IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MONTANA
GREAT FALLS DIVISION

UNITED STATES OF AMERICA,

and

STATE OF MONTANA,

Plaintiffs,

v. Civil Action No. 4:23-cv-00050-BMM

ATLANTIC RICHFIELD COMPANY and
ARCO ENVIRONMENTAL
REMEDIATION, LLC,

Defendants.

CONSENT DECREE FOR THE COMMUNITY SOILS PORTION OF OPERABLE UNIT 1 OF THE ACM SMELTER AND REFINERY SITE

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WHEREAS, the United States of America ("United States"), on behalf of the Administrator of the United States Environmental Protection Agency ("EPA"), has filed a complaint in this matter under sections 106 and 107 of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA").

WHEREAS, the United States in its complaint seeks, *inter alia*: (1) reimbursement of costs incurred by EPA and the Department of Justice ("DOJ") for response actions at the ACM Smelter and Refinery Site in Cascade County, Montana ("Site"), together with accrued interest; and (2) performance by the defendants of a response action at the Site consistent with the National Contingency Plan, 40 C.F.R. part 300 ("NCP").

WHEREAS, in accordance with the NCP and section 121(f)(1)(F) of CERCLA, EPA notified the State of Montana ("State") on December 7, 2021, of negotiations with potentially responsible parties ("PRPs") regarding the implementation of the remedial design and remedial action ("RD/RA") for Operable Unit 1 ("OU1") of the Site, and EPA has provided the State with an opportunity to participate in such negotiations and to be a party to this Consent Decree ("Decree").

WHEREAS, in accordance with section 122(j)(1) of CERCLA, EPA has notified the Montana Department of Justice, Natural Resource Damage Program as well as the U.S. Department of the Interior, of negotiations with PRPs regarding the release of hazardous substances that may have resulted in injury to the natural resources under federal trusteeship and encouraged the trustee(s) to participate in the negotiation of this Decree.

WHEREAS, the State has joined the complaint under section 107 of CERCLA, and has also alleged that defendants are liable to the State under the Montana Comprehensive Environmental Cleanup and Responsibility Act ("CECRA"), Section 75-10-701, MCA, *et seq.*

WHEREAS, the defendants that have entered into this Decree ("Settling Defendants") do not admit any liability to Plaintiffs arising out of the transactions or occurrences alleged in the complaint, nor do they acknowledge that the release or threatened release of hazardous substance(s) at or from OU1 of the Site constitutes an imminent and substantial endangerment to the public health or welfare or the environment.

WHEREAS, in accordance with section 105 of CERCLA, EPA listed the Site on the National Priorities List ("NPL"), set forth at 40 C.F.R. part 300, Appendix B, by publication in the Federal Register on March 10, 2011, 76 Fed. Reg. 13,089.

WHEREAS, for purposes of the Remedial Investigation, OU1 was divided into the following sub-areas: Northern Community Soils Area of Interest; Southern Community Soils Area of Interest; Northern Outlying Area; Southern Outlying Area; and the Railroad Corridor.

WHEREAS, in response to a release or a substantial threat of a release of hazardous substances at or from the Site, Settling Defendants completed a Remedial Investigation for four sub-areas of OU1 (the Northern/Southern Community Soils Areas of Interest and the Northern/Southern Outlying Areas, collectively, "Community Soils") at the Site on August 6,

2015, and a Feasibility Study for the Community Soils portion of OU1 at the Site on October 4, 2017, in accordance with 40 C.F.R. § 300.430.

WHEREAS, in response to a release or a substantial threat of a release of hazardous substances at or from the Site, the Burlington Northern Santa Fe Railway Company, another PRP identified by EPA at the Site, completed a Remedial Investigation for the other sub-area of OU1 (the "Railroad Corridor") at the Site on May 12, 2015, and a Feasibility Study for the Railroad Corridor portion of OU1 at the Site on September 25, 2017, in accordance with 40 C.F.R. § 300.430.

WHEREAS, in accordance with section 117 of CERCLA and 40 C.F.R § 300.430(f), EPA published notice of the completion of the Feasibility Studies and of the proposed plan for remedial action for OU1 of the Site on June 1, 2019, in a major local newspaper of general circulation. EPA provided an opportunity for written and oral comments from the public on the proposed plan for remedial action. A copy of the transcript of the public meeting and comments received are available to the public as part of the administrative record upon which the Director, Superfund Emergency Management Division, EPA Region 8, based the selection of the response action.

WHEREAS, EPA selected a remedial action to be implemented at OU1 of the Site, which is embodied in a final Record of Decision ("OU1 Record of Decision"), executed on August 23, 2021, on which the Montana Department of Environmental Quality ("MDEQ") had a reasonable opportunity to review and comment and on which MDEQ, on behalf of the State, has given its partial concurrence. The OU1 Record of Decision includes a summary of responses to the public comments. Notice of the OU1 Record of Decision was published in accordance with section 117(b) of CERCLA. The OU1 Record of Decision identifies distinct remedies for the Community Soils and the Railroad Corridor portions of OU1.

WHEREAS, based on the information currently available, EPA and MDEQ have determined that the Work will be properly and promptly conducted by Settling Defendants if conducted in accordance with this Decree.

WHEREAS, the Parties recognize, and the Court by entering this Decree finds, that this Decree has been negotiated by the Parties in good faith, that implementation of this Decree will expedite the cleanup of the Site and will avoid prolonged and complicated litigation between the Parties, and that this Decree is fair, reasonable, in the public interest, and consistent with CERCLA.

NOW, THEREFORE, it is hereby **ORDERED** and **DECREED** as follows:

I. JURISDICTION AND VENUE

1. This Court has jurisdiction over the subject matter of this action under 28 U.S.C. §§ 1331, 1367, and 1345, and sections 106, 107 and 113(b) of CERCLA, and personal jurisdiction over the Parties. Venue lies in this District under section 113(b) of CERCLA and 28 U.S.C. §§ 1391(b), and 1395(a), because the Site is located in this judicial district. This Court retains jurisdiction over the subject matter of this action and over the Parties for the purpose of

resolving disputes arising under this Decree, entering orders modifying this Decree, or effectuating or enforcing compliance with this Decree. Settling Defendants may not challenge the terms of this Decree or this Court's jurisdiction to enter and enforce this Decree.

II. PARTIES BOUND

2. This Decree is binding upon the United States and the State and upon Settling Defendants and their successors. Unless the United States otherwise consents, (a) any change in ownership or corporate or other legal status of any Settling Defendant, including any transfer of assets, or (b) any Transfer of the Site or any portion thereof, does not alter any of Settling Defendants' obligations under this Decree. Settling Defendants' responsibilities under this Decree cannot be assigned except under a modification executed in accordance with ¶ 68.

3. In any action to enforce this Decree, Settling Defendants may not raise as a defense the failure of any of their officers, directors, employees, agents, contractors, subcontractors, or any person representing Settling Defendants to take any action necessary to comply with this Decree. Settling Defendants shall provide notice of this Decree to each person representing Settling Defendants with respect to the Community Soils portion of OU1 of the Site or the Work. Settling Defendants shall provide notice of this Decree to each contractor performing any Work and shall ensure that notice of the Decree is provided to each subcontractor performing any Work.

III. DEFINITIONS

4. Subject to the next sentence, terms used in this Decree that are defined in CERCLA or the regulations promulgated under CERCLA have the meanings assigned to them in CERCLA and the regulations promulgated under CERCLA. Whenever the terms set forth below are used in this Decree, the following definitions apply:

"Atlantic Richfield" means Atlantic Richfield Company, its divisions and subsidiaries, and any predecessors in interest.

"AERL" means ARCO Environmental Remediation, L.L.C., its divisions and subsidiaries, and any predecessors in interest.

"CERCLA" means the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601-9675, and any amendments thereto.

"Community Soils" means the following sub-areas of OU1 of the Site: (1) Northern Community Soils Area of Interest, (2) Southern Community Soils Area of Interest, (3) Northern Outlying Area, and (4) Southern Outlying Area.

"Consent Decree" or "Decree" means this consent decree, all appendixes attached hereto (listed in Section XVIII), and all deliverables incorporated into the Decree under ¶ 7.6 of the SOW. If there is a conflict between a provision in Sections I through XXIII and a provision in any appendix or deliverable, the provision in Sections I through XXIII controls.

"Day" or "day" means a calendar day. In computing any period under this Decree, the day of the event that triggers the period is not counted and, where the last day is not a working day, the period runs until the close of business of the next working day. "Working day" means any day other than a Saturday, Sunday, or federal or State holiday.

"DOJ" means the United States Department of Justice.

"Effective Date" means the date upon which the Court's approval of this Decree is recorded on its docket.

"EPA" means the United States Environmental Protection Agency.

"Fund" means the Hazardous Substance Superfund established under section 9507 of the Internal Revenue Code, 26 I.R.C. § 9507.

"Future Response Costs" means all costs (including direct, indirect, payroll, contractor, travel, and laboratory costs) that the United States: (a) pays in connection with the Community Soils between October 1, 2022, and the Effective Date; and (b) pays after the Effective Date in implementing, overseeing, or enforcing this Decree, including: (i) in developing, reviewing and approving deliverables generated under this Decree; (ii) in overseeing Settling Defendants' performance of the Work; (iii) in assisting or taking action to obtain access or use restrictions under ¶ 12.e; (iv) in securing, implementing, monitoring, maintaining, or enforcing Institutional Controls, including any compensation paid; (v) in taking action under ¶ 22 (Access to Financial Assurance); (vi) in taking response action described in ¶ 50 because of Settling Defendants' failure to take emergency action under ¶ **5.5** of the SOW; (vii) in implementing a Work Takeover under ¶ 11; (viii) in implementing community involvement activities including the cost of any technical assistance grant provided under section 117(e) of CERCLA; (ix) in enforcing this Decree, including all costs paid under Section XI (Dispute Resolution) and all litigation costs; and (x) in conducting periodic reviews in accordance with section 121(c) of CERCLA. Future Response Costs includes all such costs that are paid by EPA to MDEQ through a cooperative agreement. Future Response Costs also includes all Interest accrued after September 30, 2022, on EPA's unreimbursed costs (including Past Response Costs) related to the Community Soils under section 107(a) of CERCLA.

"Including" or "including" means "including but not limited to."

"Institutional Controls" means Proprietary Controls (*i.e.*, easements or covenants running with the land that (i) limit land, water, or other resource use, provide access rights, or both and (ii) are created under common law or statutory law by an instrument that is recorded, or for which notice is recorded, in the appropriate land records office) and State or local laws, regulations, ordinances, zoning restrictions, or other governmental controls or notices that: (a) limit land, water, or other resource use to minimize the potential for human exposure to Waste Material at or in connection with the Site; (b) limit land, water, or other resource use to implement, ensure noninterference with, or ensure the protectiveness of the Remedial Action; (c) provide information intended to modify or guide human behavior at or in connection with the Site; or (d) any combination thereof.

"Interest" means interest at the rate specified for interest on investments of the Fund, as provided under section 107(a) of CERCLA, compounded annually on October 1 of each year. The applicable rate of interest will be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year. As of the date of lodging of this Decree, rates are available online at https://www.epa.gov/superfund/superfund-interest-rates.

"MDEQ" means the Montana Department of Environmental Quality and any predecessor or successor departments or agencies of the State.

"National Contingency Plan" or "NCP" means the National Oil and Hazardous Substances Pollution Contingency Plan promulgated under section 105 of CERCLA, codified at 40 C.F.R. part 300, and any amendments thereto.

"OU1" means the following sub-areas of OU1 of the Site: (1) Community Soils, and (2) Railroad Corridor.

"OU1 Record of Decision" means the EPA decision document that memorializes the selection of the remedial action relating to OU1 at the Site signed on August 23, 2021, by the Director, Superfund and Emergency Management Division, EPA Region 8, and all attachments thereto. The OU1 Record of Decision is attached as Appendix B.

"Paragraph" or "¶" means a portion of this Decree identified by an Arabic numeral or an upper- or lower-case letter.

"Parties" means the United States, the State, and Settling Defendants.

"Past Response Costs" means all costs (including direct, indirect, payroll, contractor, travel, and laboratory costs) that the United States or State paid in connection with Operable Unit 00 (Site Wide) and Operable Unit 1 (Community Soils) of the Site through September 30, 2022, plus all Interest on such costs accrued under section 107(a) of CERCLA through such date.

"Performance Standards" means the cleanup levels and other measures of achievement of the Remedial Action Objectives, applicable to the Work, as set forth in the OU1 Record of Decision.

"Plaintiffs" means the United States and the State.

"RCRA" means the Solid Waste Disposal Act, 42 U.S.C. §§ 6901-6992k, (also known as the Resource Conservation and Recovery Act).

"Remedial Action" means the remedial action activities identified and described in ¶ 1.3 of the SOW (Scope of the Remedy) and section CS 12 of the Record of Decision (Community Soils Selected Remedy). For purposes of this Decree, the Remedial Action does not include the remedial action activities for the Railroad Corridor identified and described in section RC 12 of the Record of Decision (Railroad Corridor Selected Remedy).

"Remedial Design" means those activities to be undertaken by Settling Defendants to develop plans and specifications for implementing the Remedial Action as set forth in the SOW.

"Scope of the Remedy" means the scope of the remedy set forth in ¶ 1.3 of the SOW and described in section CS 12 of the Record of Decision (Community Soils Selected Remedy). For purposes of this Decree, the Scope of the Remedy does not include the remedial action activities for the Railroad Corridor identified and described in section RC 12 of the Record of Decision (Railroad Corridor Selected Remedy).

"Section" means a portion of this Decree identified by a Roman numeral.

"Settling Defendants" means Atlantic Richfield and AERL. As used in this Decree, this definition means all settling defendants, collectively, and each settling defendant, individually.

"Site" means the ACM Smelter and Refinery Site, located generally on the north bank of the Missouri River, near Great Falls, Cascade County, Montana. The Site is depicted generally on the map attached as Appendix A.

"Special Account" means the special account, within the Fund, established for the Site by EPA under section 122(b)(3) of CERCLA.

"State" means the State of Montana, including all of its departments, agencies, and instrumentalities.

"State Future Response Costs" means all costs (including direct, indirect, payroll, contractor, travel, and laboratory costs) that the State pays after the Effective Date: (i) in overseeing Settling Defendants' performance of the Work; (ii) in assisting or taking action to obtain access or use restrictions under ¶ 12.e; (iii) in securing, implementing, monitoring, maintaining, or enforcing Institutional Controls, including any compensation paid; (iv) in taking response action described in ¶ 50 because of Settling Defendants' failure to take emergency action under ¶ 5.5 of the SOW; (v) in enforcing this Decree, including all costs paid under Section XI (Dispute Resolution) and all litigation costs. Such costs are State Future Response Costs if they are not reimbursed by EPA through a cooperative agreement.

"Statement of Work" or "SOW" means the document attached as Appendix C, which describes the activities Settling Defendants must perform to implement and maintain the effectiveness of the Remedial Action.

"Transfer" means to sell, assign, convey, lease, mortgage, or grant a security interest in, or where used as a noun, a sale, assignment, conveyance, or other disposition of any interest by operation of law or otherwise.

"United States" means the United States of America and each department, agency, and instrumentality of the United States, including EPA.

"Waste Material" means (a) any "hazardous substance" under Section 101(14) of CERCLA; (b) any pollutant or contaminant under section 101(33) of CERCLA; (c) any "solid waste" under section 1004(27) of RCRA; and (d) any "hazardous or deleterious material" under Section 75-10-701(8), MCA.

"Work" means all obligations of Settling Defendants under Sections V (Performance of the Work) through VIII (Indemnification and Insurance).

"Work Takeover" means EPA's assumption of the performance of any of the Work in accordance with ¶ 11.

IV. OBJECTIVES

5. The objectives of the Parties in entering into this Decree are to protect public health, welfare, and the environment through the design, implementation, and maintenance of a response action at the Community Soils portion of OU1 of the Site by Settling Defendants, to pay response costs of Plaintiffs, and to resolve and settle the claims of Plaintiffs against Settling Defendants as provided in this Decree.

V. PERFORMANCE OF THE WORK

6. Settling Defendants shall finance, develop, implement, operate, maintain, and monitor the effectiveness of the Remedial Action all in accordance with the SOW, any modified SOW and all EPA-approved, conditionally approved, or modified deliverables as required by the SOW or modified SOW, including the approved Remedial Action Work Plan/Final Design Report.

7. Nothing in this Decree and no EPA approval of any deliverable required under this Decree constitutes a warranty or representation by EPA or MDEQ that completion of the Work will achieve the Performance Standards.

8. Settling Defendants' obligations to finance and perform the Work and to pay amounts due under this Decree are joint and several. In the event of the insolvency of any Settling Defendant or the failure by any Settling Defendant to participate in the implementation of the Decree, the remaining Settling Defendants shall complete the Work and make the payments.

9. **Modifications to the Remedial Action and Further Response Actions**

a. Nothing in this Decree limits EPA's authority to modify the Remedial Action or to select further response actions for the Site in accordance with the requirements of CERCLA and the NCP. Nothing in this Decree limits Settling Defendants' rights, under sections 113(k)(2) or 117 of CERCLA, to comment on any modified or further response actions proposed by EPA.

b. If EPA modifies the Remedial Action in order to achieve or maintain the Performance Standards, or both, or to carry out and maintain the effectiveness of the Remedial Action, and such modification is consistent with the Scope of the Remedy, then Settling Defendants shall implement the modification as provided in ¶ 9.c.

c. Upon receipt of notice from EPA that it has modified the Remedial Action as provided in ¶ 9.b and requesting that Settling Defendants implement the modified Remedial Action, Settling Defendants shall implement the modification, subject to their right to initiate

dispute resolution under Section XI within 30 days after receipt of EPA's notice. In accordance with Section XIX (Modifications to Decree), Settling Defendants shall modify the SOW, or related work plans, or both in accordance with the Remedial Action modification or, if Settling Defendants invoke dispute resolution, in accordance with the final resolution of the dispute. The Remedial Action modification, the approved modified SOW, and any related work plans will be deemed to be incorporated into and enforceable under this Decree.

10. **Compliance with Applicable Law**. Nothing in this Decree affects Settling Defendants' obligations to comply with all applicable federal and state laws and regulations. Settling Defendants must also comply with all applicable or relevant and appropriate requirements of all federal and state environmental laws as set forth in the Record of Decision and the SOW. The activities conducted in accordance with this Decree, if approved by EPA, will be deemed to be consistent with the NCP as provided under section 300.700(c)(3)(ii).

11. **Work Takeover**

a. If EPA determines that Settling Defendants (i) have ceased to perform any of the Work required under this Section; (ii) are seriously or repeatedly deficient or late in performing the Work required under this Section; or (iii) are performing the Work required under this Section in a manner that may cause an endangerment to human health or the environment, EPA may issue a notice of Work Takeover to Settling Defendants, including a description of the grounds for the notice and a period of time ("Remedy Period") within which Settling Defendants must remedy the circumstances giving rise to the notice. The Remedy Period will be 30 days, unless EPA determines in its unreviewable discretion that there may be an endangerment, in which case the Remedy Period will be 10 days.

b. If, by the end of the Remedy Period, Settling Defendants do not remedy to EPA's satisfaction the circumstances giving rise to the notice of Work Takeover, EPA may notify Settling Defendants and, as it deems necessary, commence a Work Takeover.

c. EPA may conduct the Work Takeover during the pendency of any dispute under Section XI but shall terminate the Work Takeover if and when: (i) Settling Defendants remedy, to EPA's satisfaction, the circumstances giving rise to the notice of Work Takeover; or (ii) upon the issuance of a final determination under Section XI (Dispute Resolution) that EPA is required to terminate the Work Takeover.

VI. PROPERTY REQUIREMENTS

12. **Agreements Regarding Access and Noninterference**

a. As used in this Section, "Affected Property" means any real property, including the Site, where EPA determines, at any time, that access; land, water, or other resource use restrictions; Institutional Controls; or any combination thereof, are needed to implement the Remedial Action.

b. Settling Defendants shall use best efforts to secure from the owner(s) of all Affected Property, an agreement, enforceable by Settling Defendants and by Plaintiffs, requiring such owner to provide Plaintiffs and Settling Defendants, and their respective representatives,

contractors, and subcontractors with access at all reasonable times to such owner's property to conduct any activity regarding the Decree, including the following:

(1) implementing the Work and overseeing compliance with the Decree;

(2) conducting investigations of contamination at or near the Site;

(3) assessing the need for, planning, or implementing additional response actions at or near the Site;

(4) determining whether the Site is being used in a manner that is prohibited or restricted, or that may need to be prohibited or restricted under the Decree; and

(5) implementing, monitoring, maintaining, reporting on, and enforcing any land, water, or other resource use restrictions and Institutional Controls.

c. Further, each agreement required under ¶ 12.b must commit the owner to refrain from using its property in any manner that EPA determines will pose an unacceptable risk to human health or to the environment as a result of exposure to Waste Material, or will interfere with or adversely affect the implementation, integrity, or protectiveness of the Remedial Action.

d. As used in this Section, "best efforts" means the efforts that a reasonable person in the position of Settling Defendants would use to achieve the goal in a timely manner, including the cost of employing professional assistance and the payment of reasonable sums of money to secure access and/or use restriction agreements.

e. Settling Defendants shall provide to EPA and MDEQ a copy of each agreement required under ¶ 12.b. If Settling Defendants cannot accomplish what is required through best efforts in a timely manner, they shall notify EPA, and include a description of the steps taken to achieve the requirements. If the United States deems it appropriate, it may assist Settling Defendants, or take independent action, to obtain such access or use restrictions.

13. **Access and Noninterference by Settling Defendants**. The Settling Defendants shall: (a) provide Plaintiffs and the other Settling Defendant, and their representatives, contractors, and subcontractors with access at all reasonable times to the Site to conduct any activity regarding the Decree, including those listed in ¶ 12.b; and (b) refrain from using the Site in any manner that EPA determines will pose an unacceptable risk to human health or to the environment because of exposure to Waste Material, or will interfere with or adversely affect the implementation, integrity, or protectiveness of the Remedial Action.

14. If EPA determines in a decision document prepared in accordance with the NCP that Institutional Controls in the form of state or local laws, regulations, ordinances, zoning restrictions, or other governmental controls or notices are appropriate, Settling Defendants shall cooperate with EPA's and MDEQ's efforts to secure and ensure compliance with such Institutional Controls.

15. **Notice to Successors-in-Title**

a. Settling Defendants shall, prior to entering into a contract to Transfer any of its property that is part of the Site, or 60 days prior to a Transfer of such property, whichever is earlier:

(1) notify the proposed transferee that EPA has selected a remedy regarding the Community Soils portion of OU1 of the Site, that potentially responsible parties have entered into a Consent Decree requiring implementation of such remedy, and that the United States District Court has entered the Decree (identifying the name and civil action number of this case and the date the Court entered the Decree); and

(2) notify EPA and MDEQ of the name and address of the proposed transferee and provide EPA and MDEQ with a copy of the notice that it provided to the proposed transferee.

