floor classrooms
- Inaccessible Areas – Storage areas, closets

Indoor dust sampling will be limited to Step One (floor sampling) and Step Two (inaccessible surface sampling) as specified in Section 4.0 above.

4.1.5.1 Floor Mats

Floor mats will be placed and sampled at two entrances to the building shown in Figure 6. Floor mat samples will be collected 1 week after placement.

4.1.5.2 Floor Samples

Two floor samples will be collected as shown in Figure 6: one from the first floor hallway and one from the second floor hallway.

4.1.5.3 Micro-Vacuum Samples

Micro-vacuum samples will be collected from locations identified in Figure 6 and listed in Table 6. As defined in the QAPP, micro-vacuum samples for Decision Units will be collected from a minimum of two inaccessible surface sub-locations (i.e., window tracts/sills, I-beams, light fixtures, and HVAC vent covers) within the same room or space (e.g., mechanical room) to form a composite sample. Inaccessible Area micro-vacuum samples will not be composited. The availability of dust, the presence of dust accumulation on structures (counter tops, window sills/tracks, suspended lighting, I-beams, HVAC vents, etc.), and the accessibility of a surface or available infrastructure within the subject area will determine whether a sample can be collected.

4.2 Dust Sampling Procedures

Dust sampling density, location, and compositing decisions will be made according to the information provided in Section 3.2 of the QAPP (Atlantic Richfield Company, 2022).

4.3 Deviations

This section addresses any deviations to the Agencies-approved QAPP (Atlantic Richfield Company, 2022) pertaining to 2022 BPSOU RMAP school indoor dust sampling defined in this FSP. Deviations include the following:

- No known deviations at this time
- Any future deviations will be discussed with the Agencies' field representative, documented in the field notes, and the associated Investigation and Data Summary Reports

5. LABORATORY METHODS

5.1 Indoor Dust Metals Analyses Methods

The dust samples will be digested according to USEPA Method 3050B, and arsenic and lead concentrations will be determined per USEPA Method 6020B (inductively coupled plasma mass spectrometry [ICP-MS]). Mercury concentrations will be determined per USEPA Method 7471B (Manual Cold-Vapor Technique).

6. QUALITY CONTROL

6.1 Field Quality Control Samples

Field QC will be conducted as stated in Sections 3.10 of the QAPP (Atlantic Richfield Company, 2022).

A field duplicate sample will be prepared from a split sample for floor mat or floor samples. Additional sample mass will be collected for matrix spike/matrix spike duplicate analysis at one location. Separate filter cassettes from collocated areas will be collected for micro-vacuum field duplicate, matrix spike and matrix spike duplicate samples. An equipment blank will be collected for floor dust samples. Filter cassette blanks will be collected for micro-vacuum samples.

7. REFERENCES

Atlantic Richfield Company, 2022. Residential Metals Abatement Program Quality Assurance Project Plan (Non-Residential Parcels – Indoor Dust). February 2022.

TABLES

Table 1
School Property List
Butte RMAP FSP Indoor Dust - Group 1
Butte, Montana

Count	Res-ID	Geocode	Name	Physical Address	Owner	Construction Date
1	S-0019	01119713106200000 01119713106330000 01119713106300000 01119713106250000	Aware Early Head Start	237 E Mercury Street, Butte, MT 59701	Aware Inc.	2001
3	S-0013	01119713226010000	Lincoln Head Start	W Broadway Street, Butte, MT 59701	Head Start Program, Butte	1958
19	S-0016	01119820227170000 01119820227240000 01119820227300000 01119820227150000	Highland View Christian School	2500 Grand Avenue, Butte, MT 59701	Montana Conference Association of Seventh Day Adventists Inc	2010
5	S-0015	01109506106060000	Silver Bow Montessori	1800 Sunset Road, Butte, MT 59701	Montessori Campus LLC	1947
17	S-0020	01119819428120000	Small World Day Care	1500 Cobban, Butte, MT 59701	Roman Catholic Bishop of Helena	1920

Table 2
Sample Task and Location Summary
Aware Early Head Start
Butte RMAP FSP Indoor Dust - Group 1
Butte, Montana

Time Frame	Location	Decision Unit Color	Description	Floor Surface Samples	Floor Mat Samples ¹	Micro-Vac Samples ²
1 Day	Decision Unit 1	Blue	West wing classrooms, offices	1	1	7
	Decision Unit 2	Green	East wing classrooms, offices	--	1	5
	Inaccessible Areas	Orange	Closets, boiler room, storage	1	--	10

Notes:

¹ = Floor mat samples will be placed at appropriate sample points the day other samples are being collected. Floor mat samples will be collected 1 week after placement.