16. Notwithstanding any provision of the Decree, EPA and MDEQ retain all of their access authorities and rights, as well as all of their rights to require land, water, or other resource use restrictions and Institutional Controls, including related enforcement authorities, under CERCLA, RCRA, and any other applicable statute or regulations.

VII. FINANCIAL ASSURANCE

17. To ensure completion of the Work required under Section V, Atlantic Richfield, on behalf of Settling Defendants, shall secure financial assurance, initially in the amount of $2,286,000 ("Estimated Cost of the Work"), for the benefit of EPA. The financial assurance must: (i) be one or more of the mechanisms listed below, in a form substantially identical to the relevant sample documents available from EPA; and (ii) be satisfactory to EPA. As of the date of lodging of this Decree, the sample documents can be found under the "Financial Assurance - Settlements" category on the Cleanup Enforcement Model Language and Sample Documents Database at https://cfpub.epa.gov/compliance/models/. Atlantic Richfield may use multiple mechanisms if they are limited to surety bonds guaranteeing payment, letters of credit, trust funds, insurance policies, or some combination thereof. The following are acceptable mechanisms:

a. a surety bond guaranteeing payment, performance of the Work, or both, that is issued by a surety company among those listed as acceptable sureties on federal bonds as set forth in Circular 570 of the U.S. Department of the Treasury;

b. an irrevocable letter of credit, payable to EPA or at the direction of EPA, that is issued by an entity that has the authority to issue letters of credit and whose letter-of-credit operations are regulated and examined by a federal or state agency;

c. a trust fund established for the benefit of EPA that is administered by a trustee that has the authority to act as a trustee and whose trust operations are regulated and examined by a federal or state agency;

d. a policy of insurance that provides EPA with acceptable rights as a beneficiary thereof and that is issued by an insurance carrier that has the authority to issue insurance policies in the applicable jurisdiction(s) and whose insurance operations are regulated and examined by a federal or state agency;

e. a demonstration by Atlantic Richfield that it meets the relevant test criteria of ¶ 18, accompanied by a standby funding commitment that requires Atlantic Richfield to pay funds to or at the direction of EPA, up to the amount financially assured through the use of this demonstration in the event of a Work Takeover; or

f. a guarantee to fund or perform the Work executed in favor of EPA by a company: (1) that is a direct or indirect parent company of Atlantic Richfield or has a "substantial business relationship" (as defined in 40 C.F.R. § 264.141(h)) with Atlantic Richfield; and (2) demonstrates to EPA's satisfaction that it meets the financial test criteria of ¶ 18.

18. If Atlantic Richfield is seeking to provide financial assurance by means of a demonstration or guarantee under ¶ 17.e or 17.f it must, within 30 days after the Effective Date:

a. demonstrate that:

(1) Atlantic Richfield or guarantor has:

i. two of the following three ratios: a ratio of total liabilities to net worth less than 2.0; a ratio of the sum of net income plus depreciation, depletion, and amortization to total liabilities greater than 0.1; and a ratio of current assets to current liabilities greater than 1.5; and

ii. net working capital and tangible net worth each at least six times the sum of the Estimated Cost of the Work and the amounts, if any, of other federal, state, or tribal environmental obligations financially assured through the use of a financial test or guarantee; and

iii. tangible net worth of at least $10 million; and

iv. assets located in the United States amounting to at least 90 percent of total assets or at least six times the sum of the Estimated Cost of the Work and the amounts, if any, of other federal, state, or tribal environmental obligations financially assured through the use of a financial test or guarantee; or

(2) Atlantic Richfield or guarantor has:

i. a current rating for its senior unsecured debt of AAA, AA, A, or BBB as issued by Standard and Poor's or Aaa, Aa, A or Baa as issued by Moody's; and

ii. tangible net worth at least six times the sum of the Estimated Cost of the Work and the amounts, if any, of other federal, state, or tribal environmental obligations financially assured through the use of a financial test or guarantee; and

iii. tangible net worth of at least $10 million; and

iv. assets located in the United States amounting to at least 90 percent of total assets or at least six times the sum of the Estimated Cost of the Work and the amounts, if any, of other federal, state, or tribal environmental obligations financially assured through the use of a financial test or guarantee; and

b. submit to EPA: (1) a copy of an independent certified public accountant's report of the entity's financial statements for the latest completed fiscal year, which must not express an adverse opinion or disclaimer of opinion; and (2) a letter from its chief financial officer and a report from an independent certified public accountant substantially identical to the sample letter and reports available from EPA. As of the date of lodging of this Decree, a sample letter and report is available under the "Financial Assurance - Settlements" subject list category on the Cleanup Enforcement Model Language and Sample Documents Database at https://cfpub.epa.gov/compliance/models/.

19. If Atlantic Richfield is providing financial assurance by means of a demonstration or guarantee under ¶ 17.e or 17.f it must also:

a. annually resubmit the documents described in ¶ 18.b within 90 days after the close of Atlantic Richfield's or guarantor's fiscal year;

b. notify EPA within 30 days after Atlantic Richfield determines that it no longer satisfies the relevant financial test criteria and requirements set forth in this Section; and

c. provide to EPA, within 30 days of EPA's request, reports of the financial condition of Atlantic Richfield in addition to those specified in ¶ 18.b; EPA may make such a request at any time based on a belief that Atlantic Richfield or guarantor may no longer meet the financial test requirements of this Section.

20. Atlantic Richfield has selected, and EPA has found satisfactory, a surety bond guaranteeing payment prepared in accordance with ¶ 17 (Financial Assurance Requirements) as the initial form of financial assurance. Within 30 days after the Effective Date, Atlantic Richfield shall secure all executed or otherwise finalized mechanisms or other documents consistent with the EPA-approved form of financial assurance and shall submit such mechanisms and documents to the Regional Financial Management Officer, to DOJ, and to EPA and MDEQ in accordance with ¶ 66.

21. Atlantic Richfield shall diligently monitor the adequacy of the financial assurance. If Atlantic Richfield becomes aware of any information indicating that the financial assurance provided under this Section is inadequate or otherwise no longer satisfies the requirements of this Section, Atlantic Richfield shall notify EPA of such information within

10 days. If EPA determines that the financial assurance provided under this Section is inadequate or otherwise no longer satisfies the requirements of this Section, EPA will notify Atlantic Richfield of such determination. Atlantic Richfield shall, within 30 days after notifying EPA or receiving notice from EPA under this Paragraph, secure and submit to EPA for approval a proposal for a revised or alternative financial assurance mechanism that satisfies the requirements of this Section. EPA may extend this deadline for such time as is reasonably necessary for Atlantic Richfield, in the exercise of due diligence, to secure and submit to EPA a proposal for a revised or alternative financial assurance mechanism, not to exceed 60 days. Atlantic Richfield shall follow the procedures of ¶ 23 in seeking approval of, and submitting documentation for, the revised or alternative financial assurance mechanism. Atlantic Richfield's inability to secure financial assurance in accordance with this Section does not excuse performance of any other requirement of this Decree.

22. **Access to Financial Assurance**

a. If EPA issues a notice of a Work Takeover under ¶ 11.a, then, in accordance with any applicable financial assurance mechanism including the related standby funding commitment, EPA may require that any funds guaranteed be paid in accordance with ¶ 22.d.

b. If EPA is notified that the issuer of a financial assurance mechanism intends to cancel the mechanism, and Atlantic Richfield fails to provide an alternative financial assurance mechanism in accordance with this Section at least 30 days prior to the cancellation date, the funds guaranteed under such mechanism must be paid prior to cancellation in accordance with ¶ 22.d.

c. If, upon issuance of a notice of a Work Takeover under ¶ 11.a, either: (1) EPA is unable for any reason to promptly secure the resources guaranteed under any applicable financial assurance mechanism including the related standby funding commitment, whether in cash or in kind, to continue and complete the Work; or (2) the financial assurance is a demonstration or guarantee under ¶ 17.e or 17.f, then EPA is entitled to demand an amount, as determined by EPA, sufficient to cover the cost of the remaining Work to be performed. Atlantic Richfield shall, within 30 days after such demand, pay the amount demanded as directed by EPA.

d. Any amounts required to be paid under this ¶ 22 must be, as directed by EPA: (i) paid to EPA in order to facilitate the completion of the Work by EPA or by another person; or (ii) deposited into an interest-bearing account, established at a duly chartered bank or trust company that is insured by the FDIC, in order to facilitate the completion of the Work by another person. If payment is made to EPA, EPA may deposit the payment into the Fund or into the Special Account to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the Fund.

23. **Modification of Amount, Form, or Terms of Financial Assurance**. Beginning after the first anniversary of the Effective Date, and no more than once per calendar year, Atlantic Richfield may submit a request to change the form, terms, or amount of the financial assurance mechanism. Any such request must be submitted to EPA in accordance with ¶ 20, and

must include an estimate of the cost of the remaining Work, an explanation of the bases for the cost calculation, and a description of the proposed changes, if any, to the form or terms of the financial assurance. EPA will notify Atlantic Richfield of its decision regarding the request. Atlantic Richfield may initiate dispute resolution under Section XI regarding EPA's decision within 30 days after receipt of the decision. Atlantic Richfield may modify the form, terms, or amount of the financial assurance mechanism only: (a) in accordance with EPA's approval; or (b) in accordance with any resolution of a dispute under Section XI. Atlantic Richfield shall submit to EPA, within 30 days after receipt of EPA's approval or consistent with the terms of the resolution of the dispute, documentation of the change to the form, terms, or amount of the financial assurance instrument.

24. **Release, Cancellation, or Discontinuation of Financial Assurance**. Atlantic Richfield may release, cancel, or discontinue any financial assurance provided under this Section only: (a) if EPA issues a Certification of Work Completion under ¶ 5.9 of the SOW; (b) in accordance with EPA's approval of such release, cancellation, or discontinuation; or (c) if there is a dispute regarding the release, cancellation or discontinuance of any financial assurance, in accordance with the agreement, final administrative decision, or final judicial decision resolving such dispute under Section XI.

VIII. INDEMNIFICATION AND INSURANCE

25. **Indemnification**

a. Plaintiffs do not assume any liability by entering into this Decree or by virtue of any designation of Settling Defendants as EPA's and MDEQ's authorized representatives under section 104(e)(1) of CERCLA. Settling Defendants shall indemnify and save and hold harmless Plaintiffs and their officials, agents, employees, contractors, subcontractors, and representatives for or from any claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of Settling Defendants, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on Settling Defendants' behalf or under their control, in carrying out activities under this Decree, including any claims arising from any designation of Settling Defendants as EPA's and MDEQ's authorized representatives under section 104(e)(1) of CERCLA. Further, Settling Defendants agree to pay Plaintiffs all costs they incur including attorneys' fees and other expenses of litigation and settlement arising from, or on account of, claims made against Plaintiffs based on negligent or other wrongful acts or omissions of Settling Defendants, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control in carrying out activities under this Decree. Plaintiffs may not be held out as parties to any contract entered into by or on behalf of Settling Defendants in carrying out activities under this Decree. The Settling Defendants and any such contractor may not be considered an agent of Plaintiffs.

b. Either Plaintiff shall give Settling Defendants notice of any claim for which such Plaintiff plans to seek indemnification in accordance with this ¶ 25, and shall consult with Settling Defendants prior to settling such claim.

26. Settling Defendants covenant not to sue and shall not assert any claim or cause of action against Plaintiffs for damages or reimbursement or for set-off of any payments made or to be made to Plaintiffs, arising from or on account of any contract, agreement, or arrangement between any one or more of Settling Defendants and any person for performance of Work or other activities on or relating to the Community Soils portion of OU1 of the Site, including claims on account of construction delays. In addition, Settling Defendants shall indemnify and save and hold Plaintiffs harmless with respect to any claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between any one or more of Settling Defendants and any person for performance of Work at or relating to the Community Soils portion of OU1 of the Site, including claims on account of construction delays.

27. **Insurance**. Settling Defendants shall secure, by no later than 7 days before commencing any on-site Work, the following insurance: (a) commercial general liability insurance with limits of liability of $3 million per occurrence; and (b) automobile liability insurance with limits of liability of $3 million per accident. The insurance policy must name Plaintiffs as additional insureds with respect to all liability arising out of the activities performed by or on behalf of Settling Defendants under this Decree. Settling Defendants shall maintain this insurance until the first anniversary after issuance of EPA's Certification of Remedial Action Completion under ¶ 5.7 of the SOW. In addition, for the duration of this Decree, Settling Defendants shall satisfy, or shall ensure that their contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Settling Defendants in furtherance of this Decree. Prior to commencement of the Work, Settling Defendants shall provide to EPA certificates of such insurance and a copy of each insurance policy. Settling Defendants shall resubmit such certificates and copies of policies, if there is any change in insurance coverage. If Settling Defendants demonstrate by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering the same risks but in a lesser amount, then, with respect to that contractor or subcontractor, Settling Defendants need provide only that portion of the insurance described above that is not maintained by the contractor or subcontractor. Settling Defendants shall ensure that all submittals to EPA under this Paragraph identify the ACM Smelter and Refinery Site in Cascade County, Montana, and the civil action number of this case.

IX. PAYMENTS FOR RESPONSE COSTS

28. **Payment for Past Response Costs**. Within 30 days after the Effective Date, Settling Defendants shall pay EPA, in reimbursement of Past Response Costs in connection with the Site. Past Response Costs for Settling Defendants are $464,475.12. The Financial Litigation Unit ("FLU") of the United States Attorney's Office for the District of Montana shall provide to Settling Defendants, in accordance with ¶ 66, instructions for making this payment, including a Consolidated Debt Collection System ("CDCS") reference number. Settling Defendants shall make such payment by either Fedwire Electronic Funds Transfer (EFT) or at https://www.pay.gov in accordance with the FLU's instructions, including references to the CDCS Number. Settling Defendants shall send notices of this payment to DOJ and EPA in accordance with ¶ 66. If the payment required under this Paragraph is late, Settling Defendants shall pay, in addition to any stipulated penalties owed under Section XII, an additional amount for Interest accrued from the Effective Date until the date of payment.

29. **Payments by Settling Defendants for Future Response Costs**

a. **Periodic Bills**. On a periodic basis, EPA will send Settling Defendants a bill for Future Response Costs, including an "e-Recovery Report" or other standard cost summary listing direct and indirect costs paid by EPA, its contractors, subcontractors, and DOJ. Settling Defendants may initiate a dispute under Section XI regarding a Future Response Cost billing, but only if the dispute relates to one or more of the following issues: (i) whether EPA has made an arithmetical error; (ii) whether EPA has included a cost item that is not within the definition of Future Response Costs; or (iii) whether EPA has paid excess costs as a direct result of an EPA action that was inconsistent with a specific provision or provisions of the NCP. Settling Defendants must specify in the Notice of Dispute the contested costs and the basis for the objection.

b. **Payment of Bill**. Settling Defendants shall pay the bill, or if they initiate dispute resolution, the uncontested portion of the bill, if any, within 60 days after receipt of the bill. Settling Defendants shall pay the contested portion of the bill determined to be owed, if any, within 30 days after the determination regarding the dispute. Each payment for: (i) the uncontested bill or portion of bill, if late, and; (ii) the contested portion of the bill determined to be owed, if any, must include an additional amount for Interest accrued from the date of receipt of the bill through the date of payment. Settling Defendants shall make payment by either Fedwire Electronic Funds Transfer (EFT) or at https://www.pay.gov using the "EPA Miscellaneous Payments Cincinnati Finance Center" link, and including references to the Site/Spill ID and DJ numbers listed in ¶ 66 and the purpose of the payment. Settling Defendants shall send notices of this payment to DOJ and EPA in accordance with ¶ 66.

30. **Deposit of Payments**. EPA may, in its unreviewable discretion, deposit the amounts paid under ¶¶ 28 and 29.b in the Fund, in the Special Account, or both. EPA may, in its unreviewable discretion, retain and use any amounts deposited in the Special Account to conduct or finance response actions at or in connection with the Site, or transfer those amounts to the Fund.

X. FORCE MAJEURE

31. "Force majeure," for purposes of this Decree, means any event arising from causes beyond the control of Settling Defendants, of any entity controlled by Settling Defendants, or of Settling Defendants' contractors that delays or prevents the performance of any obligation under this Decree despite Settling Defendants' best efforts to fulfill the obligation. Given the need to protect public health and welfare and the environment, the requirement that Settling Defendants exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force majeure and best efforts to address the effects of any potential force majeure (a) as it is occurring and (b) following the potential force majeure such that the delay and any adverse effects of the delay are minimized to the greatest extent possible. "Force majeure" does not include financial inability to complete the Work or a failure to achieve the Performance Standards.

32. If any event occurs for which Settling Defendants will or may claim a force majeure, Settling Defendants shall notify EPA's Project Coordinator by email. The deadline for

the initial notice is seven days after the date Settling Defendants first knew or should have known that the event would likely delay performance. Settling Defendants shall be deemed to know of any circumstance of which any contractor of, subcontractor of, or entity controlled by Settling Defendants knew or should have known. Within 12 days thereafter, Settling Defendants shall send a further notice to EPA and MDEQ that includes: (i) a description of the event and its effect on Settling Defendants' completion of the requirements of the Decree; (ii) a description of all actions taken or to be taken to prevent or minimize the adverse effects or delay; (iii) the proposed extension of time for Settling Defendants to complete the requirements of the Decree; (iv) a statement as to whether, in the opinion of Settling Defendants, such event may cause or contribute to an endangerment to public health or welfare, or the environment; and (v) all available proof supporting their claim of force majeure. Failure to comply with the notice requirements herein regarding an event precludes Settling Defendants from asserting any claim of force majeure regarding that event, provided, however, that if EPA, despite late or incomplete notice, is able to assess to its satisfaction whether the event is a force majeure under ¶ 31 and whether Settling Defendants have exercised their best efforts under ¶ 31, EPA may, in its unreviewable discretion, excuse in writing Settling Defendants' failure to submit timely or complete notices under this Paragraph.

33. EPA, after a reasonable opportunity for review and comment by MDEQ, will notify Settling Defendants of its determination whether Settling Defendants are entitled to relief under ¶ 31, and, if so, the duration of the extension of time for performance of the obligations affected by the force majeure. An extension of the time for performance of the obligations affected by the force majeure shall not, of itself, extend the time for performance of any other obligation. Settling Defendants may initiate dispute resolution under Section XI regarding EPA's determination within 15 days after receipt of the determination. In any such proceeding, Settling Defendants have the burden of proving that they are entitled to relief under ¶ 31 and that their proposed extension was or will be warranted under the circumstances.

34. The failure by EPA to timely complete any activity under the Decree or the SOW is not a violation of the Decree, provided, however, that if such failure prevents Settling Defendants from timely completing a requirement of the Decree, Settling Defendants may seek relief under this Section.

XI. DISPUTE RESOLUTION

35. Unless otherwise provided in this Decree, Settling Defendants must use the dispute resolution procedures of this Section to resolve any dispute arising under this Decree. Settling Defendants shall not initiate a dispute challenging the Record of Decision. The United States may enforce any requirement of the Decree that is not the subject of a pending dispute under this Section.

36. A dispute will be considered to have arisen when one or more parties sends a written notice of dispute ("Notice of Dispute") in accordance with ¶ 66. Disputes arising under this Decree must in the first instance be the subject of informal negotiations between the parties to the dispute. The period for informal negotiations may not exceed 20 days after the dispute arises, unless the parties to the dispute otherwise agree. If the parties cannot resolve the dispute by informal negotiations, the position advanced by EPA is binding unless Settling Defendants

initiate formal dispute resolution under ¶ 37. By agreement of the parties, mediation may be used during this informal negotiation period to assist the parties in reaching a voluntary resolution or narrowing of the matters in dispute.

37. **Formal Dispute Resolution**

a. **Statements of Position**. Settling Defendants may initiate formal dispute resolution by serving on the Plaintiffs, within 30 days after the conclusion of informal dispute resolution under ¶ 36, an initial Statement of Position regarding the matter in dispute. The Plaintiffs' responsive Statements of Position are due within 30 days after receipt of the initial Statement of Position. All Statements of Position must include supporting factual data, analysis, opinion, and other documentation. A reply, if any, is due within 14 days after receipt of the response. If appropriate, EPA may extend the deadlines for filing statements of position for up to 45 days and may allow the submission of supplemental statements of position.

b. **Formal Decision**. The Director of the Superfund & Emergency Management Division, EPA Region 8, will issue a formal decision resolving the dispute ("Formal Decision") based on the statements of position and any replies and supplemental statements of position. The Formal Decision is binding on Settling Defendants unless they timely seek judicial review under ¶ 38.

c. **Compilation of Administrative Record**. EPA shall compile an administrative record regarding the dispute, which must include all statements of position, replies, supplemental statements of position, and the Formal Decision.

38. **Judicial Review**

a. Settling Defendants may obtain judicial review of the Formal Decision by filing, within 30 days after receiving it, a motion with the Court and serving the motion on all Parties. The motion must describe the matter in dispute and the relief requested. The parties to the dispute shall brief the matter in accordance with local court rules.

b. **Review on the Administrative Record**. Judicial review of disputes regarding the following issues must be on the administrative record: (i) the adequacy or appropriateness of deliverables required under the Decree; (ii) the adequacy of the performance of the Remedial Action; (iii) whether a Work Takeover is warranted under ¶ 11; (iv) determinations about financial assurance under Section VII; (v) EPA's selection of modified or further response actions; (vi) any other items requiring EPA approval under the Decree; and (vii) any other disputes that the Court determines should be reviewed on the administrative record. For all of these disputes, Settling Defendants bear the burden of demonstrating that the Formal Decision was arbitrary and capricious or otherwise not in accordance with law.

c. Judicial review of any dispute not governed by ¶ 38.b shall be governed by applicable principles of law.

39. **Escrow Account**. For disputes regarding a Future Response Cost billing, Settling Defendants shall: (a) establish, in a duly chartered bank or trust company, an interest-bearing escrow account that is insured by the Federal Deposit Insurance Corporation ("FDIC"); (b) remit

to that escrow account funds equal to the amount of the contested Future Response Costs; and (c) send to EPA, in accordance with ¶ 66, copies of the correspondence and of the payment documentation (*e.g.*, the check) that established and funded the escrow account, including the name of the bank, the bank account number, and a bank statement showing the initial balance in the account. EPA may, in its unreviewable discretion, waive the requirement to establish the escrow account. Settling Defendants shall cause the escrow agent to pay the amounts due to EPA under ¶ 29, if any, by the deadline for such payment in ¶ 29. Settling Defendants are responsible for any balance due under ¶ 29 after the payment by the escrow agent.

40. The initiation of dispute resolution procedures under this Section does not extend, postpone, or affect in any way any requirement of this Decree, except as EPA agrees, or as determined by the Court. Stipulated penalties with respect to the disputed matter will continue to accrue, but payment is stayed pending resolution of the dispute, as provided in ¶ 43.

XII. STIPULATED PENALTIES

41. Unless the noncompliance is excused under Section X (Force Majeure), Settling Defendants are liable to the United States for the following stipulated penalties:

a. for any failure: (i) to pay any amount due under Section IX; (ii) to establish and maintain financial assurance in accordance with Section VII; or (iii) to submit timely or adequate deliverables under Section **7** of the SOW:

Period of Noncompliance	Penalty Per Noncompliance Per Day
1st through 14th day	$5,000
15th through 30th day	$6,500
31st day and beyond	$8,500

b. for any failure to submit timely or adequate deliverables required by this Decree other than those specified in ¶ 41.a:

Period of Noncompliance	Penalty Per Noncompliance Per Day
1st through 14th day	$3,000
15th through 30th day	$4,500
31st day and beyond	$6,000

42. **Work Takeover Penalty**. If EPA commences a Work Takeover, Settling Defendants are liable for a stipulated penalty in the amount of $750,000. This stipulated penalty is in addition to the remedy available to EPA under ¶ 22 (Access to Financial Assurance) to fund the performance of the Work by EPA.

43. **Accrual of Penalties**. Stipulated penalties accrue from the date performance is due, or the day a noncompliance occurs, whichever is applicable, until the date the requirement is completed or the final day of the correction of the noncompliance. Nothing in this Decree prevents the simultaneous accrual of separate penalties for separate noncompliances with this Decree. Stipulated penalties accrue regardless of whether Settling Defendants have been notified

of their noncompliance, and regardless of whether Settling Defendants have initiated dispute resolution under Section XI, provided, however, that no penalties will accrue as follows:

a. with respect to a submission that EPA subsequently determines is deficient under ¶ 7.6 of the SOW, during the period, if any, beginning on the 31st day after EPA's receipt of such submission until the date that EPA notifies Settling Defendants of any deficiency;

b. with respect to a matter that is the subject of dispute resolution under Section XI, during the period, if any, beginning on the 21st day after the later of the date that EPA's Statement of Position is received or the date that Settling Defendants' reply thereto (if any) is received until the date of the Formal Decision under ¶ 37.b; or

c. with respect to a matter that is the subject of judicial review by the Court under ¶ 38, during the period, if any, beginning on the 31st day after the Court's receipt of the final submission regarding the dispute until the date that the Court issues a final decision regarding such dispute.

44. **Demand and Payment of Stipulated Penalties**. EPA may send Settling Defendants a demand for stipulated penalties. The demand will include a description of the noncompliance and will specify the amount of the stipulated penalties owed. Settling Defendants may initiate dispute resolution under Section XI within 30 days after receipt of the demand. Settling Defendants shall pay the amount demanded or, if they initiate dispute resolution, the uncontested portion of the amount demanded, within 30 days after receipt of the demand. Settling Defendants shall pay the contested portion of the penalties determined to be owed, if any, within 30 days after the resolution of the dispute. Each payment for: (a) the uncontested penalty demand or uncontested portion, if late, and; (b) the contested portion of the penalty demand determined to be owed, if any, must include an additional amount for Interest accrued from the date of receipt of the demand through the date of payment. Settling Defendants shall make payment by either Fedwire Electronic Funds Transfer (EFT) or at https://www.pay.gov using the link for "EPA Miscellaneous Payments Cincinnati Finance Center," including references to the Site/Spill ID and DJ numbers listed in ¶ 66, and the purpose of the payment. Settling Defendants shall send a notice of this payment to DOJ and EPA, in accordance with ¶ 66. The payment of stipulated penalties and Interest, if any, does not alter any obligation by Settling Defendants under the Decree.

45. Nothing in this Decree limits the authority of the United States or the State: (a) to seek any remedy otherwise provided by law for Settling Defendants' failure to pay stipulated penalties or interest; or (b) to seek any other remedies or sanctions available by virtue of Settling Defendants' noncompliance with this Decree or of the statutes and regulations upon which it is based, including penalties under section 122(*l*) of CERCLA, provided, however, that the United States may not seek civil penalties under section 122(*l*) of CERCLA for any noncompliance for which a stipulated penalty is provided for in this Decree, except in the case of a willful noncompliance with this Decree.

46. Notwithstanding any other provision of this Section, the United States may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued under this Decree.

XIII. COVENANTS BY PLAINTIFFS

47. **Covenants for Settling Defendant**s.

a. **United States Covenants for Settlings Defendants**. Subject to ¶ 49, the United States covenants not to sue or to take administrative action against Settling Defendants under sections 106 and 107(a) of CERCLA regarding the Work, Past Response Costs, and Future Response Costs.

b. **State Covenants for Settling Defendants**. Subject to ¶ 49, the State covenants not to sue or to take administrative action against Settling Defendants under sections 106 and 107(a) of CERCLA and Sections 711, 715(1), (2)(a), 722 and 726 of CECRA, MCA §§ 75-10-711, 715(1), (2)(a), 722 and 726 regarding the Work, Past Response Costs, and Future Response Costs.

48. The covenants under ¶ 47: (a) take effect upon the Effective Date; (b) are conditioned on the satisfactory performance by Settling Defendants of the requirements of this Decree; (c) extend to the successors of each Settling Defendant but only to the extent that the alleged liability of the successor of the Settling Defendant is based solely on its status as a successor of the Settling Defendant; and (d) do not extend to any other person.

49. **General Reservations**. Notwithstanding any other provision of this Decree, the United States and the State reserve, and this Decree is without prejudice to, all rights against Settling Defendants regarding the following:

a. liability for failure by Settling Defendants to meet a requirement of this Decree;

b. liability arising from the past, present, or future disposal, release, or threat of release of Waste Material outside of the Site;

c. liability based on Settling Defendants' ownership of the Site when such ownership commences after Settling Defendants' signature of this Decree;

d. liability based on Settling Defendants' operation of the Site when such operation commences after Settling Defendants' signature of this Decree and does not arise solely from Settling Defendants' performance of the Work;

e. liability based on Settling Defendants' transportation, treatment, storage, or disposal, or arrangement for transportation, treatment, storage, or disposal of Waste Material at or in connection with the Site, after signature of this Decree by Settling Defendants, other than as provided in the OU1 Record of Decision, under this Decree, or ordered by EPA;

f. liability for additional operable units at the Site or the final response action;

g. liability, prior to achievement of Performance Standards, for additional response actions that EPA determines are necessary to achieve and maintain Performance

Standards or to carry out and maintain the effectiveness of the Remedial Action, but that are not covered by ¶ 9.b;

h. liability for all costs paid in connection with Operable Unit 00 (Site Wide) after September 30, 2022;

i. liability for State Future Response Costs; and

j. criminal liability.

50. Subject to ¶ 47, nothing in this Decree limits any authority of the United States or State to take, direct, or order all appropriate action to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Material on, at, or from the Site, or to request a Court to order such action.

XIV. COVENANTS BY SETTLING DEFENDANTS

51. **Covenants by Settling Defendant**s

a. Subject to ¶ 52, Settling Defendants covenant not to sue and shall not assert any claim or cause of action against the United States or the State under CERCLA, CECRA, section 7002(a) of RCRA, the United States Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, the State of Montana Constitution, State law including any direct or indirect claim for reimbursement from the Environmental Quality Protection Fund (established pursuant to MCA 75-10-704) or the Orphan Share Account (established pursuant to MCA 75-10-743), or at common law regarding the Work, past response actions relating to the Site, Past Response Costs, and Future Response Costs.

b. Subject to ¶ 52, Settling Defendants covenant not to seek reimbursement from the Fund through CERCLA or any other law for costs of the Work and past response actions regarding the Site, Past Response Costs, and Future Response Costs.

52. **Settling Defendants' Reservation**. The covenants in ¶ 51 do not apply to any claim or cause of action brought, or order issued, after the Effective Date by the United States or the State to the extent such claim, cause of action, or order is within the scope of a reservation under ¶¶ 49.a through 49.j.

XV. EFFECT OF SETTLEMENT; CONTRIBUTION

53. The Parties agree and the Court finds that: (a) the complaint filed by the United States in this action is a civil action within the meaning of section 113(f)(1) of CERCLA; (b) this Decree constitutes a judicially approved settlement under which each Settling Defendant has, as of the Effective Date, resolved its liability to the United States within the meaning of sections 113(f)(2) and 113(f)(3)(B) of CERCLA and/or Section 719(1) of CECRA, 75-10-719(1); and (c) each Settling Defendant is entitled, as of the Effective Date, to protection from contribution actions or claims as provided by section 113(f)(2) of CERCLA and/or Section 719(1) of CECRA, 75-10-719(1), or as may be otherwise provided by law, for the "matters addressed" in this Decree. The "matters addressed" in this Decree are the Work, Past Response

Costs, and Future Response Costs, provided, however, that if either the United States or the State exercises rights under the reservations in ¶¶ 49.a through 49.j, the "matters addressed" in this Decree will no longer include those response costs or response actions that are within the scope of the exercised reservation.

54. Each Settling Defendant shall, with respect to any suit or claim brought by it for matters related to this Decree, notify DOJ and EPA and MDEQ no later than 60 days prior to the initiation of such suit or claim. Each Settling Defendant shall, with respect to any suit or claim brought against it for matters related to this Decree, notify DOJ and EPA and MDEQ within 10 days after service of the complaint on such Settling Defendant. In addition, each Settling Defendant shall notify DOJ and EPA and MDEQ within 10 days after service or receipt of any Motion for Summary Judgment and within 10 days after receipt of any order from a court setting a case for trial.

55. **Res Judicata and Other Defenses**. In any subsequent administrative or judicial proceeding initiated against any Settling Defendant by either Plaintiff for injunctive relief, recovery of response costs, or other appropriate relief relating to the Site, Settling Defendants shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, claim preclusion (res judicata), issue preclusion (collateral estoppel), claim-splitting, or other defenses based upon any contention that the claims raised by the United States or the State in the subsequent proceeding were or should have been brought in the instant case.

56. Nothing in this Decree diminishes the right of the United States or the State under section 113(f)(2) and (3) of CERCLA to pursue any person not a party to this Decree to obtain additional response costs or response action and to enter into settlements that give rise to contribution protection pursuant to section 113(f)(2).

57. **Opportunity to Comment on CERCLA Section 122(e)(6) Requests.** Settling Defendants will be provided with an opportunity to submit written comments to EPA in the event that a potentially responsible party seeks or is required to seek authorization pursuant to Section 122(e)(6) of CERCLA for remedial action at the Community Soils portion of OU1 of the Site. Whether or not Settling Defendants submit such comments, each Settling Defendant expressly reserves any and all rights (including, but not limited to, pursuant to Section 113 of CERCLA, 42. U.S.C. § 9613), defenses, claims, demands, and causes of action it may have with respect to any matter, transaction, or occurrence relating in any way to the Site against any person not a Party to this Decree.

58. **National Priority List Deletion.** EPA agrees that it will not propose to delete individual properties within the Community Soils portion of OU1 from the National Priority List (NPL) until after EPA certifies the completion of all Remedial Action required for the Community Soils portion of OU1 in accordance with ¶ 5.7 of the SOW.

XVI. RECORDS

59. **Settling Defendant Certification**. Each Settling Defendant certifies individually that: (a) it has implemented a litigation hold on documents and electronically stored information relating to the Site, including information relating to its potential liability under CERCLA

regarding the Site, since the earlier of notification of potential liability by the United States or the State or the filing of suit against it regarding the Site; and (b) it has fully complied with any and all EPA and State requests for information under sections 104(e) and 122(e) of CERCLA, and section 3007 of RCRA, and State law.

60. **Retention of Records and Information**

a. Settling Defendants shall retain, and instruct their contractors and agents to retain, the following documents and electronically stored data ("Records") until 10 years after the Certification Completion of the Work under ¶ 5.9 of the SOW (the "Record Retention Period"):

(1) All records regarding Settling Defendants' liability under CERCLA regarding the Site;

(2) All reports, plans, permits, and documents submitted to EPA in accordance with this Decree, including all underlying research and data; and

(3) All data developed by, or on behalf of, Settling Defendants in the course of performing the Remedial Action.

b. Settling Defendants shall retain all Records regarding the liability of any person under CERCLA regarding the Site during the Record Retention Period.

c. At the end of the Record Retention Period, Settling Defendants shall notify EPA that it has 90 days to request the Settling Defendants' Records subject to this Section. Settling Defendants shall retain and preserve their Records subject to this Section until 90 days after EPA's receipt of the notice. These record retention requirements apply regardless of any corporate record retention policy.

61. Settling Defendants shall provide to EPA and MDEQ, upon request, copies of all Records and information required to be retained under this Section. Settling Defendants shall also make available to EPA and MDEQ, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

62. **Privileged and Protected Claims**

a. Settling Defendants may assert that all or part of a record requested by Plaintiffs is privileged or protected as provided under federal law, in lieu of providing the record, provided that Settling Defendants comply with ¶ 62.b, and except as provided in ¶ 62.c.

b. If Settling Defendants assert a claim of privilege or protection, they shall provide Plaintiffs with the following information regarding such record: its title; its date; the name, title, affiliation (e.g., company or firm), and address of the author, of each addressee, and of each recipient; a description of the record's contents; and the privilege or protection asserted. If a claim of privilege or protection applies only to a portion of a record, Settling Defendants

shall provide the record to Plaintiffs in redacted form to mask the privileged or protected portion only. Settling Defendants shall retain all records that they claim to be privileged or protected until Plaintiffs have had a reasonable opportunity to dispute the privilege or protection claim and any such dispute has been resolved in Settling Defendants' favor.

c. Settling Defendants shall not make any claim of privilege or protection regarding: (1) any data regarding the Site, including all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, radiological or engineering data, or the portion of any other record that evidences conditions at or around the Site; or (2) the portion of any record that Settling Defendants are required to create or generate in accordance with this Decree.

63. **Confidential Business Information (CBI) Claims**. Settling Defendants may claim that all or part of a record provided to Plaintiffs under this Section is CBI to the extent permitted by and in accordance with section 104(e)(7) of CERCLA and 40 C.F.R. § 2.203(b). Settling Defendants shall segregate and shall clearly identify all records or parts thereof submitted under this Decree for which they claim is CBI by labeling each page or each electronic file "claimed as confidential business information" or "claimed as CBI." Records that Settling Defendants claim to be CBI will be afforded the protection specified in 40 C.F.R. part 2, subpart B. If no CBI claim accompanies records when they are submitted to EPA and MDEQ, or if EPA notifies Settling Defendants that the records are not entitled to confidential treatment under the standards of section 104(e)(7) of CERCLA or 40 C.F.R. part 2, subpart B, the public may be given access to such records without further notice to Settling Defendants.

64. In any proceeding under this Decree, validated sampling or monitoring data generated in accordance with the SOW and reviewed and approved by EPA, if relevant to the proceeding, is admissible as evidence, without objection.

65. Notwithstanding any provision of this Decree, Plaintiffs retain all of their information gathering and inspection authorities and rights, including enforcement actions related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

XVII. NOTICES AND SUBMISSIONS

66. All agreements, approvals, consents, deliverables, modifications, notices, notifications, objections, proposals, reports, waivers, and requests specified in this Decree must be in writing unless otherwise specified. Whenever a notice is required to be given or a report or other document is required to be sent by one Party to another under this Decree, it must be sent as specified below. All notices under this Section are effective upon receipt, unless otherwise specified. In the case of emailed notices, there is a rebuttable presumption that such notices are received on the same day that they are sent. Any Party may change the method, person, or address applicable to it by providing notice of such change to all Parties.

As to DOJ: *via email to*:
eescdcopy.enrd@usdoj.gov
Re: DJ # 90-11-2-12191

As to EPA:	*via email to*: lobar.bryan@epa.gov Re: Site/Spill ID # 08-19
As to the Regional Financial Management Officer:	*via email to*: johnson.karren@epa.gov Re: Site/Spill ID # 08-19
As to the State:	*via email to*: rsloan@mt.gov
As to Settling Defendants:	*via email to*: Luke.Pokorny@bp.com

XVIII. APPENDIXES

67. The following appendixes are attached to and incorporated into this Decree:

"Appendix A" is the description and map of the Site.

"Appendix B" is the OU1 Record of Decision.

"Appendix C" is the SOW (which includes the Remedial Action Work Plan/Final Design Report as Attachment 1).

XIX. MODIFICATIONS TO DECREE

68. Except as provided in ¶ 9 of the Decree and ¶ 7.6 of the SOW (Approval of Deliverables), nonmaterial modifications to Sections I through XXIII and the Appendixes must be in writing and are effective when signed (including electronically signed) by the Parties. Material modifications to Sections I through XXIII and the Appendixes must be in writing, signed (which may include electronically signed) by the Parties, and are effective upon approval by the Court. As to changes to the Remedial Action, a modification to the Decree, including the SOW, to implement an amendment to the Record of Decision that "fundamentally alters the basic features" of the Remedial Action within the meaning of 40 C.F.R. § 300.435(c)(2)(ii) will be considered a material modification.

XX. SIGNATORIES

69. The undersigned representatives of the United States, the undersigned representatives of the State, and each undersigned representative of a Settling Defendant certifies that he or she is fully authorized to enter into the terms and conditions of this Decree and to execute and legally bind such Party to this document.

XXI. PRE-ENTRY PROVISIONS

70. If for any reason the Court should decline to approve this Decree in the form presented, this agreement, except for ¶ 71 and ¶ 72, is voidable at the sole discretion of any Party and its terms may not be used as evidence in any litigation between the Parties.

71. This Decree will be lodged with the Court for at least 30 days for public notice and comment in accordance with section 122(d)(2) of CERCLA and 28 C.F.R. § 50.7. The United States or State may withdraw or withhold its consent if the comments regarding the Decree disclose facts or considerations that indicate that the Decree is inappropriate, improper, or inadequate.

72. Settling Defendants agree not oppose or appeal the entry of this Decree.

XXII. INTEGRATION

73. This Decree constitutes the entire agreement among the Parties regarding the subject matter of the Decree and supersedes all prior representations, agreements, and understandings, whether oral or written, regarding the subject matter of the Decree.

XXIII. FINAL JUDGMENT

74. Upon entry of this Decree by the Court, this Decree constitutes a final judgment under Fed. R. Civ. P. 54 and 58 among the Parties.

SO **ORDERED** this 20th day of November, 2023

Brian Morris, Chief District Judge
United State District Court

Signature Page for Consent Decree in *U.S. and the State of Montana v. Atlantic Richfield Company and ARCO Environmental Remediation, L.L.C.* (D. Mont.)

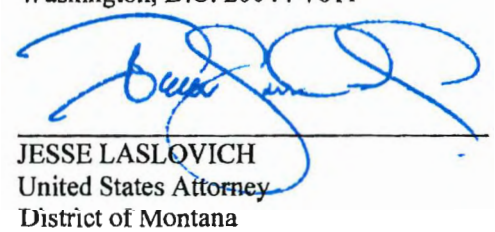
FOR THE UNITED STATES:

TODD KIM
Assistant Attorney General
Environment and Natural Resources Division

ELLEN M. MAHAN
Deputy Section Chief
U.S. Department of Justice
Environment and Natural Resources Division
Environmental Enforcement Section



JASON A. DUNN
Senior Attorney
U.S. Department of Justice
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P.O. Box 7611
Washington, D.C. 20044-7611



JESSE LASLOVICH
United States Attorney
District of Montana



MARK STEGER SMITH
Chief, Civil Division
District of Montana
2601 2nd Avenue North, Suite 3200
Billings, MT 59101

Signature Page for Consent Decree in *U.S. and the State of Montana v. Atlantic Richfield Company and ARCO Environmental Remediation, L.C.C.* (D. Mont.)

FOR THE U.S. ENVIRONMENTAL PROTECTION AGENCY:

KENNETH SCHEFSKI
Digitally signed by KENNETH SCHEFSKI
Date: 2023.08.01 11:19:33 -06'00'

KENNETH C. SCHEFSKI
Regional Counsel
U.S. Environmental Protection Agency
Region 8

BEN BIELENBERG
Digitally signed by BEN BIELENBERG
Date: 2023.07.18 14:59:12 -04'00'

BEN BIELENBERG
Acting Director
Superfund and Emergency Management Division
U.S. Environmental Protection Agency
Region 8

SARAH RAE
Digitally signed by SARAH RAE
Date: 2023.07.14 10:23:57 -06'00'

SARAH RAE
Senior Assistant Regional Counsel
U.S. Environmental Protection Agency
Region 8

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Signature Page for Consent Decree in *U.S. and the State of Montana v. Atlantic Richfield Company and ARCO Environmental Remediation, L.L.C.* (D. Mont.)

FOR THE STATE OF MONTANA:

DocuSigned by:
08/02/2023
69AFAB13A3474A0...
CHRIS DORRINGTON
Director
Montana Department of Environmental Quality

DocuSigned by:
08/02/2023
24F8E250E38E441...
JESSICA WILKERSON
Legal Counsel
Montana Department of Environmental Quality

Signature Page for Consent Decree in *U.S. and the State of Montana v. Atlantic Richfield Company and ARCO Environmental Remediation, L.L.C.* (D. Mont.)

FOR: Atlantic Richfield Company

7/13/2023
Dated

Name: CHRIS GRECO
Title: Vice President, Atlantic Richfield Company
Address: 150 W Warrenville Rd., MC 700-1H
Naperville, IL 60563

Dated

Name: NATHAN BLOCK
Title: Senior Counsel, Atlantic Richfield Company
Address: 501 Westlake Park BLVD., WL 1, 3.668B
Houston, TX 77079

Dated

Name: ADAM S. COHEN
Title: Partner, Davis Graham & Stubbs LLP
Address: 1550 17th Street, Suite 500
Denver, CO 80202

If the Decree is not approved by the Court within 60 days after the date of lodging, and the United States requests, this Settling Defendant agrees to accept service of the complaint by mail, and to execute a waiver of service of a summons under Rule 4 of the Federal Rules of Civil Procedure and any applicable local rules of this Court. **This Settling Defendant hereby designates the agent below to accept service of the complaint by mail and to execute the Rule 4 waiver of service.** This Settling Defendant understands that it does not need to file an answer to the complaint until it has executed the waiver of service or otherwise has been served with the complaint.