² = Decision Unit samples will be micro-vacuumed from multiple sub-locations within the area sampled to form a composite sample, typically in the same room or space. Inaccessible Area micro-vacuum samples will not be composited.

Table 3
Sample Task and Location Summary
Lincoln Head Start
Butte RMAP FSP Indoor Dust - Group 1
Butte, Montana

Time Frame	Location	Decision Unit Color	Description	Floor Surface Samples	Floor Mat Samples¹
1 Day	Decision Unit 1	Blue	Gymnasium, stage	--	1
	Decision Unit 2	Green	East classrooms	2	1
	Decision Unit 3	Pink	Southwest classrooms, administration	--	1
	Inaccessible Areas	Orange	Closets, storage	--	--

Notes:

¹ = Floor mat samples will be placed at appropriate sample points the day other samples are being collected. Floor mat samples will be collected 1 week after placement.

Table 4
Sample Task and Location Summary
Highland View Christian School
Butte RMAP FSP Indoor Dust - Group 1
Butte, Montana

Time Frame	Location	Decision Unit Color	Description	Floor Surface Samples	Floor Mat Samples¹
1 Day	Decision Unit 1	Blue	Entire school	1	3
	Inaccessible Areas	Orange	Janitor closet, storage	--	--

Notes:

¹ = Floor mat samples will be placed at appropriate sample points the day other samples are being collected. Floor mat samples will be collected 1 week after placement.

Table 5
Sample Task and Location Summary
Silver Bow Montessori
Butte RMAP FSP Indoor Dust - Group 1
Butte, Montana

Time Frame	Location	Decision Unit Color	Description	Floor Surface Samples	Floor Mat Samples ¹	Micro-Vac Samples ²
1 Day	Decision Unit 1	Blue	West classroom	--	2	1
	Decision Unit 2	Green	North building	--	1	1
	Decision Unit 3	Pink	South classroom	--	2	3
	Inaccessible Areas	Orange	Storage areas, basement	1	--	7

Notes:

¹ = Floor mat samples will be placed at appropriate sample points the day other samples are being collected. Floor mat samples will be collected 1 week after placement.

² = Decision Unit samples will be micro-vacuumed from multiple sub-locations within the area sampled to form a composite sample, typically in the same room or space. Inaccessible Area micro-vacuum samples will not be composited.

Table 6
Sample Task and Location Summary
Small World Day Care
Butte RMAP FSP Indoor Dust - Group 1
Butte, Montana

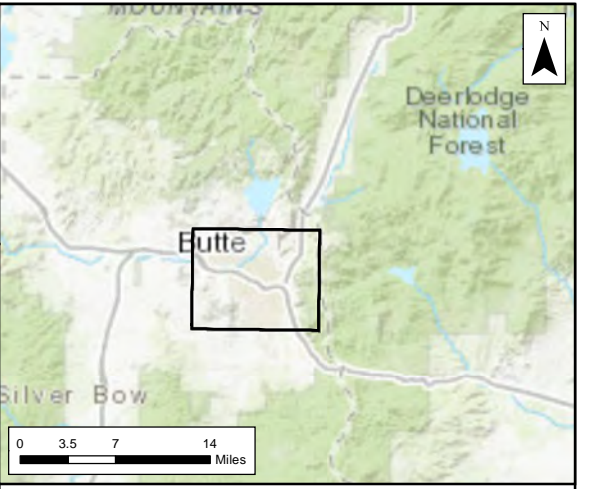
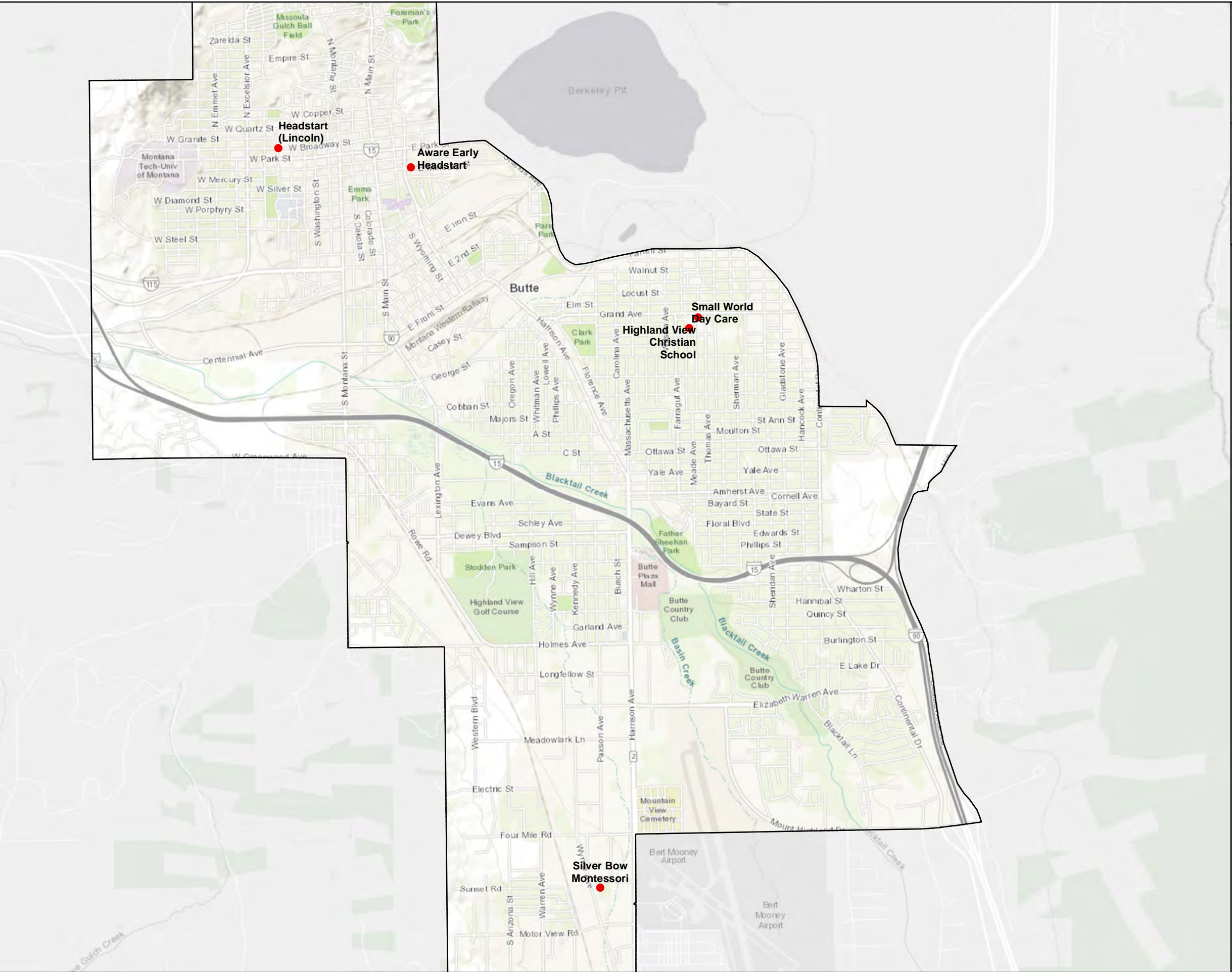
Time Frame	Location	Decision Unit Color	Description	Floor Surface Samples	Floor Mat Samples ¹	Micro-Vac Samples ²
1 Day	Decision Unit 1	Blue	First floor offices, kitchen, cafeteria	1	2	7
	Decision Unit 2	Green	Second floor classrooms	1	--	7
	Inaccessible Areas	Orange	Storage areas, closets	--	--	4

Notes:



¹ = Floor mat samples will be placed at appropriate sample points the day other samples are being collected. Floor mat samples will be collected 1 week after placement.

² = Decision Unit samples will be micro-vacuumed from multiple sub-locations within the area sampled to form a composite sample, typically in the same room or space. Inaccessible Area micro-vacuum samples will not be composited.