Name: Adam S. Cohen
Title: Partner (AR outside counsel)
Company: Davis Graham & Stubbs LLP
Address: 1550 17th Street, Suite 500
Denver, CO 80202
Phone: (303) 892-7407
email: Adam.cohen@dgslaw.com

Signature Page for Consent Decree in *U.S. and the State of Montana v. Atlantic Richfield Company and ARCO Environmental Remediation, L.L.C.* (D. Mont.)

FOR: Atlantic Richfield Company

Dated

Name: CHRIS GRECO
Title: Vice President, Atlantic Richfield Company
Address: 150 W Warrenville Rd., MC 700-1H
Naperville, IL 60563

7/11/23
Dated

Name: NATHAN BLOCK
Title: Senior Counsel, Atlantic Richfield Company
Address: 501 Westlake Park BLVD., WL 1, 3.668B
Houston, TX 77079

7/11/23
Dated

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FOR: ARCO Environmental Remediation, L.L.C.

13 JULY 2023
Dated

Name: PATRICIA GALLERY
Title: Vice President
Address: 201 Helios Way
Houston, TX 77079

Dated

Name: NATHAN BLOCK
Title: Senior Counsel
Address: 501 Westlake Park BLVD., WL 1, 3.668B
Houston, TX 77079

Dated

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FOR: ARCO Environmental Remediation, L.L.C.

Dated

Name: PATRICIA GALLERY
Title: Vice President
Address: 201 Helios Way
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7/11/23
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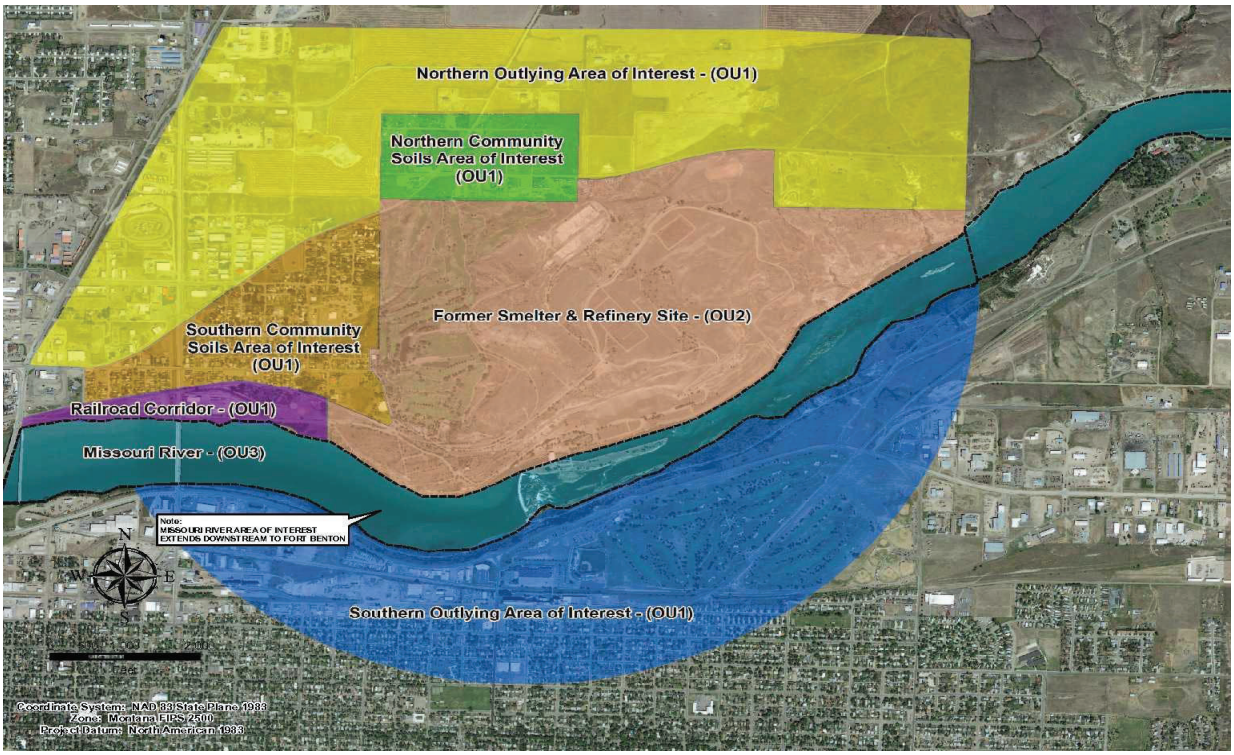
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email: adam.cohen@dgslaw.com

Appendix A

Site Map

Appendix A: ACM Smelter and Refinery Site Description and Map



Appendix B

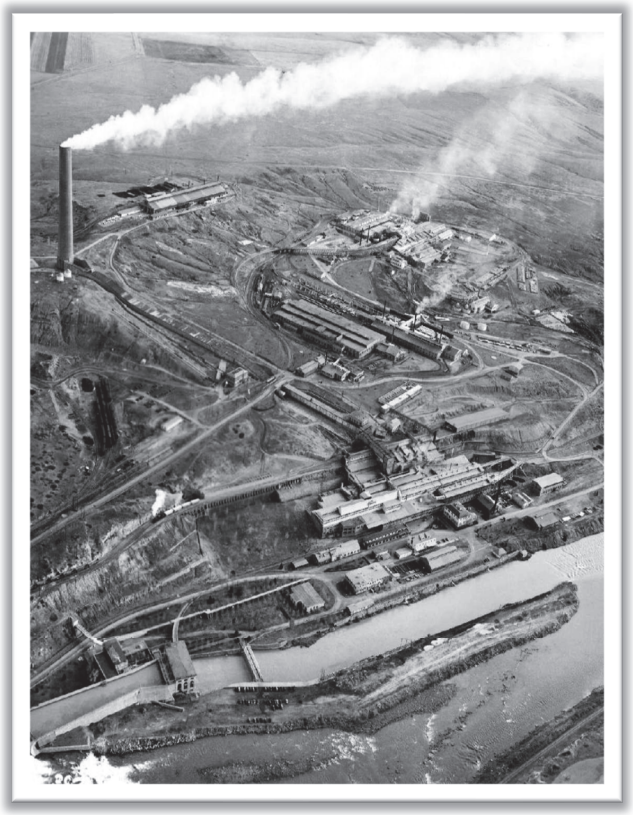
OU1 Record of Decision

100010810 - R8 SDMS

Record of Decision

ACM Smelter and Refinery
Community Soils Operable Unit
National Priorities Site

August 2021



Black Eagle, Cascade County, Montana

U.S Environmental Protection Agency
Montana Department of Environmental Quality

Part 1 - Declaration

Site Name and Location

ACM Smelter and Refinery Site, Community Soils Operable Unit, 01, CERCLIS ID Number: MTD093291599.

Statement of Basis and Purpose

This decision document presents the selected remedy for the Community Soils Operable Unit (OU1) of the ACM Smelter and Refinery Site in Black Eagle, Montana, which was chosen in accordance with the Comprehensive Environmental Response, Compensation, Liability Act (CERCLA) Section 117(c), 42 U.S.C. Section 9617(c), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Section 300.435(c)(2)(ii).

This document is issued by the U.S. Environmental Protection Agency (EPA), the lead agency, in consultation with the State of Montana Department of Environmental Quality (MDEQ), the supporting agency. This decision is based on the administrative record for OU1 and will become part of the administrative record per the NCP Section 300.825(a)(2). The administrative record and copies of key documents are available for public review at the Black Eagle Community Center, 2332 Smelter Avenue, Black Eagle, Montana 59414.

Assessment of the Site

The response action set forth in this Record of Decision (ROD) is necessary to protect the public health, or welfare, or the environment, from actual or threatened releases of hazardous substances, pollutants, or contaminants into the environment. Such release or threat of release may present an imminent and substantial endangerment to public health, welfare or the environment.

Description of the Selected Remedy

The selected remedy for the Community Soils OU1 is the first remedial action to be taken at the Site. This remedial action addresses: 1) human health risks from lead and arsenic in residential and non-residential soils within the community of Black Eagle and 2) human health risks from lead and arsenic in soils associated with the abandoned railroad corridor that runs through the community of Black Eagle.

Lead and arsenic contaminants in soil are from past releases, from the adjacent smelter and refinery facility and from fugitive dust from the abandoned railroad corridor, containing smelter-related materials. Although lead and arsenic may act as a source to surface water, sediment and groundwater contamination, these sources are not highly mobile and are not considered principal threat wastes.

The EPA is continuing to investigate potential groundwater and ecological risks from the Former Smelter Facility (Operable Unit 2) and potential risks to surface water and aquatic resources in the Missouri River (Operable Unit 3).

The selected remedy for OU1 will be implemented for the following areas:

- Northern Community Soils Area of Interest (CSAOI)
- Southern Community Soils Area of Interest

- Northern Outlying Area
- Railroad Corridor.

No remedial actions are required in the South Outlying Area.

Major components of the remedy to address current residential soils in the Northern and Southern CSAOI include:

- Step 1 - Remove soils in any yard component exceeding the "Not to Exceed" (NTE) action level of 250 mg/kg arsenic and 400 mg/kg lead to a maximum depth of 18 inches (maximum 24 inches in gardens)
- Step 2 – Calculate the residual risk that may be present after Step 1 and remove any additional soil to achieve a yard average concentration, in the top 6 inches, less than 54 mg/kg arsenic and 281 mg/kg lead.

Major components of the remedy for current non-residential soils in the Northern and Southern CSAOI and North Outlying Area include:

- Confirm that the property average soil concentration, in the top 6 inches, is below risk-based action levels for the current non-residential land use or remediate soils to achieve the risk-based action levels for current non-residential land use in the top 6 inches.
- To address a potential land use change to residential, one of the following must be completed:
    - Confirm that the property-specific 0-12-inch depth-weighted average soil concentration meets the remedial action objectives (RAOs) for residential soils, or
    - Place ICs on the property such as restricting future residential use or providing for additional remediation at the time of residential redevelopment, or
    - Remediate soils to further reduce soil concentrations to achieve a property average concentration in the top 12 inches that meets the remedial action objectives (RAOs) for residential soils.

Major components of the remedy for the Railroad Corridor include:

- Remove all visual waste materials plus one foot of underlying soil to a maximum depth of 4 feet.
- Regrade site to promote drainage and revegetate and/or stabilize remaining soils to reduce runoff and dust. Backfill soil is not required unless needed for drainage and/or soil revegetation/stabilization.
- Confirm that the average residual soil concentrations, after removal of waste materials, in the top 6 inches, is below risk-based action levels for the current land use.
- Alternatively, allow placement of engineered covers, consisting of either a minimum of 24-inch soil cover and/or other developed features (I.e., paved trails, streets, or parking areas).
- Provide future operation and maintenance to maintain the protectiveness of engineered covers.
- Place ICs on the property such as restricting future residential use or providing for additional remediation at the time of future residential development.

Common components include:

Excavated materials will either be consolidated on site within OU2, pending OU2 remedial decisions, or disposed at an off-site facility.

Statutory Determinations

The selected remedy meets the mandates of CERCLA Section 121 and the NCP. It is protective of human health and the environment and complies with all federal and state requirements that are applicable or relevant and appropriate to the remedial action; it is cost effective and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. The remedy does not satisfy the statutory preference for treatment as a principle element of the remedy. However, contaminated materials at the Community Soils OU1 do not represent a principal threat, and treatment would be significantly more expensive due to the large quantities of materials impacted. Although they are present in large volume, the solid materials within the OU are low in toxicity and can be reliably contained.

Because the remedy may result in hazardous substances, pollutants or contaminants remaining on site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of remedial action to ensure that the remedy is, or will be, protective of human health and the environment.

ROD Data Certification Checklist

The following information is included in the Decision Summary section of this ROD. Additional information supporting the EPA's decision can be found in the Administrative Record for this Site.

- Contaminants of Concern (COCs) and their respective concentrations (Sections CS and RC 5 and Sections CS and RC 7)
- Baseline risk represented by the COCs (Sections CS and RC 7)
- Cleanup levels established for COCs and the basis for those levels (Sections CS and RC 7)
- Whether source materials constituting principal threats are found at the Site and, if so, how the remedy will address them (Sections CS and RC 11)
- Current and reasonably anticipated future land use assumptions and groundwater use assumptions and current and potential future beneficial uses of ground water (if applicable) used in the baseline risk assessment and ROD (Sections CS and RC 6)
- Potential land and groundwater use (if applicable) that will be available at the Site as a result of the selected remedy (Sections CS and RC 6)
- Estimated capital, annual operation and maintenance (O&M) costs, total present-worth costs, discount rate, and the number of years over which the remedy cost estimates are projected (Sections CS and RC 9)
- Key factors that led to selecting the remedy (Sections CS and RC 12).

Additional information can be found in the administrative record for this ROD.

Authorizing Signatures

This Record of Decision documents the selected remedy for the Community Soils Operable Unit of the ACM Smelter and Refinery National Priorities List Site. The remedy was selected by EPA with the partial concurrence of the State of Montana, as authorized by the EPA signatory below and the attached Montana Department of Environmental Quality letter of partial concurrence.

August 23, 2021

_____ _____

Betsy Smidinger
Director
Superfund and Emergency Management Division
United States Environmental Protection Agency, Region 8

Date

DEQ
Montana Department
of Environmental Quality

April 6, 2021

Deb Thomas, Regional Administrator (Acting)
US Environmental Protection Agency
Region 8
1595 Wyncoop Street
Denver, CO 80202-8917

Re: State Partial Concurrence to the ACM Smelter and Refinery Superfund Site OU1 Record of Decision

Dear Ms. Thomas,

The Montana Department of Environmental Quality (DEQ) concurs in part with the 2021 Record of Decision (ROD) for the Community Soils Operable Unit 1 of the ACM Smelter and Refinery Superfund Site (ACM OU1). DEQ believes the two-step cleanup approach designed to address arsenic and lead contamination in residential and non-residential soils throughout OU1 will address the majority of the contamination at the site and that the proposed remedial action for the railroad corridor will be protective of human health and the environment. DEQ can only partially concur with the selected remedy for the following reasons:

Remedial Action Levels do not meet State criteria for protectiveness

The "Not to Exceed" (NTE) Remedial Action Objective levels and cumulative excess cancer risk for arsenic, which were used to determine the cleanup criteria for residential and non-residential soils are not based on site-specific cleanup levels for the ACM site. The 250 mg/kg "not to exceed" (NTE) Remedial Action Objective (RAO) for arsenic has no relationship to this site and is based upon a site-specific cleanup level for Anaconda that is not appropriate for this site. DEQ proposes that the arsenic PRG of 175 mg/kg be used as the NTE RAO since it is actually based upon site-specific conditions. Additionally, the State of Montana considers the protective RAO for arsenic to be a cumulative excess cancer risk no greater than 1 in 100,000, rather than the cumulative cancer risk of 1.44 in 100,000 as included in the current ROD. To meet Montana CECRA requirements, the arsenic RAO should be 36 mg/kg, rather than the 54 mg/kg.

Depth of cleanup for residential soils is inadequate

The proposed remedial action does not address soils at an adequate depth to comply with State requirements because the proposed remedy only addresses the top 6 inches of soil. The remedy may in some cases result in exceedances in area-specific regions of residential yards, in residential soils to a depth of 18 inches consistent with Remedial Investigation Database. Montana considers surface soil is defined as the top 0-2 ft of soil, and therefore, the remedy for surface soil remediation should extend beyond the 0-6 in interval in order to be protective.

The selected remedy for Operable Unit 1 implicates an on-site repository within the boundaries of OU2, an OU that has yet to be fully evaluated through the Remedial Investigation/Feasibility Study process

The ROD states that "[e]xcavated materials will either be consolidated and managed with similar materials within OU2, pending a final remedy for OU2" or disposed of off-site. As the ROD acknowledges the agencies have yet to consider the final remedy at OU2, DEQ remains concerned, however, that the selected remedy for OU1 (consolidating OU1 materials within the boundary of OU2) favors the use of an on-site repository within OU2. DEQ wants to ensure that the future land use of OU2, as well as any limitations that may be imposed on the land, are fully and fairly vetted during the remedy investigation and selection process for OU2. This includes the solicitation and response to public comment around the remedy for OU2 and any land use restrictions that may require. The State continues to request that the repository language in this OU1 remedy be clarified to state that the soils will be disposed of off-site or that the soils will be temporarily staged on OU2 until a final remedy is chosen for that particular operable unit.

Further Institutional Controls are necessary to assure protectiveness of human health

Finally, Institutional Controls must be required for all currently non-residential properties to ensure that such properties remain non-residential unless they are remediated to the DEQ residential criteria if residential use is planned., As the chosen remedy does not comply with the State's residential use cleanup requirements for allowable lifetime cancer risks these Institutional Controls are necessary for the chosen remedy to be protective of human health.

DEQ appreciates the Environmental Protection Agency's (EPA's) willingness to consider our input as to the protectiveness of the overall remedy, as well as our comments and suggestions as to the scope of the remedy. DEQ offers our continued support as we move to the remedial design and implementation of these remedial action elements, as well as the long-term operations and maintenance of this remedy to protect human health and the environment.

Sincerely,



Christopher Dorrington
Director Department of Environmental Quality

Cc: Betsy Smidinger, Director Superfund and Emergency Management Division, EPA
Aaron Urdiales, Superfund Branch Chief, EPA
Joe Vranka, Superfund Unit Manager, EPA
Charlie Coleman, Remedial Project Manager, EPA
Jenny Chambers, Division Administrator, DEQ
Matt Dorrington, Bureau Chief, DEQ
Carolina Balliew, Section Supervisor, DEQ
Richard Sloan, Project Officer, DEQ
Jessica Wilkerson, Legal, DEQ
File

Part 2 – Decision Summary

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Appendices

A Applicable and Relevant and Appropriate Requirements

B Part 3: Responsiveness Summary

Acronyms and Abbreviations List

µg/dL	micrograms per deciliter
µg/L	micrograms per liter
ACM Site	Anaconda Smelter and Refinery Superfund Site
AERL	ARCO Environmental Remediation, LLC
ALM	Adult Lead Methodology
AR	Atlantic Richfield Company
ARARs	Applicable or Relevant and Appropriate Requirements
ARM	Administrative Rules of Montana
ATSDR	Agency for Toxic Substances and Disease Registry
ATV	all-terrain vehicle
bgs	below ground surface
BNSF	Burlington Northern Santa Fe Railway Company
BTV	Background Threshold Value
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIP	Community Involvement Plan
COC	Contaminants of Concern
COIs	Contaminants of Interest
COPCs	Contaminants of Potential Concern
CSAOI	Community Soils Area of Interest
CS	Community Soils
CSM	Conceptual Site Model
ECDR	Electric City Dirt Riders
EPA	U.S. Environmental Protection Agency
FS	Feasibility Study
GRA	General Response Actions
HHRA	Human Health Risk Assessment
IC	Institutional Control
IEUBK model	Integrated Exposure, Uptake, and Biokinetic model
IVBA	in vitro bioaccessibility
MDEQ	State of Montana Department of Environmental Quality
mg/kg	milligrams per kilogram

NCP	National Oil and Hazardous Substances Pollution Contingency Plan (also called the National Contingency Plan)
NPL	National Priorities List
NTE	Not to Exceed
OA	Outlying Areas
O&M	Operation and Maintenance
OU	Operable Unit
ppm	parts per pillion
PRGs	preliminary remediation goals
PRP	Potentially Responsible Party
PSM	possible smelter material
RAGS	EPA's Risk Assessment Guidance for Superfund
RALs	remedial action levels
RAO	remedial action objectives
RBA	relative oral bioavailability
RBSL	Risk-Based Screening Level
RC	Railroad Corridor
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
SAP	Sampling and Analysis Plan
Settlement Agreement/CO	Administrative Settlement Agreement and Order on Consent
SWDA	Federal Solid Waste Disposal Act
TAG	Technical Advisory Group
TBC	To-Be Considered
UAO	Unilateral Administrative Order for Remedial Investigation/ Feasibility Study, CERCLA-08-2012-0001
UCL	upper confidence limit
UU/UE	unlimited use / unrestricted exposure

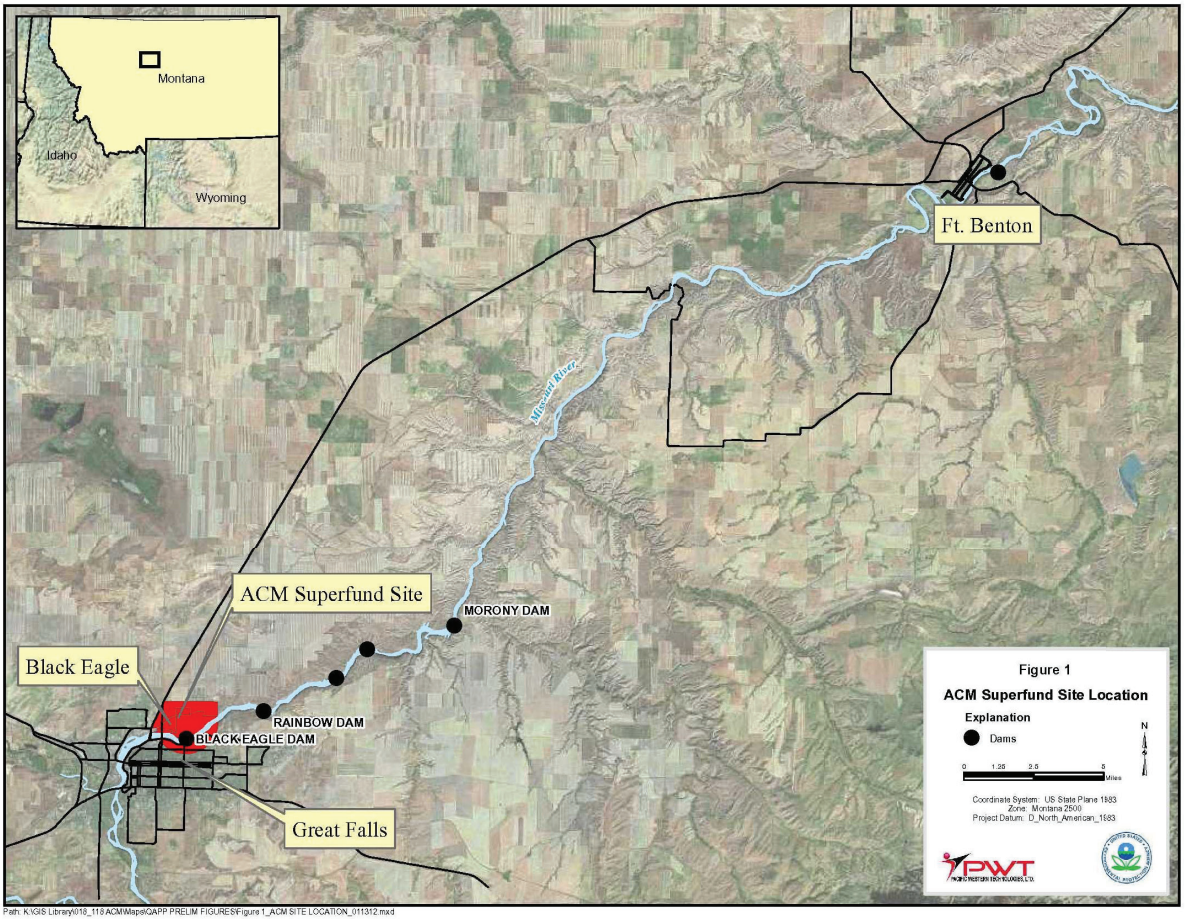
Part 2 – Decision Summary

Section 1: Site Name, Location, and Description

The ACM Smelter and Refinery Site (ACM Site or Site) is adjacent to the unincorporated community of Black Eagle along the Missouri River in Cascade County, Montana (Figure 1-1). The city of Great Falls is across the Missouri River south of the Site. Under this ROD, the EPA is addressing arsenic and lead contamination from smelting and refining waste in residential and non-residential areas of the community soils operable unit (OU1) of the Site.