FIGURES



Legend

-  Butte City Limits
-  Group 1 Schools

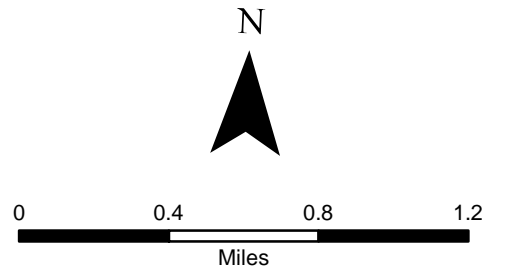
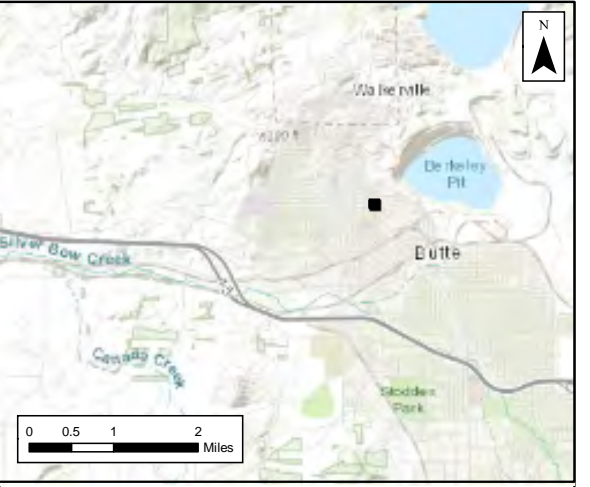


Figure 1
Locations of Group 1 Schools
Butte, Montana 59701



Legend

- ▲ Floor Surface Sample
- Floor Mat Sample
- Micro-vacuum Surface Sample
- Inaccessible Area
- Decision Unit 1
- Decision Unit 2

Notes:
 Room ID's reflect verbiage used on site maps provided by Butte School District