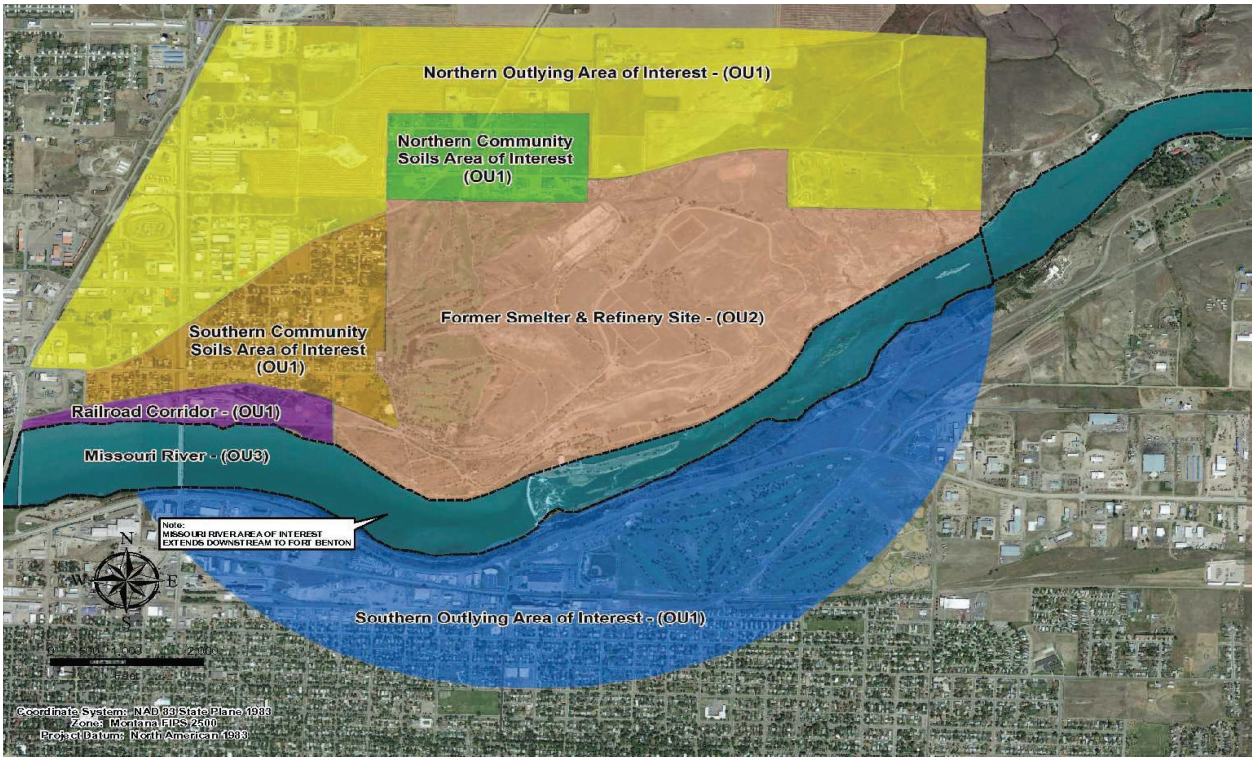
OU1 includes approximately 500 homes in the community of Black Eagle, along with vacant properties, commercial businesses, a park, city-owned alleys and rights-of-way, and a historical railroad corridor with mixed ownership. For the purposes of the remedial investigation (RI) OU1 was divided into five areas of interest as follows: the Northern Community Soils Area of Interest (Northern CSAOI); the Southern Community Soils Area of Interest (Southern CSAOI); the Railroad Corridor; the Northern Outlying Area; and the Southern Outlying Area.

Figure 1-1 – ACM Superfund Site Location



The EPA Site Identification number is MTD093291599. The EPA Region 8 is the lead agency for the Site, with support from the Montana Department of Environmental Quality (MDEQ).

Figure 1-2 – ACM Site Operable Units



Section 2: Site History and Enforcement Activities

2.1 History of Contamination

From 1891 to 1893 the Boston and Montana Consolidated Copper and Silver Mining Company constructed a new smelter on the north bank of the Missouri River at Great Falls. In 1889 and 1890, rail lines were constructed to the Site through Black Eagle to provide access to the new facility prior to construction. Operations at the ACM smelter began in 1893 when copper ore mined in Butte was shipped to the Site and concentrated, smelted and refined. Smelting and refining of copper, as well as the production of other specialty metals, continued for more than 80 years. Primary products and wastes from activities at the ACM Site were copper, zinc, arsenic, lead, and cadmium.

A 501-foot-tall plant stack dispersed contaminants over a wide area near the facility. See Photograph 2-1 for a view of the smelter during operations. The large stack went into service in 1909 and continued

operation until 1972. It was designed to eject a volume of 1,575,000 cubic feet of air per minute at a velocity of 450 feet per minute to entrain and remove from the smelter all the gases and dust generated during the smelting and refining process.



Photograph 1-1 – ACM Smelter

Wastes generated from the operations also involved tailings and slag that were dumped into the Missouri River. Between 1893 and 1915, when on-Site containment was instituted, the MDEQ estimates that between 27,500,000 and 31,000,000 cubic yards of waste were dumped into the river, including tailings, slag, smelter wastes and flue dusts. It is likely that dumping of waste into the Missouri River continued at a reduced rate after 1915 until the facility closed in the 1970s.

Demolition of plant facilities began in 1972, and the Atlantic Richfield Company (AR) acquired the property in 1977. All operations at the Great Falls Refinery ceased in September 1980. AR began closure in 1981 and completed the process in 1999. Closure activities included demolition and removal of buildings, backfilling of basement substructures, and salvaging and on-Site burial of flue dust, granulated slag, asbestos-containing material, demolition debris and other wastes. A soil cover ranging from six-inches to five-feet thick was placed over the wastes.

A post-closure inventory was conducted in 1981, and 27 areas of concern were identified. A preliminary assessment completed in 1982-1983 documented groundwater and surface water contamination at the ACM facility. AR submitted a voluntary cleanup plan for the Site to MDEQ in 2000. MDEQ found the plan to be incomplete and subsequently requested that the EPA review any cleanup activities.

MDEQ collected samples of Missouri River sediment in May 2002. These samples were collected from the Fort Benton area (38 to 40 miles downstream from the ACM Site). MDEQ concluded that the five samples it collected had elevated levels of antimony, arsenic, copper, lead and zinc and recommended additional investigations.

Between 2003 and 2008, the EPA conducted several Site investigations, including an expanded Site investigation in 2003 and Superfund Site Assessment in 2007, which focused on residential areas within Black Eagle and Great Falls. The results of the 2003 investigation identified 78 acres encompassing 375 residences in Black Eagle with arsenic and lead above screening levels. Subsequent investigations in 2007 and 2008 also identified a large area having soil with elevated arsenic and lead in Black Eagle. Requests from the community, local government and the Governor of Montana were made to the EPA to include the Site on the National Priorities List (NPL). On March 20, 2011, the Site was added to the NPL.

In 2011, the EPA conducted a removal action in the Southern CASOI at the then proposed Copper Basin subdivision to remove approximately 1,200 cubic yards of soils containing elevated arsenic and lead from portions of five residential lots. The EPA also coordinated with the Montana Department of Transportation to treat and dispose of waste materials encountered in the Railroad Corridor.

On September 8, 2011, the EPA and AR entered into the *Administrative Settlement Agreement and Order on Consent*, CERCLA Docket No. CERCLA-08-2011-0017 (Settlement Agreement) whereby AR agreed to conduct remedial investigations within OU1 of the ACM Site. On November 30, 2011, the EPA issued the *Administrative Order for Remedial Investigation/Feasibility Study*, CERCLA-08-2012-0001, (UAO) to Burlington Northern Santa Fe Company (BNSF) to conduct remedial investigations in the Railroad Corridor portion of OU1. In July 2014, BNSF conducted minor interim cleanup activities in Art Higgins Community Park.

2.2 Remedial Investigation/Feasibility Study (RI/FS)

AR conducted the Remedial Investigation (RI)/Feasibility Study (FS) investigation in the majority of OU1, while BNSF conducted the RI/FS investigation within the Railroad Corridor portion of OU1. AR sampling was conducted in accordance with the EPA approved sampling and analysis plan, as described in the AR *Final Remedial Investigation Report, ACM Smelter and Refinery Site Operable Unit 1 – Community Soils Areas of Interest and Outlying Areas* (Formation, 2015). AR sampling began in 2011 and was completed in 2013. The extensive soil investigation included detailed sampling at 422 residential yards, and collection of nearly 8,000 residential soil samples. An additional 752 soil samples were collected from various non-residential properties within OU1.

AR conducted a Feasibility Study using the data from the RI, and the EPA approved the final AR *ACM Smelter and Refinery Site Operable Unit 1 (OU1) – Community Soils Areas of Interest (CSAOI) and Outlying Areas (OA) Feasibility Study* dated October 2017 (Formation, 2017). The Feasibility Study (FS) summarizes appropriate response action options.

BNSF completed an RI/FS for the Railroad Corridor, and the EPA approved the *Final Remedial Investigation Report, Railroad Corridor Segment of OU1 ACM Smelter and Refinery Superfund Site*, dated May 2015, and the *Final Feasibility Study Report Railroad Corridor Segment of OU1 ACM Smelter and Refinery Superfund Site* dated September 25, 2017 (Kennedy/Jenks, 2015, 2017).

Following completion of the Feasibility Studies, the EPA prepared a Proposed Plan which identified the alternative that, based on the Feasibility Studies, best met the requirements of 40 CFR 300.430(f)(1). The EPA issued the Proposed Plan for public comment on June 3, 2019 (EPA, 2019), and conducted a public meeting with the community on June 19, 2019. After evaluating comments received on the Proposed Plan during the public comment period and community meeting, the EPA prepared this Record of Decision (ROD) which describes the remedial alternative the EPA has selected to address contamination within OU1 of the ACM Site.

2.3 Enforcement Activities

The EPA is the lead agency overseeing the investigations conducted by AR and BNSF. MDEQ is the support agency.

An enforcement timeline is as follows:

2011, September	Administrative Order on Consent for OU1 Remedial Investigation Feasibility Study between AR and the EPA, CERCLA Docket No. CERCLA-08-2011-0017
2011, November	UAO for Remedial Investigation/Feasibility Study, issued by the EPA to BNSF, CERCLA Docket No. CERCLA-08-2012-0001

Section 3: Community Participation

Since the Site was listed on the NPL in March 2011, the EPA, MDEQ and the Cascade County Health Department have been actively engaged with the community. Meetings with the community have involved the EPA, the MDEQ and the Agency for Toxic Substances and Disease Registry (ATSDR) as well as AR and BNSF. The EPA established a local information repository at:

Black Eagle Community Center
2332 Smelter Avenue
Black Eagle, MT 59414
406-453-4736

Site documents are also available online at the ACM Site webpage:
https://www.epa.gov/superfund/acm-smelter

Site records are also available at the EPA Superfund Records Center Montana Office, at 10 West 15th Street, Suite 3200, Helena, Montana 59626.

The initial Community Involvement Plan (CIP) interviews were conducted from January 24 to January 28, 2011. The interview summaries are included in the CIP, dated June 30, 2011. The CIP supports communication between the community in and around the Site, the EPA and MDEQ and encourages community involvement in Site activities.

Listing the Site on the NPL also provided support for the development of a community-led Technical Advisory Group (TAG), which hired a TAG consultant with the assistance of an EPA grant. The TAG publishes articles in the quarterly Water and Sewer newsletter that goes out to all households in Black Eagle providing information about the Site. Monthly TAG meetings are attended by interested community members, the TAG consultant, EPA and MDEQ representatives, and other stakeholders. These meetings provide updates on the project schedule, sampling and analysis progress, outreach materials/fact sheets, and redevelopment plans for OU2 of the Site. TAG members also provide feedback to the EPA and MDEQ regarding sampling and cleanup plans and the redevelopment goals/desires of the community.

The Proposed Plan for Record of Decision for Community Soils Operable Unit 1 (OU1) ACM Smelter and Refinery Superfund Site, Black Eagle, Montana, was issued on June 3, 2019 (EPA, 2019), and a public notice was placed in the Great Falls Tribune, which ran on June 2, 5, 9, 12, 16, 17, 18, and 19, 2019, announcing the Proposed Plan, the public comment period, and a community meeting. The initial public comment period was open from June 3, 2019, through July 31, 2019. No extensions to this comment period were requested. During the public meeting, which was held on June 19, 2019 from 6:30 to 8:00 pm at the Black Eagle Community Center, two residents gave comments on the plan. Subsequent to the public meeting, several other residents provided written comments on the Proposed Plan. No changes to the Proposed Plan were necessary as a result of public comments.

At the public meeting, the EPA answered questions about the Site and the remedial alternatives. The EPA also discussed that the reasonably anticipated future land use remains primarily residential. A transcript of the public meeting is included in the administrative record. Public comments and the EPA's responses to comments received during the public comment period are presented in the Responsiveness Summary, Part 3 of this ROD.

Section 4: Scope and Role of Operable Unit or Response Action

The ACM Site is comprised of three operable units: OU1, Community Soils; OU2, Former Facility; and OU3, Missouri River. OU1 consists of the five subareas: the Northern and Southern Community Soils Areas of Interest (CSAOI), the Railroad Corridor (RC), and the Northern and Southern Outlying Areas (Figure 1-2).

The community soils portion of OU1 contains approximately 500 parcels in the community of Black Eagle, 422 of which are residential properties sampled as part of the RI. Soil was also sampled from a public park, vacant lots, commercial properties, and dirt roads and alleys as part of the RI effort to characterize the nature and extent of smelter-related contamination.

The Railroad Corridor portion of OU1 runs from 10th Street to the former smelter facility and contains the Art Higgins Memorial Park.

This ROD describes in detail the final remedy selected by the EPA for OU1 of the ACM Site, including contaminated surficial soil on residential, non-residential, undeveloped, commercial and public property in OU1.

OU2 consists of the former facility property and includes potential impacts to ground water and surface water as well as potential ecological risks at the Site, including potential impacts from OU1. The historical footprint of the ACM Smelter and Refinery facility is bounded by the Missouri River to the South and Southeast, Wire Mill Road to the North, and Smelter Avenue to the West. The Northeast portion of OU2 of the Site borders lands owned by the Lewis and Clark foundation.

OU3 will address potential impacts to the Missouri River from previously discharged waste materials from the former smelter operations.

Sections 5 through 14:

The discussion that follows has been broken into two parallel parts, first addressing the Community Soils (CS) portion of OU1, then addressing Railroad Corridor (RC) portion of OU1.

Community Soils

Section CS 5: Community Soils Site Characteristics

CS 5.1 CSAOI Description and History

Both CSAOIs are on the north side of the Missouri River. The Southern CSAOI is located immediately west of the Former Smelter and Refinery and the Northern CSAOI is located on the north side of the Former Smelter and Refinery (Figure 1-2). The Southern CSAOI is primarily residential and includes the eastern portion of the community of Black Eagle, which was built as a company town for the copper smelter starting in 1891. Homes in the older, central part of Black Eagle were generally constructed before 1920, and the majority of homes within OU1 were constructed prior to 1950. These homes are a mix of brick and wood-frame structures typically set on 30-foot by 150-foot lots along the avenues and 40-foot by 150-foot lots on the streets. The Northern CSAOI is predominantly undeveloped land but also has commercial and residential properties.

The two Outlying Areas include the northern portion of the City of Great Falls and unincorporated areas of Cascade County that surround the CSAOIs and the former smelter and refinery (Figure 1-2). The southern outlying area is south of the Missouri River, partly within the City of Great Falls, and includes commercial, residential, and recreational properties. Most of the homes in this part of Great Falls were constructed prior to 1950, and they are a mix of brick and wood-frame structures set on 50-foot by 150-foot lots. The Northern Outlying Area is north of the Missouri River and outside of the Great Falls city limits. The northern outlying area includes commercial, industrial, agricultural and recreational properties, as well as undeveloped land. The primary recreational property in the Northern Outlying Area is the Electric City Dirt Riders (ECDR) off-road racetrack.

CS 5.2 CSAOI Characteristics

This section includes a description of the Conceptual Site Model (CSM) on which the investigations, risk assessment, and response actions are based. A CSM is a living document used to organize and communicate information about Site characteristics, potential exposure routes, that is regularly updated and reflects the best interpretation of available information about the Site at any point in time. The initial OU1 CSM was completed by EPA in 2011, and an updated CSM incorporating the information gathered during the RI, was provided by AR in the OU1 RI Report (Formation, 2015). The major characteristics of the Site, and the nature and extent of community soils property contamination as defined by the RI, are summarized below. More detailed information is available in the administrative record for the Site.

CS 5.3 CSAOI Conceptual Site Model (CSM)

Figure 5-1 presents a graphical representation of the CSM for the Site. The CSM identifies the primary sources of contamination and how residents can be exposed to contamination. A more detailed discussion of the CSM is provided in the Baseline Human Health Risk Assessment, ACM Smelter and Refinery Site Operable Unit 1 (Ramboll Environ, 2016).

CS 5.4 CSAOI Sources of Contamination

The primary sources of contamination at the Site identified in the Human Health Risk Assessment (HHRA) include:

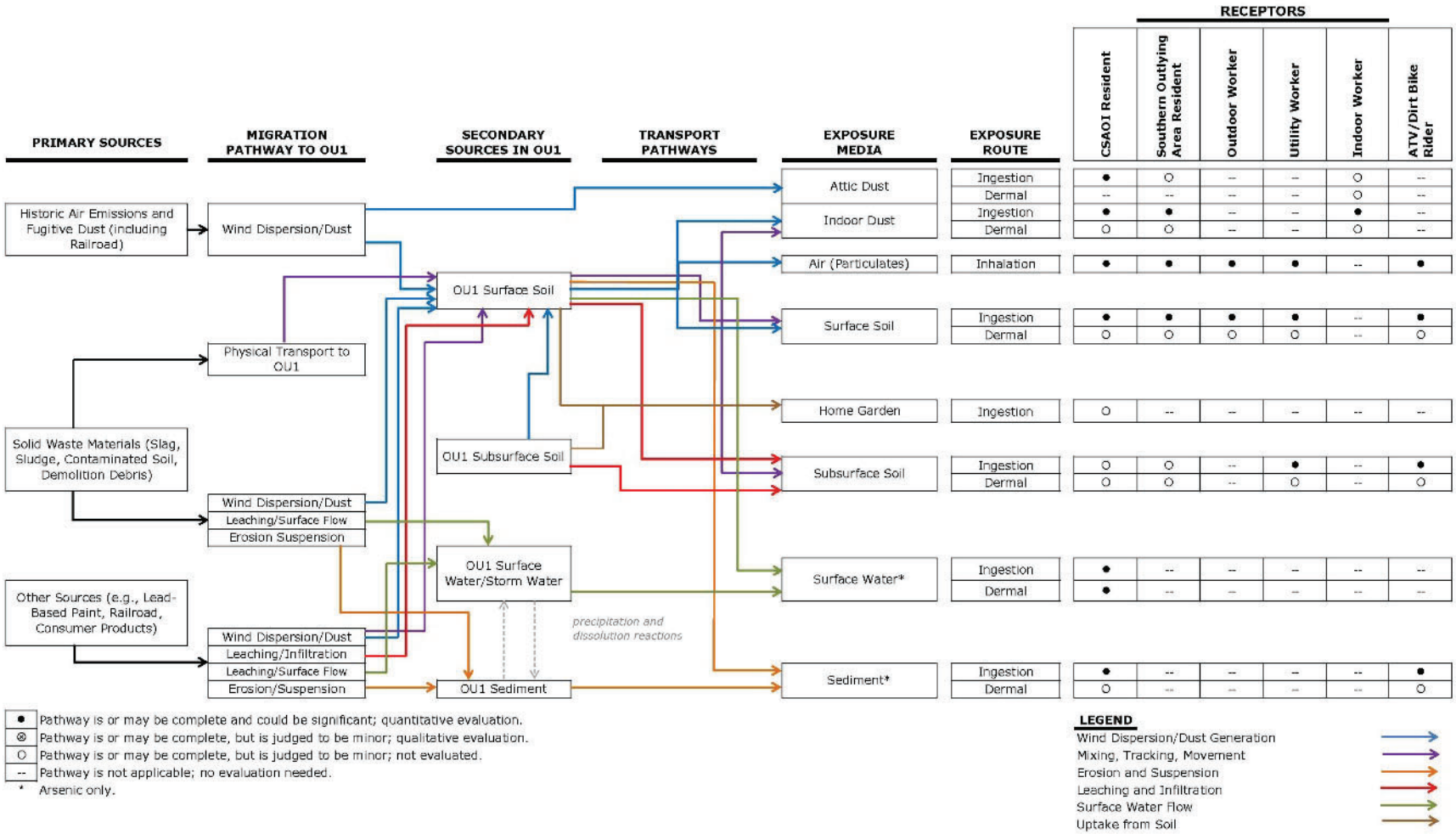
- Fugitive dust and releases associated with historical smelter/refinery operations,
- Solid wastes such as slag and slag-impacted soils,
- Liquid wastes such as process solutions, acids, and rinsate from historical facility operations.

Potential contaminant sources are summarized briefly and then discussed in more detail below. These include sources associated with copper and zinc smelting and refining; the zinc plant; the copper rod, wire, and cable mill; the cadmium plant; a lead plant; indium/iridium recovery; experimental germanium recovery; and the aluminum rod, wire and cable mill.