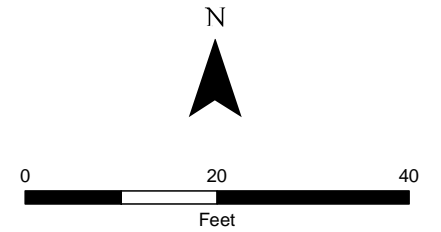
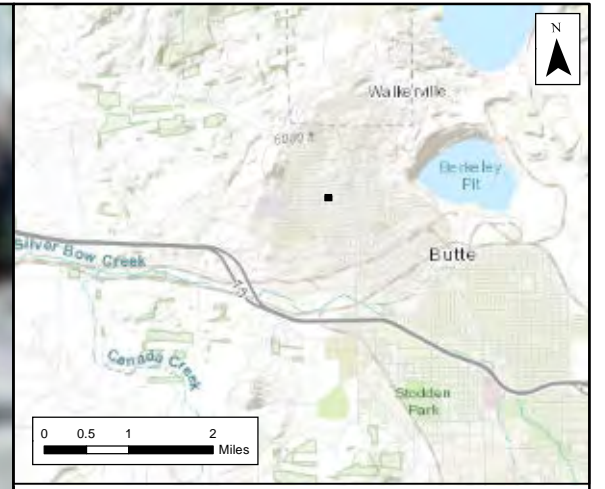
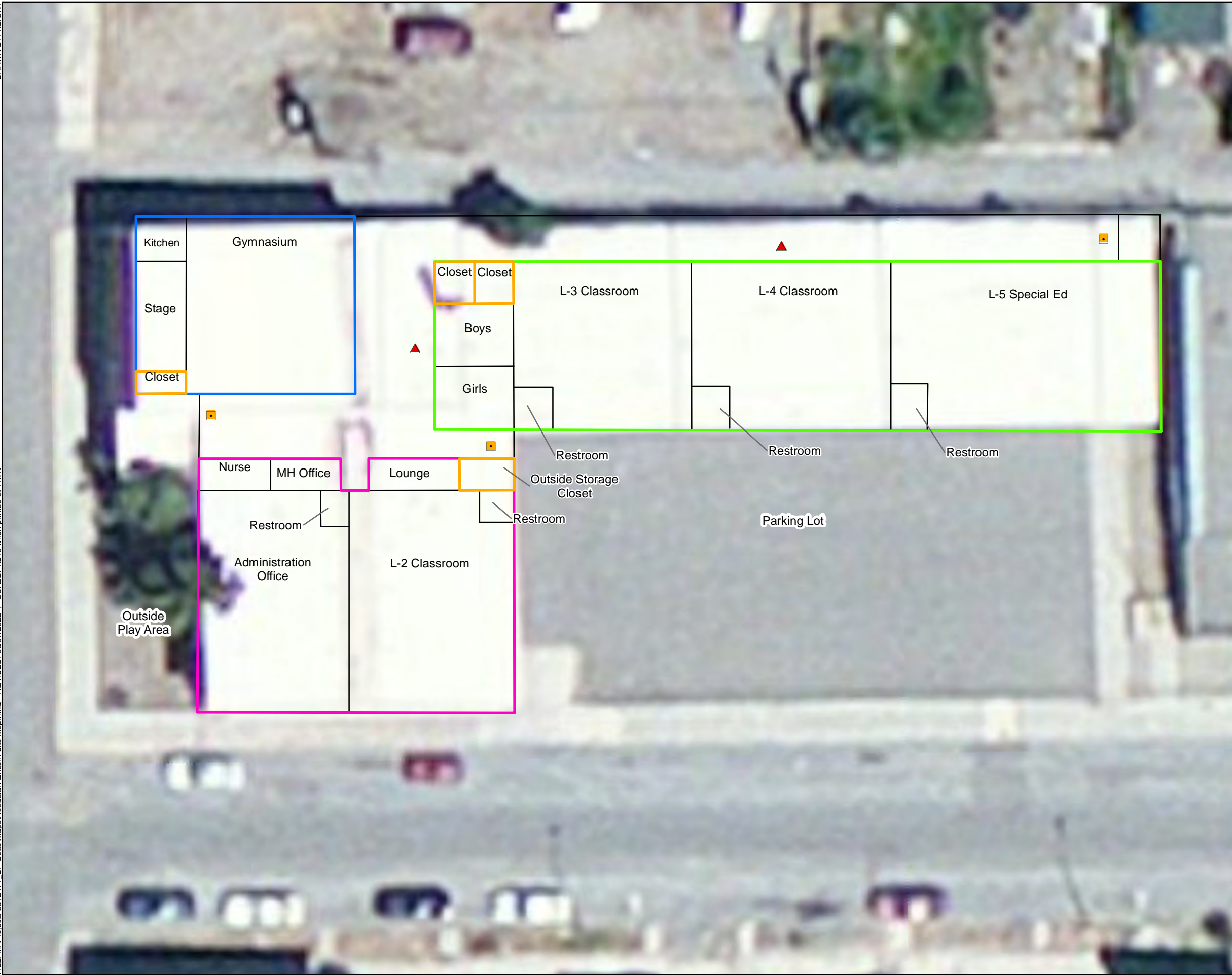


Figure 2
Aware Early Head Start
Site Map
 237 E Mercury
 Butte, MT 59701



Legend

- ▲ Floor Surface Sample
- Floor Mat Sample
- Inaccessible Area
- Decision Unit 1
- Decision Unit 2
- Decision Unit 3

Notes:
 Room ID's reflect verbiage used on site maps provided by Butte School District

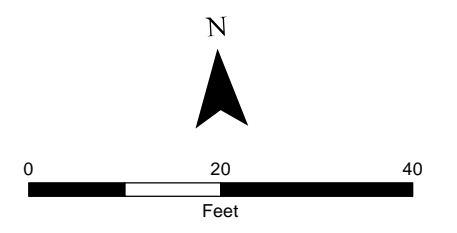
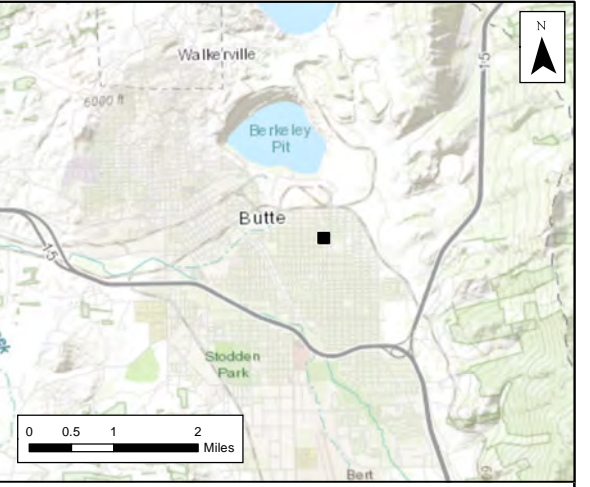


Figure 3
Lincoln Head Start Site Map
 100 N Clark St
 Butte, MT 59701



- Legend**
- Floor Surface Sample
 - Floor Mat Sample
 - Inaccessible Area
 - Decision Unit 1

Notes:
Room ID's reflect verbiage used on site maps provided by Butte School District

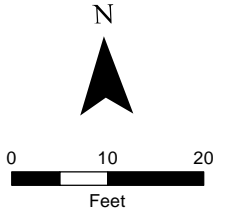
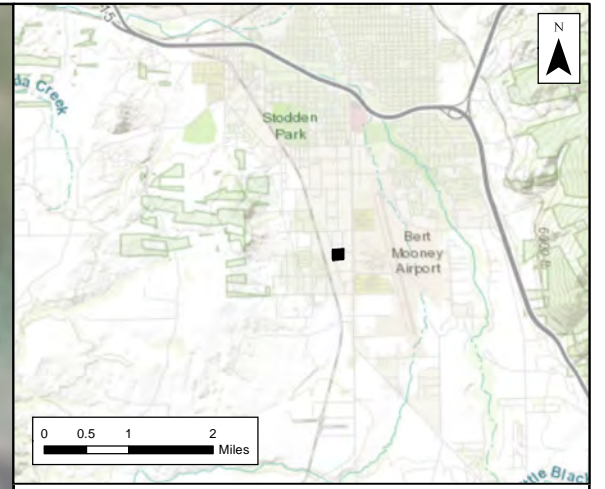
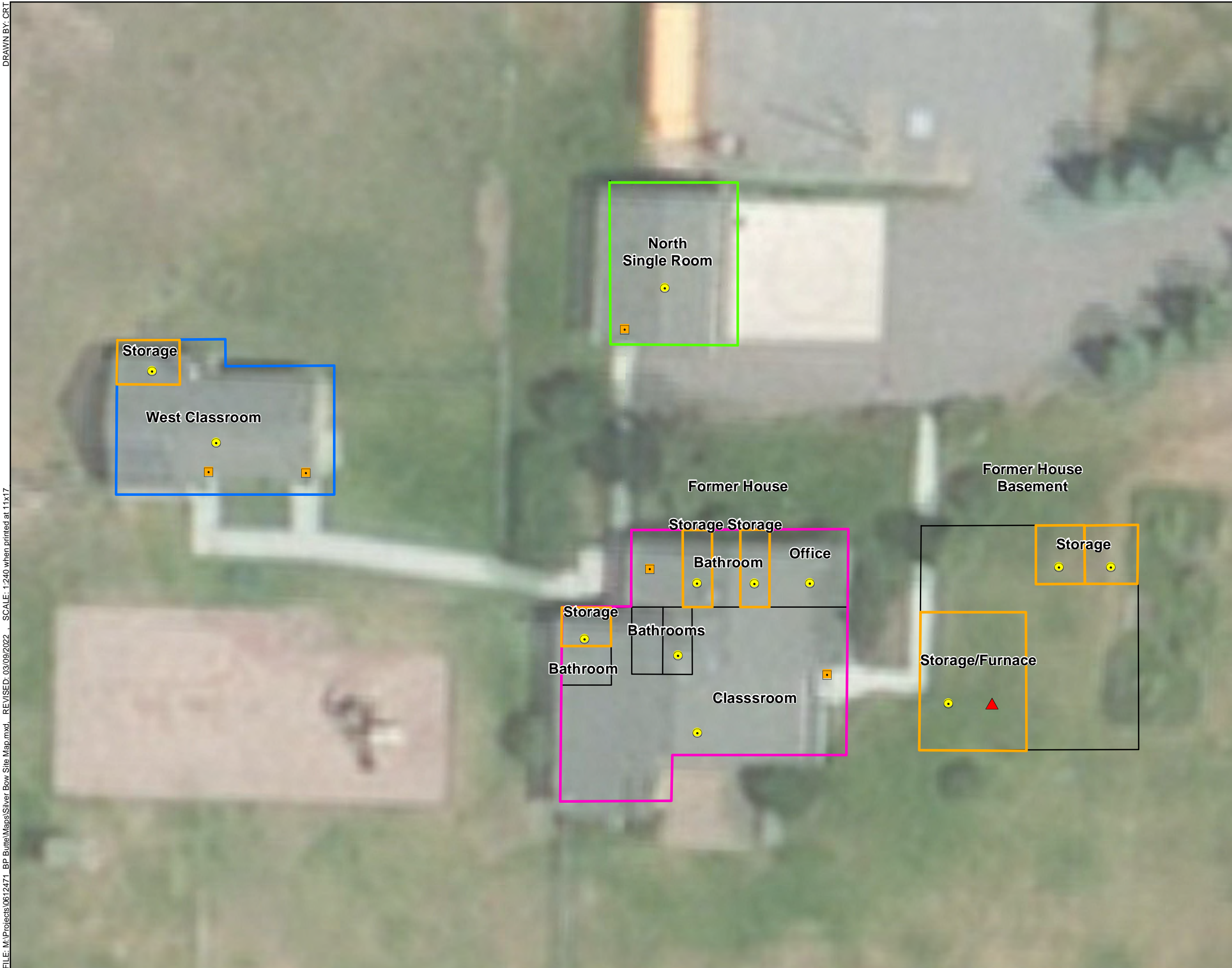