Table CS 5-1 Summary of ACM Processes, Raw Materials, and Wastes

Process Timeframe	Known or Suspected Raw Materials and/or Related By-Products	Potential Associated Wastes or Waste Streams
Smelter refining of copper ore 1893	Iron slag, sulfuric acid	Arsenic, cadmium, lead
Electrolytic refining of copper 1916	Copper ore, blister copper	Arsenic, antimony
Electrolytic refining of zinc 1916	Zinc ore, leaching and purification solutions	Cadmium, lead, zinc corrosives
Copper Rod, Wire, and Cable Mill 1918	Refined copper	Copper, process fluids
Cadmium Plant 1920s	Zinc by-products, leaching and purification solutions	Lead, corrosives
Zinc Plant 1920s	Leaching and purification solutions	Sulfur, sulfuric acid
Lead Plant	Copper ore, sulfuric acid solutions	Sulfur dioxide, sulfuric acid, slag
Indium processing 1930s to 1960s	Flue dust from zinc-lead processing	Waste acids and soda solutions
Iridium processing 1930s to 1960s	Decopperized slimes, soda-silica flux, lime flux, soda ash	Copper, selenium, tellurium, lead-lime slag, soda slag, spent acid solutions
Germanium processing 1950s	Filtrates and wash waters	Arsenic in wastewater, corrosives
Aluminum Rod, Wire, and Cable Mill 1950s	Refined aluminum	Aluminum, process fluids

Figure CS 5-1 – ACM Conceptual Site Model



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CS 5.5 CSAOI Site Hydrologic Setting

Both CSAOIs are located on a plateau above the Missouri River, which flows eastward adjacent to the Site within a steeply cut but broad channel. The elevation of OU1 ranges from about 3,550 feet above mean sea level on the plateaus above the river to approximately 3,250 feet above mean sea level at the river's edge. Surface drainage from OU1 flows to the Missouri River. Urban runoff from impervious areas on either side of the Missouri River is routed to storm water systems that ultimately drain to the Missouri River. There are two natural stream drainages within OU1: the Black Eagle drainage and the ECDR drainage.

CS 5.6 CSAOI Nature and Extent of Contamination

Environmental data were collected in the CSAOIs and Outlying Areas from 2011 through 2013 as part of the OU1 RI. Environmental samples included soil samples from residential and non-residential locations in the CSAOIs and Outlying Areas, groundwater from water supply wells, surface water and sediment from the Black Eagle and ECDR drainages and storm water culverts, and indoor dust samples from homes in the CSAOIs. In addition, exterior paint tests for lead were conducted on selected homes in the CSAOIs. The soil investigation involved collecting soil samples from four separate depth intervals (0 to 2, 2 to 6, 6 to 12, and 12 to 18 inches) at 422 residential properties (nearly 8,000 samples total), as well as from multiple properties with diverse non-residential uses (e.g., commercial, agricultural, recreational, and vacant land) in both the CSAOIs and Outlying Areas (an additional 756 samples).

Environmental samples were analyzed for some or all of the 14 chemicals of interest (antimony, arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, silver, and zinc) identified by the EPA for the OU1 RI. Chemical data collected throughout OU1 were analyzed to identify the contaminants of potential concern (COPCs) for each environmental media and describe the spatial distribution of COPCs in each of the media investigated. Arsenic was identified as a COPC in soil, sediment, and surface water. Lead was identified as a COPC in soil and surface water. No chemicals of interest were identified as COPCs in groundwater/drinking water.

Arsenic and lead in residential soil were reported at concentrations that exceeded risk-based screening levels for residential soil. Arsenic concentrations exceeded the risk-based screening level of 0.61 mg/kg[1] in nearly all the residential soil samples. The majority of lead concentrations in residential soil were less than the risk-based screening level of 400 mg/kg. Arsenic and lead concentrations in non-residential soil also exceeded risk-based screening levels. Arsenic concentrations were higher than the screening level of 0.61 mg/kg at all locations in the non-residential areas sampled in OU1. Lead concentrations were higher than the screening level of 400 mg/kg at some Outlying Area sample locations.

Compared to OU1 soil, the other environmental media investigated including groundwater, surface water, storm water, and sediment had relatively few locations where elevated arsenic and lead concentrations were reported. Arsenic and lead concentrations in groundwater samples collected from existing water wells were below drinking water standards. Surface water and storm water samples contained low concentrations of arsenic and lead primarily in suspended solids. Sediment arsenic

[1] This screening level was used in the Final RI Report. The current arsenic screening level is 0.68 mg/kg (U.S. EPA 2015b).

concentrations exceeded the risk-based screening levels for residential soil (lead concentrations did not), but arsenic concentrations in sediment were lower than concentrations in nearby soil.

CS 5.7 CSAOI Contaminant Fate and Transport

Historically, the primary pathways for transport of COPCs to environmental media in OU1 included wind dispersion of releases from operations of the former smelter/refinery, which resulted in deposition of particulate matter to soil in downwind areas and tracking or physical placement of source materials into OU1. Other sources of COPCs were historically present within OU1, including exterior lead-based paint, which may have also contributed COPCs to soil. The primary ongoing transport pathways within OU1 are air transport of fine soil particles disturbed by human activities (dust generation) and tracking and physical transport of soil by human activities. Wind transport of fine particles from surface soil is also possible but considered less significant in developed areas of OU1 where soil is typically covered by vegetation.

Leaching and migration of COPCs vertically downward from surface soil to deeper soil in OU1 appears limited to depths of 6 to 18 inches. Groundwater samples collected from existing water supply wells provided no evidence for transport of COPCs from soil to deeper groundwater. Contaminated soil remains a potential source of COPCs to surface water (including storm water) and sediment in OU1, but OU1 surface water and sediment data indicated that the transport of COPCs from soil to surface water and sediment by erosion and runoff is minimal.

CS 5.8 CSAOI Soil Sampling Results

Residential Soil Sampling

Residential soil sampling design for OU1 is outlined in the Black Eagle Residential Soils Sampling and Analysis Plan (SAP) and the RI SAP and described in the RI Report (Formation, 2015). These sampling plans identified comparable soil sampling design and sampling and analysis procedures. Yards were divided into components (i.e., Front Yard, Back Yard, Garden, Play Area). One subsample location was identified from front or back yards under 625 square feet total area, with additional subsample locations as necessary to ensure a sample density of at least one subsample per 625 square feet in these components. A minimum of two subsample locations were identified in other yard components (rock garden, vegetable garden, etc.) regardless of the area.

Soil was collected from each identified subsample location from the 0 to 2 inch, 2 to 6 inch, 6 to 12 inch, and 12 to 18 inch depth intervals. The number of individual soil samples collected from each property varied, typically between 12 and 24 samples.

Residential Soil Results from the Northern and Southern CSAOIs

Residential yard sampling was conducted at 391 yards in the Northern and Southern CSAOIs in 2011 and 2012. In total, more than 7,200 individual soil samples were analyzed for arsenic, cadmium, copper, lead, and zinc. Subsets of the samples were also analyzed for iron, chromium (hexavalent and/or total), and mercury. To facilitate COPC determination for the Site, in 2011 a representative subset of 295 samples were also analyzed for antimony, chromium, cobalt, manganese, nickel, selenium, and silver.

Results for arsenic and lead are discussed below. For data on other analytes and additional information on the COPC selection process, see Section CS 7.2.

Arsenic concentrations ranged from less than 0.1 mg/kg to 1,560 mg/kg, with a median arsenic concentration of 26.2 mg/kg which is above the Montana background threshold value (BTV) of 22.1 mg/kg. Lead concentrations ranged from less than 0.1 mg/kg to 6,270 mg/kg with a median concentration of 93.2 mg/kg. Lead concentrations generally exceeded the Montana BTV of 29.8 mg/kg lead, and occasionally exceeded the risk-based screening level of 400 mg/kg. For additional detail on residential soil sampling and results, refer to the RI Report (Formation, 2015).

Residential Soil Results from the Southern Outlying Area

In 2013, residential yard sampling was conducted at 31 yards in the Southern Outlying Area within the City of Great Falls. In total, 640 soil samples were collected and analyzed for arsenic, cadmium, chromium (total), copper, lead and zinc. For a subset of the samples, hexavalent chromium analysis was also performed. Results for arsenic and lead are discussed below. For data on other analytes and additional information on the COPC selection process, see Section CS 7.2.

Concentrations in the Southern Outlying Area were generally lower than those seen in the CSAOIs. Arsenic concentrations ranged from 3.5 mg/kg to 331 mg/kg, with a median arsenic concentration of 19.4 mg/kg, which is below the Montana background threshold value (BTV) of 22.1 mg/kg. Lead concentrations ranged from 6.3 mg/kg to 1,150 mg/kg with a median concentration of 57.5 mg/kg. Lead concentrations generally exceeded the Montana BTV of 29.8 mg/kg lead, and occasionally exceeded the risk-based screening level of 400 mg/kg. For additional detail on residential soil sampling and results, refer to the RI Report (Formation, 2015).

Non-Residential Soil Sampling

Non-residential soil sampling was conducted at properties within the CSAOIs and the Northern Outlying Area that currently have non-residential uses, including vacant lots, in accordance with the RI SAP. Five-point composite samples were collected at each non-residential soil sampling location. The same depth intervals were used for non-residential sampling as were used for the residential sampling (0 to 2 inches, 2 to 6 inches, 6 to 12 inches, and 12 to 18 inches). These non-residential soil samples were all analyzed for antimony, arsenic, cadmium, chromium (total), copper, lead, and zinc. 14 samples were also analyzed for hexavalent chromium. Results for arsenic and lead are discussed below. For data on other analytes and additional information on the COPC selection process, see Section CS 7.2.

Non-Residential Soil Sampling in the Northern and Southern CSAOIs

Over 200 non-residential soil samples were collected from 51 sample locations at 10 properties within the CSAOIs (three in the Northern CSAOI, seven in the Southern CSAOI). On properties in the Northern CSAOI, sampling locations were established on a 100-foot by 100-foot grid. In the Southern CSAOI, non-residential properties were smaller, and 2 to 4 sample locations were established on each property rather than using a grid.

Non-Residential Soil Sampling in the Northern Outlying Area

A total of 106 sample locations were established in and immediately adjacent to the Northern Outlying Area, most using a 400-foot by 400-foot grid. Exceptions to the grid included sample locations spaced at 1000-feet established along a transect line following the Missouri River, and samples collected outside of the eastern boundary of the Northern Outlying Area along Rainbow Dam Road.

Non-Residential Soil Sampling Results

The median arsenic concentration in soil from non-residential areas was 33.9 mg/kg. The maximum arsenic concentration was 756 mg/kg (in a sample from the ECDR track), and arsenic concentrations in 48% of the non-residential soil samples exceeded the Montana BTV of 22.5 mg/kg. In general, arsenic concentrations were higher at depths greater than 6 inches. The median lead concentration in non-residential soil was 38.9 mg/kg, which is above the Montana BTV of 29.8 mg/kg. The maximum lead concentration in the Northern and Southern CSAOIs was 644 mg/kg, and the maximum lead concentration in the Northern Outlying Area was 2,430 mg/kg. In general, lead concentrations were highest in the top 2 inches of soil, and concentrations above 400 mg/kg were limited to the northeast portion of the Northern Outlying Area (Formation, 2015).

Hexavalent chromium concentrations in all non-residential soil samples were below the residential risk-based screening level of 0.29 mg/kg. For additional detail on non-residential soil sampling and results, refer to the RI Report (Formation, 2015).

Soil Results from Unpaved Roads and Alleys in Black Eagle

Unpaved roads and alleys in Black Eagle were sampled as part of the OU1 RI. A total of 112 soil samples were collected from 28 unpaved roads and alleys. For each road or alley segment, four subsample locations were identified, and subsamples collected at each. The subsamples were composited to make one sample to represent the road or alley segment from each of the sampled depth intervals (0 to 2 inches, 2 to 6 inches, 6 to 12 inches, and 12 to 18 inches). The road and alley samples were analyzed for arsenic, cadmium, chromium (total), copper, lead, and zinc.

Arsenic concentrations ranged from 5 mg/kg to 751 mg/kg, with a median concentration of 21 mg/kg, which is below the Montana BTV of 22.5 mg/kg. All 112 samples exceeded the residential arsenic risk-based screening level of 0.61 mg/kg. Consistent with other non-residential soil samples, arsenic concentrations were highest in deeper samples. Lead concentrations ranged from 6 mg/kg to 3,880 mg/kg, with a median concentration of 120 mg/kg, which is above the Montana BTV of 29.8 mg/kg. Eight of the samples exceeded the lead risk-based screening level of 400 mg/kg. Unlike the pattern with residential soil samples, lead concentrations in the road and alley samples were highest in the deeper samples. None of the 0 to 2-inch samples exceeded the lead risk-based screening level (Formation, 2015).

Cadmium, chromium (total), copper and zinc concentrations did not exceed their respective residential risk-based screening level in any of the road and alley samples. For additional detail on unpaved road and alley soil sampling and results, refer to the RI Report (Formation, 2015).

CS 5.9 Indoor /Attic Dust

Indoor dust testing for lead was conducted at 30 homes (including 18 attics) in the study area (Formation, 2015). Attic dust was not collected at the remaining homes because they did not have attics, or the attics could not be accessed safely. Dust samples were analyzed for arsenic and lead. The average arsenic concentration measured in samples of dust from living areas of the home was 12.2 mg/kg, while the average lead value for these same samples was 156 mg/kg. The average arsenic concentration measured in attics was 110.7 mg/kg. The average lead concentrations measured in attic dust was 887 mg/kg.

The results of this sampling are included on Tables CS 5-2 and CS 5-3, below (Formation, 2015).

Table CS 5-2 Indoor Dust Sampling Results

	Sample ID	Property ID	Sample Date	Arsenic (mg/kg)	Lead (mg/kg)	Year Home Built
Interior Floor Samples	IBE-032-111813	BE-032	11/18/2013	15.1 J	232 J	1900
	IBE-042-112013	BE-042	11/20/2013	18.7 J	277 J	1905
	IBE-044-111413	BE-044	4/2/2014	15.3	229 J	2001
	IBE-047-120513	BE-047	11/13/2013	11.8 J	179 J	1902
	IBE-055-111213	BE-055	11/12/2013	22.1 J	204 J	1900
	IBE-062-111313	BE-062	11/13/2013	10.4 J	148 J	1900
	IBE-067-120513	BE-067	12/5/2013	12.1 J	121 J	1910
	IBE-076-111813 COMP 1-2-3	BE-076	11/18/2013	13.2 J	242 J	1892
	IBE-077-111813 COMP 1-2	BE-077	11/18/2013	9.94 J	158 J	1910
	IBE-079-111913	BE-079	11/19/2013	25.5 J	321 J	1915
	IBE-088-112513	BE-088	11/25/2013	16.1 J	115	1890
	IBE-094-121013	BE-094	12/10/2013	10.9 J	125 J-	1900
	IBE-203-120213	BE-203	12/2/2013	9.27 J	197 J	1901
	IBE-204A-120213	BE-204A	12/2/2013	13.9 J	244 J	1900
	IBE-217-120513	BE-217	12/5/2013	17.4 J	241 J	1912
	IBE-234-120213	BE-234	12/2/2013	8.53 J	161 J	1921
	IBE-248-111913 COMP 1-2	BE-248	11/19/2013	14.9 J	295 J	1896
	IBE-250A-111413	BE-250A	4/2/2014	12.5	167 J	1916
	IBE-253A-1-112013	BE-253A	11/20/2013	3.25 J	30.3 J	1895
	IBE-253A-2-112013	BE-253A	11/20/2013	5.3 J	119 J	1895
	IBE-258-121013	BE-258	12/10/2013	21.6 J	49.7 J-	1900
	IBE-316-111313 COMP 1-2-3	BE-316	11/13/2013	11.3 J	168 J	1919
	IBE-405-111913	BE-405	11/19/2013	3.63 J	20.3 J	2009
	IBE-438-111913	BE-438	11/19/2013	3.59 J	12.7 J	2007
	IBE-459-112613	BE-459	11/26/2013	8.02 J	84.3 J	1947
	IBE-506-112013	BE-506	11/20/2013	4.49 J	53.1 J	1915
	IBE-508-112113	BE-508	11/21/2013	16.9 J	79.7 J	1910
	IBE-514-111413 COMP 1-2	BE-514	11/14/2013	20.7 J	250 J	1928
	IBE-517-112013	BE-517	11/20/2013	9.95 J	223 J	1919
	IBE-546A-120513	BE-546A	12/5/2013	8.29 J	59.1 J	1910
	IBE-600-112613	BE-600	11/26/2013	2.58 J	32.4 J	--

Table CS 5-3 Attic Dust Testing Results

	Sample ID	Property ID	Sample Date	Arsenic (mg/kg)	Lead (mg/kg)	Year Home Built
Attic Samples	ATTIC-BE-032-111813	BE-032	11/18/2013	77.4	2800	1900
	ATTIC-BE-042-112013	BE-042	11/20/2013	42.1	500	1905
	ATTICBE-044-111413	BE-044	11/14/2013	8.52	91.6	2001
	ATTIC-BE-049-112013	BE-506	11/20/2013	84.3	859	1915
	ATTICBE-067-120513	BE-067	12/5/2013	14.6	144	1910
	ATTIC-BE-076-111813	BE-076	11/18/2013	182	2420	1892
	ATTIC-BE-079-111913	BE-079	11/19/2013	13.5	215	1915
	ATTICBE-094-121013	BE-094	12/10/2013	75.8	932 J-	1900
	ATTICBE-203-120213	BE-203	12/2/2013	204	1490	1901
	ATTICBE-217-120513	BE-217	12/5/2013	51.9	495	1912
	ATTIC-BE-248-111913	BE-248	11/19/2013	167	898	1896
	ATTICBE-250A-111413	BE-250A	4/2/2014	84.8	1310	1916
	ATTIC-BE-253A-112013	BE-253A	11/20/2013	695	298 J	1895
	ATTICBE-258-121013	BE-258	12/10/2013	129	456 J-	1900
	ATTICBE-459-112613	BE-459	11/26/2013	9.04	214	1947
	ATTIC-BE-508-112113 COMP 1-2	BE-508	11/21/2013	20.6	305	1910
	ATTICBE-514-111413	BE-514	11/14/2013	74	682	1928
	ATTICBE-546A-120513	BE-546A	12/5/2013	59.1	1850	1910

Note:

J Result qualifier indicating that the result is less than the Reporting Limit but greater than or equal to the Method Detection Limit. The concentration is an approximate value.

mg/kg Milligrams per kilogram

CS 5.10 Bioavailability

Bioavailability (sometimes referred to as bioaccessibility) is the degree and rate at which a substance (such as arsenic or lead) is absorbed into a living system, and which therefore may be available for a physiological effect. Both AR and BNSF performed Site-specific bioavailability/bioaccessibility testing. These Site-specific values were used in the HHRA instead of the default values of 60% for lead and arsenic.

In the community soils areas of OU1, a bioavailability analysis was performed for arsenic and lead in soil samples to determine how likely it was that an individual who ingested Site-specific lead and arsenic contaminants might be negatively affected. Soil testing to estimate the Site-specific relative oral bioavailability (RBA) of arsenic and lead was a data need identified to support development of the CSM and for the OU1 RI HHRA. Bioavailability samples were selected to represent a range of arsenic and lead concentrations and to provide a spatially representative group of samples for the OU1 residential community. Soil samples from different depths were included, even though residents are most likely to come into contact with surface soil. Soil samples were selected to represent a range of different locations relative to potential ACM sources. The average RBA in residential yards for lead is 64% for shallow samples (0 – 6 inches) and for deeper samples (deeper than 6 inches) is 58%. The average RBA for arsenic is 40%.

Table CS 5-4 Community Soils Arsenic and Lead Bioaccessibility Results

Sample ID	Arsenic in Soil			Lead in Soil		
	Concentration (mg/kg)	In Vitro Bioaccessibility (%)	Relative Bioavailability[1] (%)	Concentration (mg/kg)	In Vitro Bioaccessibility (%)	Relative Bioavailability[2] (%)
BE-014-FY-0612	104	64	59	95.2	70	58
BE-021B-DZ-0002	21.4	22	33	1098	73	61
BE-031-DZ-0206	30.2	27	36	1041	79	67
BE-039-FG-1218	157	50	50	657	80	68
BE-046-FY-0002	90.2	36	42	1158	83	70
BE-055-FY-0002	546	22	33	1890	51	42
BE-057-DZ-0002	31.1	30	38	1389	77	65
BE-064-BY-0206	142	38	43	630	65	54
BE-064-FY-0612	244	30	38	613	55	45
BE-088-FY-0612	127	22	33	1127	24	19
BE-205-ED-0204	17.4	25	35	727	69	58
BE-206B-BY-0206	42.7	32	40	1166	99	84
BE-216-DZ-1218	79.6	37	43	1489	89	75
BE-236B-BA-0206	145	50	51	507	78	66
BE-248-ED-0206	141	32	39	257	70	58
BE-253A-BY-0206	144	47	49	531	80	68
BE-253B-FY-1218	241	48	49	213	68	56
BE-324-BA-0612	109	44	47	170	79	66
BE-335-DZ-1218	121	40	44	48.5	62	52
BE-335-RG-0002	24.6	27	36	1539	88	74
BE-411-VG-0002	104	46	48	32.7	61	51
BE-429-ED-1218	28.6	19	31	27.5	53	44
BE-429-FG-0612	17.4	19	31	310	75	63
BE-430-BY-0002	16.3	21	33	529	88	74
BE-430-FY-0206	53.8	32	39	162	73	61
BE-447-BY-0206	42.9	34	41	167	73	61
BE-447-FG-1218	149	48	50	36.5	75	63
BE-506-FY-0206	39.4	29	37	244	65	55
BE-508-RG-0206	158	53	53	728	73	62
BE-514-FG-0002	20.9	19	31	310	79	67
BE-514-FY-0612	175	35	41	57.7	61	51
BE-516A-BA-0002	20	21	33	667	78	65
BE-527B-FY-0002	17.5	17	30	145	69	58
BE-702-BY-0206	94	35	41	47.2	44	36
BE-702-DZ-0002	21	12	27	149	59	49

Notes:

[1]Arsenic relative bioavailability (%) = 0.62 x in vitro bioaccessibility (%) + 19.7 (Brattin et al., 2013)

[2]Lead relative bioavailability (%) = 0.878 x in vitro bioaccessibility (%) – 0.028 (Drexler and Brattin, 2007)

Section CS 6: Current and Potential Future Land Uses in the CSAOIs

The CSAOIs include a portion of the unincorporated community of Black Eagle, a portion of the City of Great Falls, and areas of unincorporated Cascade County. There are a range of land uses across OU1. All of the parcels comprising the CSAOIs are under the jurisdiction of the Cascade County Zoning Regulations adopted in 2005 and revised in 2007, 2009, and 2012 (Cascade County Commission, 2012).

Land within the Southern CSAOI is largely urban residential with scattered parcels of commercial land. Land within the Northern CSAOI is zoned for residential use but most of the privately owned properties are vacant or are developed for commercial use. Most of the property in the Northern Outlying Area is zoned for industrial use, including one parcel owned by the City of Great Falls, or open space. The predominant current land uses of the Northern Outlying Area are associated with agricultural production, recreation, and ranching. Adjacent parcels are also used for commercial or industrial purposes, including a small property used for dirt bike and all-terrain vehicle riding and racing (the ECDR track), and a former city municipal landfill. Current land uses in the Southern Outlying Area are predominantly residential in the northern portion of the city of Great Falls. A former landfill and a golf course are present east of the residential area in incorporated Great Falls on land zoned for park and open space use. Commercial and vacant properties lie just above the Missouri River on both the north and south banks, and these areas are zoned for mixed, industrial, or open space land uses.

Residences are present in unincorporated Cascade County to the east, north, and west of OU1 along with numerous heavy industrial facilities, including an operating oil refinery, two operating hydroelectric dams and power facilities, and former railroad lines.

The primary recreational use area in the vicinity of the ACM Site is the River's Edge Trail, as well as dirt bike and all-terrain vehicle riding and racing at the ECDR track. The River's Edge Trail is located along the south side of the Missouri River and consists of an asphalt and gravel trail developed on abandoned portions of the Great Northern and Milwaukee Railroad lines that starts in Great Falls and parallels the river for 25 miles. A single-track mountain bike trail is also present along the south bank of the Missouri River. The western portion of the trail is within the Great Falls city limits and the eastern portion is on Cascade County land, both of which are zoned for open space use. The ECDR is directly northeast of Former Great Falls Refinery Site (OU2) and south of Rainbow Dam Road. The ECDR was originally constructed in the 1960s and consists of a 35-acre dirt track that is used for both dirt bike and all-terrain vehicle riding and racing. The ECDR is within Cascade County and is zoned for industrial use.

Section CS 7: Summary of CSAOI Risk

Summary of Baseline Human Health Risks

The Community Soils Baseline HHRA focused on people living, working, and recreating within OU1 and their potential exposures to the COPCs in OU1 soil, dust, air, sediment and surface water. The HHRA presented estimates of typical and upper end risks for a hypothetical receptor exposed to environmental media in different areas within OU1 based on a range of reasonable exposure scenarios.

CS 7.1 Contaminants of Potential Concern

Metals that were assessed in the RI included: antimony, arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, silver and zinc.

Data from 295 soil samples collected at 70 residential properties during 2011 was statistically evaluated for comparison to risk-based screening levels to determine whether the measured concentrations of each metal of interest required further investigation. It was determined that arsenic and lead were COPCs for the Site but chromium and mercury as contaminants of interest (COIs) were unable to be eliminated based on the data available at that time.

A summary is included below on Table CS 7-1.

Within the data used for the initial COPC determination, total chromium concentrations were all well below the risk-based screening level for total chromium. The maximum measured total chromium concentration in this dataset was 50.6 mg/kg, and the risk-based screening level for total chromium is 120,000 mg/kg. However, all the total chromium concentrations exceeded the much lower risk-based screening level of 0.29 mg/kg for hexavalent chromium. Additional sampling and analysis for total and hexavalent chromium was subsequently conducted on 105 soil samples. The results of this analysis indicated that hexavalent chromium could be eliminated as a Site COPC. Additional information regarding hexavalent chromium in OU1 soil is available in the AR OU1 RI Report (Formation, 2015).

Mercury analysis was done on 371 samples, and the resulting data was used to determine that mercury need not be retained as a COPC for OU1. For additional information on mercury concentrations in OU1 soil, refer to AR OU1 RI Report (Formation, 2015).

For this ROD, arsenic and lead are the only COIs retained as COPCs based on Site-specific risk calculations for residential and recreational exposure scenarios.

CS 7.2 Identification of Media of Concern

Based on Site characterization, exposures to lead and arsenic in soils and soil-derived dust are the primary contributors to risks estimated for people living, working and recreating in the CSAOI. Exposure to attic dust, sediment and surface water were minor contributors to overall risks estimated for all receptor groups, including residents. The estimated risk from exposure to arsenic and lead in attic dust did not exceed levels of potential concern. Based on this supplemental analysis, attic dust is not a media of potential concern.

The contribution of indoor dust to residential risk was included when evaluating cleanup levels for soil. It was determined that residential cleanups of exterior soil in accordance with the selected remedy will sufficiently reduce exposure so that interior cleanups are not necessary to ensure the protectiveness of the remedy.

During planning for the Baseline HHRA, the groundwater exposure pathway was evaluated and determined to be incomplete for the CSAOI based on consideration of available groundwater data and other information suggesting groundwater is not used for drinking water within the OU1 boundaries.

Table CS 7-1 Summary Statistics for Concentrations of Contaminants of Interest in Residential Soil and Comparison to Risk-Based Screening Levels

Summary Statistics	Antimony	Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Nickel	Selenium	Silver	Zinc
	Concentrations in mg/kg (dw)												
N (number of samples)	295	295	295	295	295	295	295	295	295	295	295	295	295
Minimum	0.38	16.2	0.52	8.3	3.3	40	8,020	3.6	176	9	0.48	<0.38	90.8
Maximum	14.2	398	129	50.6	20.1	2,600	44,600	2,150	3,200	73.6	4.9	24.2	18,100
Median	1.5	39.8	7.2	25.1	9.2	246	23,400	330	516	23.9	1.6	1.7	1,370
Mean	1.75	47.2	12.5	24.9	9.2	277	23,787	364	575	24.8	1.8	2.1	2,056
Standard Deviation	1.15	30.9	15	6.7	2.6	197	5,037	262	318	9.1	0.6	1.9	2,126
Data distribution type	not normal	not normal	log normal	not normal	not normal	not normal	not normal	not normal	not normal	log normal	log normal	not normal	log normal
99th percentile	6	201	72.3	48.1	19.6	991	38,000	1,170	2,330	64.3	3.8	7	10,800
95LCL on percentile [1]	4.4	**114**	63	**39**	15	675	35,800	**948**	1,380	48.8	3.6	6.6	9,660
Risk Based Screening Level (residential soil) [2]	31	0.39	70	Cr(III) 120,000 [3] Cr(VI) 0.29	23	3,100	55,000	400	1,800	1,500	390	390	23,000
Notes:													

[1] For data sets with "not normal" distribution type, the 99th percentile and lower confidence limit (95LCL) on the percentile were determined as the 293rd ranked and 289th ranked values, respectively. For data sets with log normal distributions (Cd, Ni, Se, Zn), the 95LCL was computed based on distribution assumptions. 95LCL values for arsenic, chromium, and lead are above the RBSLs.

[2] EPA Regional Screening Levels for Residential Soil (refer to http://www.epa.gov/region9/superfund/prg/)

[3] Total chromium concentrations were measured in soil. Trivalent chromium [Cr(III)] has an RBSL of 120,000 mg/kg, and hexavalent chromium [Cr(VI)] has RBSLs of 0.29 mg/kg based on carcinogenic risks and 230 mg/kg based on non-cancer hazards.

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Given these findings, the environmental condition to be addressed by the remedy is soil in areas of CSAOI. No actions are needed to address arsenic and lead in other environmental media in CSAOI (i.e., surface water, sediment, groundwater, or attic dust).

CS 7.3 Exposure Scenarios

The Baseline HHRA included quantitative evaluation of the following potential receptors and potential exposure scenarios:

- A resident (child/adult) within the CSAOIs exposed to arsenic and lead from residential soils (0 to 6 inches), indoor dust originating from residential surface soils (0 to 2 inches), and dust from community-wide surface soils (0 to 2 inches). The resident was also assumed to be exposed to arsenic in surface water and sediment from the Black Eagle drainage, and arsenic and lead in attic dust (adult only)
- A resident (child/adult) within the Southern Outlying Area (Great Falls) exposed to arsenic and lead in residential surface soils, indoor dust originating from residential surface soils, and dust from community-wide surface soils
- An outdoor worker within the CSAOIs and the Northern Outlying Area exposed to arsenic and lead primarily in non-residential surface soils and surface soil-derived dust
- A utility worker within the CSAOIs and the Northern Outlying Area exposed to arsenic and lead in non-residential surface and subsurface soils and soil-derived dust
- An indoor worker within the CSAOIs and the Northern Outlying Area exposed to arsenic and lead in indoor dust within a commercial building that originates from non-residential surface soil
- An all-terrain vehicle (ATV)/dirt bike) rider exposed to arsenic and lead in ECDR surface and subsurface soils (0 to 18 inch depth interval) and soil-derived dust and arsenic in sediment and sediment-derived dust from the ECDR drainage.

For arsenic exposure, pathway-specific intake estimates were combined with toxicity information to characterize arsenic risks. Equations for estimating arsenic intake as an average daily dose for non-cancer endpoints or lifetime average daily dose for the cancer endpoint were based on the EPA's *Risk Assessment Guidance for Superfund (RAGS)* (EPA, 1989).

For residential lead exposure, the EPA's Integrated Exposure, Uptake, and Biokinetic (IEUBK) model was used to evaluate lead risks for children and to predict the risk, as a probability, that a young child (0 to 6 years of age) will have a blood lead level greater than 10 micrograms per deciliter (µg/dL) when exposed to a combination of lead concentrations in specific media (EPA, 2002). For non-residential lead exposure, the EPA's Adult Lead Methodology (ALM) was used to assess risks to the fetus of a worker exposed to lead and to estimate the probability that non-residential exposures to lead by an outdoor worker, indoor worker, utility worker, and ATV/dirt bike rider will increase fetal blood lead above 10 µg/dL.

CS 7.4 Development of Risk-Based Preliminary Remediation Goals

A range of risk-based preliminary remediation goals (PRGs) for arsenic and lead in residential and non-residential soil were developed and presented in the Baseline HHRA. For arsenic in soil, PRGs were

calculated for each exposure scenario for different risk levels within the EPA's target risk range for the cancer endpoint (1E-06 to 1E-04) and also based on a hazard index of 1 for non-cancer effects. For lead in soil, both IEUBK-model default and alternate soil intake rate assumptions were used to calculate PRGs for a child. The PRGs were also calculated for lead in soil for the other exposure scenarios. The arsenic cancer risk estimates corresponding to all receptor groups' exposures to attic dust, sediment and surface water were less than 1E-06, the low end of the EPA's target risk range; therefore, PRGs were not developed for those media in the Baseline HHRA.

Arsenic PRGs - Residential soil PRGs for arsenic account for a resident's incidental ingestion of surface soil (0 to 6 inches) and surface-soil-derived, indoor dust, as well as inhalation of windblown soil particulate resuspended in air. Non-residential soil arsenic PRGs were calculated for soil-derived exposure pathways specific to each exposure scenario/receptor. For the outdoor worker, utility worker, and ATV/dirt bike rider receptors, PRGs included incidental ingestion of soil and inhalation of re-suspended soil particulate in air. For the indoor worker, the PRG was calculated based on incidental ingestion of soil-derived indoor dust in commercial buildings.

Soil arsenic PRGs presented in the Baseline HHRA for the cancer risk range of 1 in 1,000,000 to 1 in 10,000 (1E-06 to 1E-04) and non-cancer hazard quotient of 1 are presented in Table CS 7-2.

Table CS 7-2 Arsenic Soil Preliminary Remediation Goals

Exposure Scenario	Arsenic Preliminary Remediation Goals (mg/kg)			
	Risk = 1E-06	Risk = 1E-05	Risk = 1E-04	HQ=1
Resident - OU1 Soil	4	36	360	175
Outdoor Worker - OU1 Soil	12	120	1,204	1,566
Utility Worker - OU1 Soil	767	7,670	76,697	1,312
Indoor Worker - OU1 Soil	58	577	5,772	9,276
All-Terrain Vehicle/Dirt Bike Rider - Electric City Dirt Riders Soil	20	200	1,996	979

Note:
HQ Hazard quotient

Lead PRGs - Residential soil lead PRGs presented in the Baseline HHRA were based on the probability that no more than 5 percent of exposed children or an exposed fetus will have a blood lead level that exceeds 10 µg/dL. Residential and non-residential soil lead PRGs were developed using the same model inputs and assumptions used to estimate corresponding lead risks in the Baseline HHRA.

Soil lead PRGs presented in the Baseline HHRA included:

- Child Resident (alternate soil intake rate) – 768 ppm lead
- Child Resident (default soil intake rate) – 500 ppm lead
- Outdoor Worker – 1,766 ppm lead
- Indoor Worker – 3,172 ppm lead
- ATV/Dirt Bike Rider – 3,087 ppm lead

CS 7.5 Identification of Areas of Concern

Areas of Concern are the locations within CSAOI where, based on current zoning and reasonably anticipated future land use of the property, soil concentrations for arsenic or lead are greater than either the lead or arsenic PRG. Areas of Concern include the Southern and Northern CSAOIs and the eastern portion of the Northern Outlying Area, as shown on Figures 7-1 through 7-4. Based on the Supplemental Risk Evaluation of existing residences within the Southern Outlying Area, none of the properties have a lead or arsenic risk that exceeds the PRGs. In addition, the Southern Outlying Area is predominantly upwind of the ACM smelter and refinery, and therefore, it is unlikely that arsenic and lead concentrations in the Southern Outlying Area are due to releases from the former smelter/refinery operation. For these reasons, the Southern Outlying Area is not included as an Area of Concern.

Based on available soil data for lead and arsenic in the Northern Outlying Areas, property-specific risks for outdoor or indoor workers exposed to surface soil do not exceed the PRGs. The Northern Outlying Area is currently zoned for industrial use, but current land uses are distinct in the western and eastern portions of the Northern Outlying Area. The western portion of the Northern Outlying Area is currently developed for industrial and commercial land uses. The few undeveloped properties in this area are owned by the City of Great Falls and Cascade County. Because existing development within the western portion of the Northern Outlying Area is consistent with the zoned land uses, future changes in land use are not reasonably anticipated. In contrast, the current land use in the eastern portion of the Northern Outlying Area is predominantly agricultural. Two exceptions include: (1) a large parcel owned by the City of Great Falls, which is the location of a former city landfill, now closed; and (2) a property owned by ECDR, which is currently used for recreation. Future land use is not reasonably anticipated to change at these two properties.