Figure 4
Highland View Christian School
Site Map
2500 Grand Ave
Butte, MT 59701



Legend

- ▲ Floor Surface Sample
- Floor Mat Sample
- Micro-vacuum Surface Sample
- Inaccessible Area
- Decision Unit 1
- Decision Unit 2
- Decision Unit 3

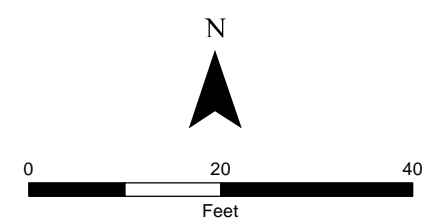
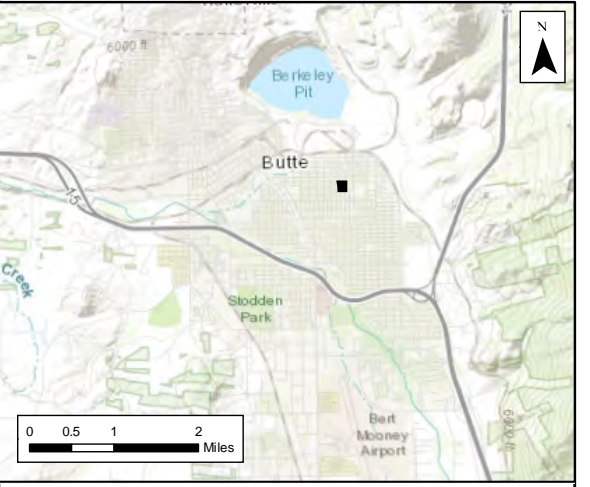


Figure 5
Silver Bow Montessori Site Map
 1800 Sunset Rd
 Butte, MT 59701



- Legend**
- ▲ Floor Surface Sample
 - Floor Mat Sample
 - Micro-vacuum Surface Sample
 - Inaccessible Area
 - Decision Unit 1
 - Decision Unit 2

Notes:
Room ID's reflect verbiage used on site maps provided by Butte School District

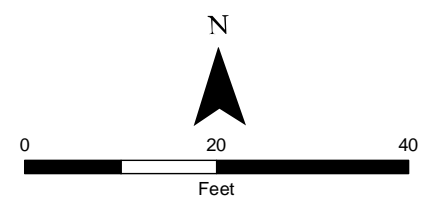


Figure 6
Small World Daycare Site Map
First and Second Floors
1621 Thornton Ave
Butte, MT 59701

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ERM's Livingston Office

1 Ninth Street Island Drive
Livingston, MT 59047

T: +1 406 222 7600

F: +1 406 222 7677

www.erm.com