Figure CS 7-1 – Southern Community Soils Area of Interest PRG Exceedances

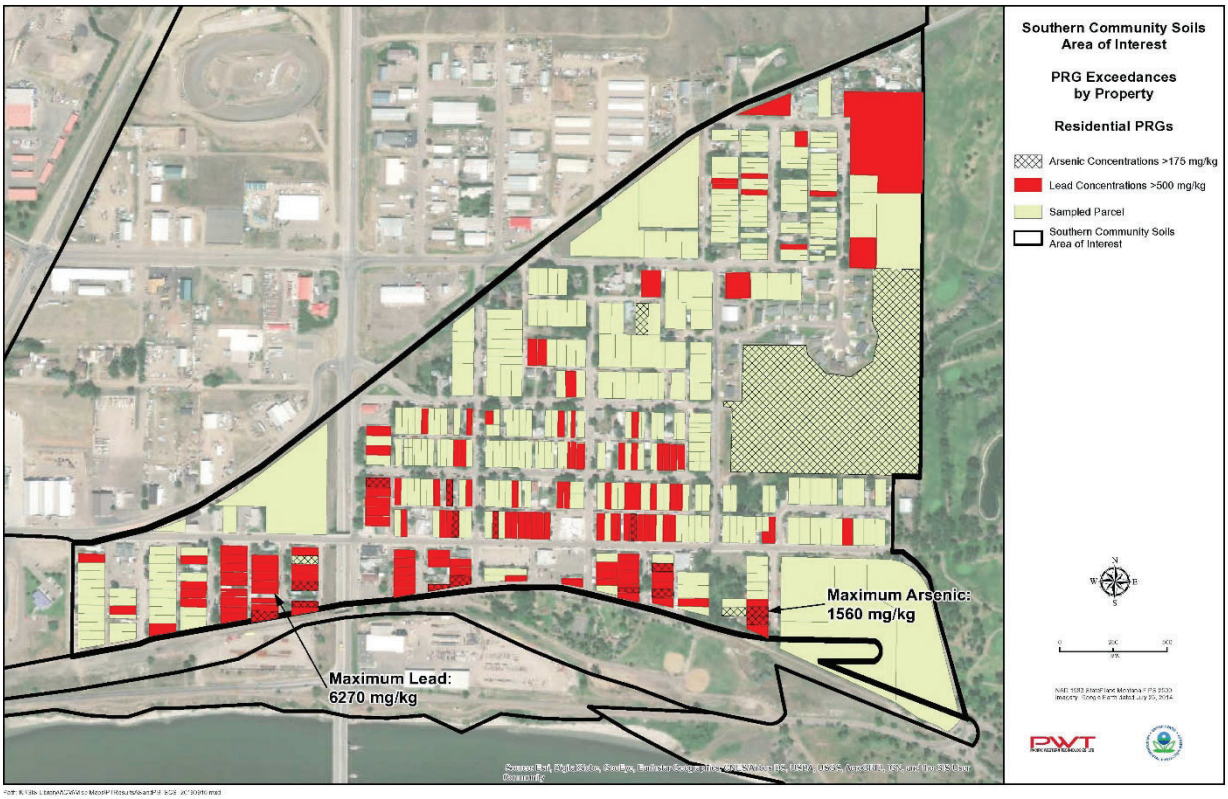


Figure CS 7-2 – Northern Community Soils Area of Interest PRG Exceedances

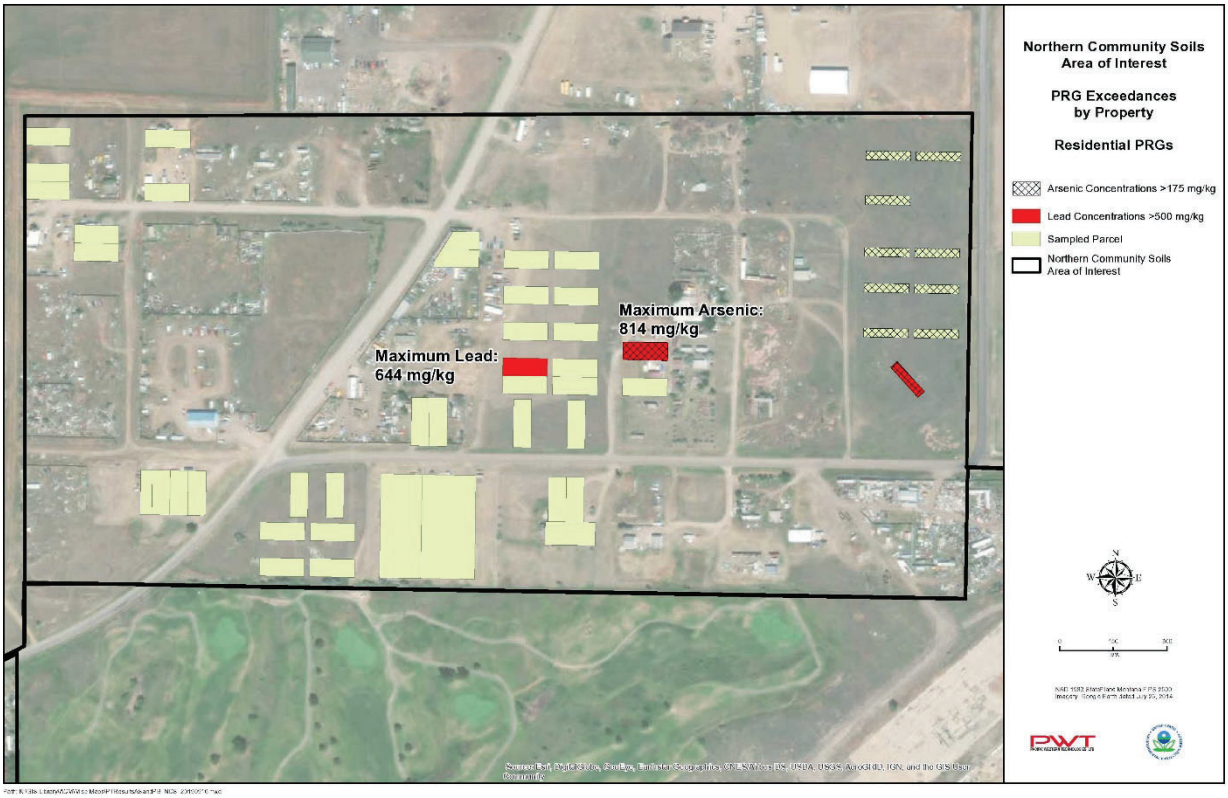


Figure CS 7-3 – Northern Outlying Area of Interest PRG Exceedances

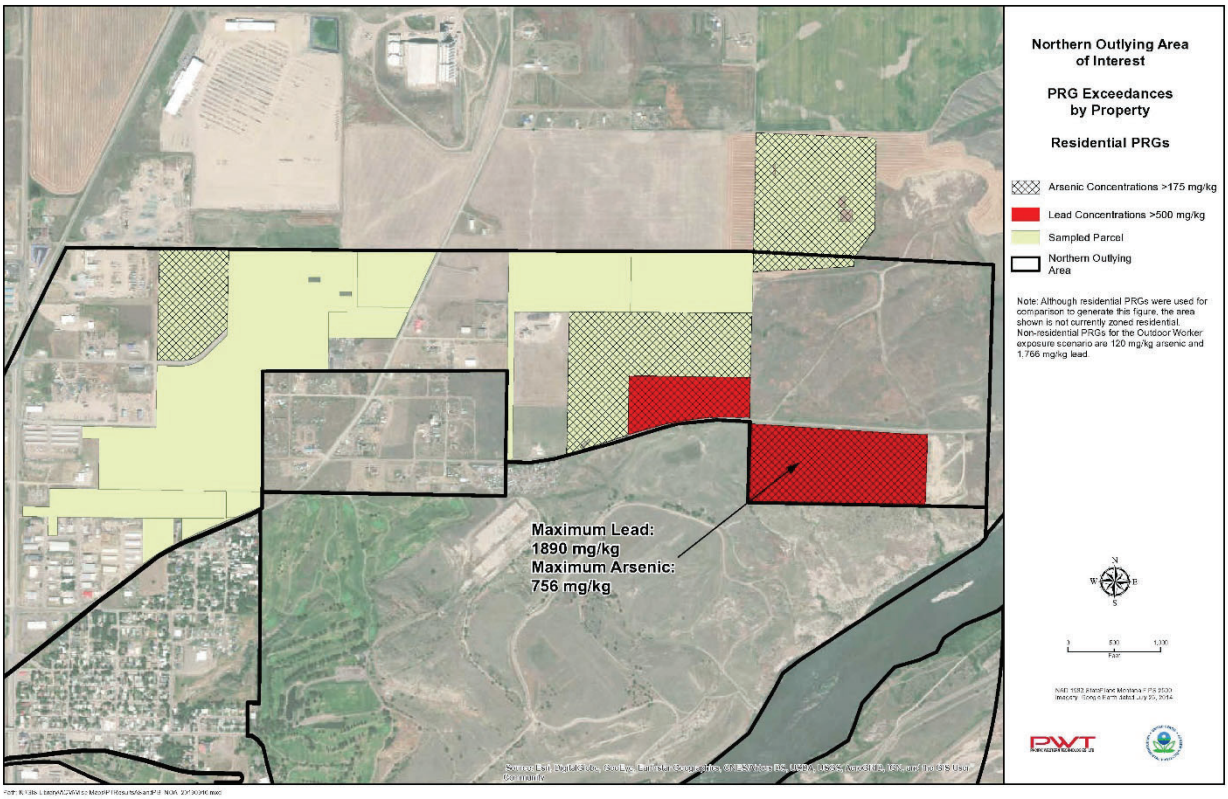
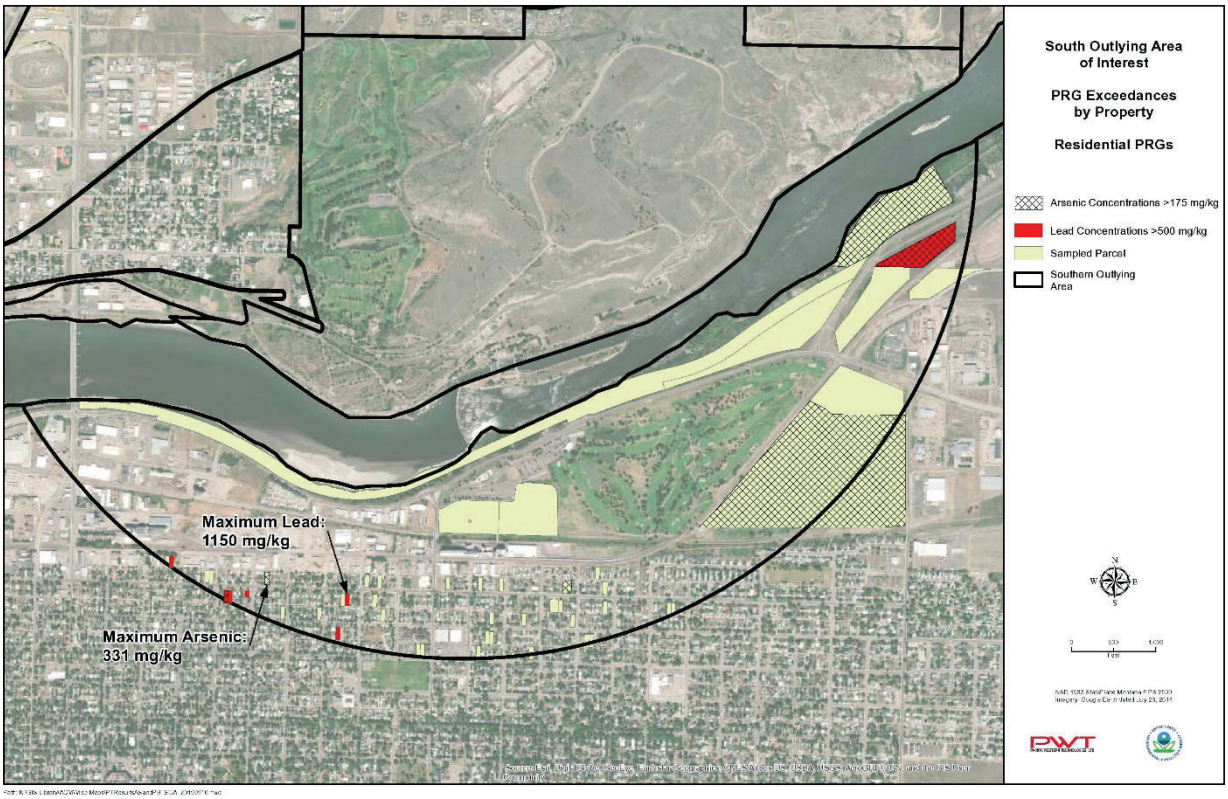


Figure CS 7-4 – Southern Outlying Area of Interest PRG Exceedances



The eastern and western portions of the Northern Outlying Area are also distinct with respect to the distribution of arsenic and lead in soil within these areas. Arsenic and lead concentrations are relatively low in the western portion of the Northern Outlying Area compared to the eastern portion of the Northern Outlying Area. This is likely due to the eastern portion of the Northern Outlying Area being predominantly in the upwind direction from the former smelter/refinery. None of the sampled properties in the western portion of the Northern Outlying Area had arsenic or lead concentrations in soil representing risks greater than the PRGs for existing uses (i.e., potential worker exposures), and as noted above, future changes in land use are not anticipated in this area. For these reasons, the western portion of the Northern Outlying Area has been excluded from the Areas of Concern.

The southernmost portion of the Northern Outlying Area located between the former railroad bed and the Missouri River overlaps with the Railroad Corridor subarea of OU1 as shown on Figure 7-1. Arsenic and lead concentrations in this portion of the Northern Outlying Area are relatively low outside of the Railroad Corridor subarea of OU1. In addition, the majority of this area is currently commercially developed including buildings, parking lots, and other surface features which limit exposure to arsenic and lead in the soil. Therefore, this portion of the Northern Outlying Area is not included in the Areas of Concern as shown on Figure 7-3.

CS 7.6 Ecological Risks

The evaluation of ecological risks for OU1 has not been completed. This evaluation was deferred to the OU2 remedial investigation and will be considered in conjunction with the OU2 Screening Level Ecological Risk Assessment and Baseline Ecological Risk Assessment.

CS 7.7 Basis of Action

Based on the exceedance of arsenic and lead PRGs, the response actions selected in this ROD are necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

Section CS 8: Community Soils Remedial Action Objectives (RAOs) and Applicable or Relevant and Appropriate Requirements (ARARs)

Section 300.430(e) of the 1990 National Oil and Hazardous Substances Pollution Contingency Plan (NCP) requires that the remedial alternative development process be initiated by developing RAOs, identifying general response actions (GRAs) that address the RAOs, and performing an initial screening of applicable remedial technologies. The overarching goal of the remedy evaluation process is to provide the basis for selecting a remedy that is protective of human health and the environment, and also addresses applicable or relevant and appropriate requirements (ARARs). This section provides the RAOs, identifies the media and Areas of Concern, and summarizes ARARs for OU1 of the ACM Site.

CS 8.1 Remedial Action Objectives

Before developing cleanup alternatives for a site, the EPA establishes RAOs to protect human health and the environment. RAOs are based on available information and standards, such as ARARs, to-be considered (TBC) guidance and Site-specific risk-based levels. The EPA used 1 in 100,000 cancer risk as the point of departure determining RAOs for arsenic because 1 in 1,000,000 is below background.

CS 8.1.1 Community Soils RAOs

RAOs for soil contamination at residential properties in the Northern and Southern Community Soils Areas of Interest were developed to attain a degree of cleanup that ensures the protection of human health and the environment to:

- Achieve an excess cancer risk no greater than 1 in 100,000 or non-cancer hazard index no greater than 1, whichever is more stringent
- Achieve a probability of less than 5 percent that an individual child would have a blood lead level exceeding 5 µg/dL.

These protective RAOs were selected for soil in consideration of other contributions of Site risk (i.e., interior and attic dust, and the minor contributions from surface water and sediment), uncertainties with data collection and risk assumptions, and the potential contributions of contamination from adjacent non-Site industrial sources and lead paint.

CS 8.1.2 Proposed Cleanup Levels for Residential Soils

To achieve the RAOs, the EPA has selected as cleanup levels for residential soils within the Southern and Northern Community Soil Areas of Interest. The following levels apply to the average concentration for a residential property.

- 54 mg/kg Arsenic
- 281 mg/kg Lead

Section CS 9: Description of Alternatives for Community Soils

The primary actions for the CSAOIs are containment, physical treatment, removal, and ICs to minimize contact with contaminated soil and soil-derived dust. Three remedial alternatives have been assembled by combining technologies and process options retained after the initial evaluation for effectiveness, implementability and cost.

The No Action alternative will also be evaluated as required by the NCP.

The alternatives include:

- Alternative 1 – No Action
- Alternative 2 – Soil Removal and Replacement (Risk-Based Remedial Approach)
- Alternative 3 – Soil Removal and Replacement (Area-Weighted Average Arsenic/Lead Handbook Remedial Approach)
- Alternative 4 – Soil Removal and Replacement (Component-Specific Not to Exceed/Risk-Based Remedial Approach).

The alternatives are summarized in Table CS 9-1.

Table CS 9-1 Alternatives Retained for Detailed Analysis Summary

		Alternative 2 Soil Removal and Replacement (Risk-Based Remedial Approach)		Alternative 3 Soil Removal and Replacement (Area-Weighted-Average Arsenic / Lead Handbook Remedial Approach)		Alternative 4 Soil Removal and Replacement (Component-Specific Not to Exceed / Risk-Based Remedial Approach)	
		Residential	**Non-Residential**	**Residential**	**Non-Residential**	**Residential**	**Non-Residential**
Remedial Action (RA)	**Approach to Meet Remedial Action Objectives (RAOs)**	Step #1: RA based on property-specific, average, surface soil risk estimates that exceed the RAOs for the resident. Risks for each property would be assessed against the RAOs based on the average lead or arsenic concentration in the 0- to 6-inch depth interval for all yard components within the property. Step #2: At all properties, regardless of whether property-specific risks exceed one or more RAOs, an additional decision step would employ component-specific NTE soil concentrations for arsenic and lead to address concerns regarding potential exposures to "hot spot" concentrations in yard components up to the 18-inch depth interval within the property.	RA based on property-specific, average, surface soil (0- to 2-inch) risk estimates that exceed the RAOs for the worker scenario. In addition, ICs (and/or selective removal and replacement of surface soil or soil tilling at sample locations with the highest arsenic concentration) will be evaluated for properties not currently used for commercial purposes if the property-specific, 0- to 12-inch depth-weighted average risk estimate based on residential exposure assumptions exceeds the RAOs to achieve unlimited use.	Arsenic: RA based on arsenic concentrations in soil computed using a property-wide, area-weighted average (AWA) concentration for each depth-interval. Lead: RA based on component-specific and depth-interval basis, consistent with guidance in the Lead Handbook.	Both arsenic and lead RA based on property-average concentration in the surface soil (0- to 2-inches below ground surface). In addition, ICs (and/or selective removal and replacement of surface soil or soil tilling at sample locations with the highest arsenic concentration) will be evaluated for properties not currently used for commercial purposes if the property-specific, 0- to 12-inch depth-weighted average risk estimate based on residential exposure assumptions exceeds the RAOs to achieve unlimited use.	Step #1: RA would employ component-specific NTE soil concentrations for arsenic and lead to address concerns regarding potential exposures to "hot spot" concentrations in yard components up to the 18-inch depth interval within the property. Step #2: An additional decision step would employ RA based on property-specific, average, surface soil risk estimates that exceed the RAOs for the resident. Risks for each property would be assessed against the RAOs based on the average lead or arsenic concentration in the 0- to 6-inch depth interval for all yard components within the property following the NTE RA.	Step #1: RA based on subarea-specific NTEs for non-residential properties. Step #2: An additional decision step would employ RA based on property-specific, average, surface soil (0- to 2-inch) risk estimates that exceed the RAOs for the worker scenario following the NTE RA. In addition, ICs (and/or selective removal and replacement of surface soil or soil tilling at sample locations with the highest arsenic concentration) will be evaluated for properties not currently used for commercial purposes if the property-specific, 0- to 12-inch depth-weighted average risk estimate based on residential exposure assumptions exceeds the RAOs to achieve unlimited use.
	RA Depths	RAO: 0- to 6-inch depth interval NTE: 0- to 18-inch depth interval Vegetable Garden Units: Removed on a depth-interval basis if RAOs or NTE screening results are exceeded to a maximum depth of 24 inches.	0- to 6-inch depth interval	0- to 12-inch depth interval Vegetable Garden Units: Removed on a depth-interval basis if RAOs are exceeded to a maximum depth of 24 inches.	0- to 6-inch depth interval	NTE: 0- to 18-inch depth interval RAO: 0- to 6-inch depth interval Vegetable Garden Units: Removed on a depth-interval basis if RAOs or NTE screening results are exceeded to a maximum depth of 24 inches.	0- to 6-inch depth interval
	RA Description	Remove and replace soil in the highest concentration yard component until the property-specific average surface soil risk no longer exceeds the RAOs. Or If the component-specific NTEs are exceeded by NTE screening results.	Soil tilling, soil cover, other cover type, and/or soil removal and replacement until the property-specific average, surface soil risk no longer exceeds the RAOs.	Remove and replace soil in each yard component on a component-specific and depth-interval basis for yard components with arsenic or lead concentrations exceeding the RAOs.	Soil tilling, soil cover, other cover type, and/or soil removal and replacement for the entire property if the property-average arsenic and/or lead concentration exceed the RAOs.	Remove and replace soil if the component-specific concentration of either arsenic or lead is greater than the relevant NTE concentration. or If the average surface soil risk still exceeds the RAOs following the NTE RA, remove the highest concentration yard component until the property-specific average surface soil risk no longer exceeds the RAOs.	Soil tilling, soil cover, other cover type, and/or soil removal and replacement if the component-specific NTEs are exceeded by the NTE screening results. or If the property-specific average, surface soil risk exceeds the RAOs for the protection of workers following the NTE RA.
	Arsenic RAO	Property-specific surface soil risk estimates exceed 1E-05 cancer risk for child and adult resident.	Surface soil risk estimates exceed 1E-05 cancer risk for adult worker. In addition, ICs (and/or selective removal and replacement of surface soil or soil tilling at sample locations with the highest arsenic concentration) will be evaluated for properties not currently used for commercial purposes if the property-specific, 0- to 12-inch depth-weighted average risk estimate based on residential exposure assumptions exceeds a 1E-05 arsenic excess cancer risk.	PRG corresponding to a residential cancer risk of 1.44E-05 based on arsenic concentrations in soil computed using a property-wide, AWA concentration for each depth-interval.	PRG corresponding to an outdoor worker cancer risk of 1.44E-05 based on arsenic concentrations in soil computed using property-average concentration in the surface soil. In addition, ICs (and/or selective removal and replacement of surface soil or soil tilling at sample locations with the highest arsenic concentration) will be evaluated for properties not currently used for commercial purposes if the property-specific, 0- to 12-inch depth-weighted average risk estimate based on residential exposure assumptions exceeds a 1.44E-05 arsenic excess cancer risk.	Property-specific surface soil risk estimates exceed 1E-05 cancer risk for child and adult resident.	Surface soil risk estimates exceed 1E-05 cancer risk for adult worker. In addition, ICs (and/or selective removal and replacement of surface soil or soil tilling at sample locations with the highest arsenic concentration) will be evaluated for properties not currently used for commercial purposes if the property-specific, 0- to 12-inch depth-weighted average risk estimate based on residential exposure assumptions exceeds a 1E-05 arsenic excess cancer risk.

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		Alternative 2 Soil Removal and Replacement (Risk-Based Remedial Approach)		Alternative 3 Soil Removal and Replacement (Area-Weighted-Average Arsenic / Lead Handbook Remedial Approach)		Alternative 4 Soil Removal and Replacement (Component-Specific Not to Exceed / Risk-Based Remedial Approach)	
		Residential	**Non-Residential**	**Residential**	**Non-Residential**	**Residential**	**Non-Residential**
Remedial Action (RA)	**Lead RAO**	Greater than 5% probability that a 5 µg/dL blood lead level will be exceeded for child resident based on property-specific estimate.	Greater than 5% probability that 5 µg/dL blood lead level will be exceeded for the fetus of an adult worker. In addition, ICs (and/or selective removal and replacement of surface soil at sample locations with the highest lead concentration) will be evaluated for properties not currently used for commercial purposes if the property-specific, 0- to 12-inch depth-weighted average risk estimate based on residential exposure assumptions exceeds a 5% probability that a 5 µg/dL blood lead level will be exceeded for child resident.	PRG based on 8 µg/dL blood lead cutoff for the residential soil exposure scenario.	PRG based on 8 µg/dL blood lead cutoff for the outdoor worker soil exposure scenario. In addition, ICs (and/or selective removal and replacement of surface soil at sample locations with the highest lead concentration) will be evaluated for properties not currently used for commercial purposes if the property-specific, 0- to 12-inch depth-weighted average risk estimate based on residential exposure assumptions exceeds a 5% probability that a 8 µg/dL blood lead level will be exceeded for child resident.	Greater than 5% probability that a 5 µg/dL blood lead level will be exceeded for child resident based on property-specific estimate.	Greater than 5% probability that 5 µg/dL blood lead level will be exceeded for the fetus of an adult worker. In addition, ICs (and/or selective removal and replacement of surface soil at sample locations with the highest lead concentration) will be evaluated for properties not currently used for commercial purposes if the property-specific, 0- to 12-inch depth-weighted average risk estimate based on residential exposure assumptions exceeds a 5% probability that a 5 µg/dL blood lead level will be exceeded for child resident.
	Not to Exceed (NTE) Concentration	Arsenic: 797 mg/kg Lead: 800 mg/kg	Not included in alternative.	Not included in alternative.	Not included in alternative.	Arsenic: 250 mg/kg Lead: 400 mg/kg	Arsenic: 250 mg/kg Lead: 400 mg/kg
	NTE Screening Depth	Component-specific 0- to 2-inch or 2- to 6-inch depth intervals. Or Component-specific 0- to 12-inch and 0- to 18-inch depth-weighted average.	Not included in alternative.	Not included in alternative.	Not included in alternative.	Component-specific 0- to 2-inch, 2- to 6-inch, 6- to 12-inch, or 12- to 18-inch depth intervals. NTE screening does not include depth-weighted average evaluation.	Component-specific 0- to 2-inch depth intervals. NTE screening does not include depth-weighted average evaluation.
	NTE Action Depth	0- to 6-inch, 0- to 12-inch, or 0- to 18-inch depth interval dependent upon NTE screening results.	Not included in alternative.	Not included in alternative	Not included in alternative	0- to 6-inch, 0- to 12-inch, or 0- to 18-inch depth interval dependent upon NTE screening results.	0- to 6-inch dependent upon NTE screening results.
Risk Management	**Area of Concern (AOC)**	The AOC locations within OU1 where selected to address areas where the risk is greater than the RAOs using assumptions applied in the Baseline HHRA and Supplemental Risk Evaluation. The AOC was based on current zoning and reasonably anticipated future land use of the property. The AOC is the same for all alternatives.					
	Risk Management	ICs for educational purposes, to improve the overall effectiveness of the remedy, and to support a successful risk management for the Site by increasing overall public awareness.	ICs would complement the engineering controls and effectively manage residual Site risks associated with changes in current zoning and reasonably anticipated changes in future land use.	ICs for educational purposes, to improve the overall effectiveness of the remedy, and to support a successful risk management for the Site by increasing overall public awareness.	ICs would complement the engineering controls and effectively manage residual Site risks associated with changes in current zoning and reasonably anticipated changes in future land use.	ICs as an extra protective measure and to improve the overall effectiveness of the remedy.	ICs would complement the engineering controls and effectively manage residual Site risks associated with changes in current zoning and reasonably anticipated changes in future land use.
	Institutional Controls	Alternative 2 and Alternative 3 could include one or more of the following ICs: • Public health program. • Support for Cascade-County run blood lead screening program. • Proprietary ICs, which may include restrictive covenants, conservation easements, or deed restrictions. • Deed restrictions to require proper handling of soil excavated in the future from beneath the clean replacement soil.				ICs are not required to address the RAOs, but one or more of the following ICs could be included as an extra protective measure(s): • Proprietary ICs, which may include restrictive covenants, conservation easements, or deed restrictions. • Deed restrictions to require proper handling of soil excavated in the future from beneath the clean replacement soil.	
	Unlimited Use	Achieved	Will be achieved if meets residential RAO. or Would be remediated based on 0- to 12-inch depth-weighted average for unlimited use.	Achieved	Will be achieved if meets residential RAO. or Would be remediated based on 0- to 12-inch depth-weighted average for unlimited use.	Achieved	Will be achieved if meets NTE screening results and residential RAO. or Would be remediated based on 0- to 12-inch depth-weighted average for unlimited use.

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Table CS 9-2 Detailed Analysis of Remedial Alternatives Summary

	Alternative 1 No Action	**Alternative 2** Soil Removal and Replacement (Risk-Based Remedial Approach)	**Alternative 3** Soil Removal and Replacement (Area-Weighted Average Arsenic/Lead Handbook Remedial Approach)	**Alternative 4** Soil Removal and Replacement (Component-Specific Not to Exceed/Risk-Based Remedial Approach)
Additional Soil Sampling and Analysis				
Additional Soil Sampling and Data Analysis	Not Required	Additional soil sampling and data analysis as shown on Figure 5-1.	Additional soil sampling and data analysis as shown on Figure 5-1.	Additional soil sampling and data analyses as shown on Figure 5-1.
Residential Remedial Action				
Residential Properties with Remedial Action	0	61	144	174
Undeveloped Residential Properties with Remedial Action	0	10	11	10
Residential Soil Removal and Replacement (SF)	0	51,000	475,000	205,000
Open Area Remedial Action (AC)	0	11	12	11
Non-Residential Remedial Action				
Non-Residential Properties with Remedial Action	0	0	2	1
Open Area Remedial Action (AC)	0	0	27	12
Operation and Institutional Controls				
Institutional Controls	None	Educational and/or proprietary	Educational and/or proprietary	Proprietary
Cost Estimate (2017 dollars)				
Institutional Controls Capital Cost	$0	$200,000	$200,000	$100,000
Annual Institutional Controls Operating Cost	$0	$10,000	$10,000	$10,000
Remedial Alternative Capital Cost	$0	$754,000	$2,504,000	$1,745,000
Life-Cycle Cost Analysis (2017 dollars)				
Estimated Project Present Value, 50-Year LCCA (Low Range, -30%)	$0	$977,000	$2,204,000	$1,600,000
Estimated Project Present Value, 50-Year LCCA	**$0**	**$1,395,000**	**$3,148,000**	**$2,286,000**
Estimated Project Present Value, 50-Year LCCA (High Range, +50%)	$0	$2,093,000	$4,722,000	$3,429,000

Note:

For properties where insufficient data was available, the existing RI data was used for the detailed analysis and these areas may require additional data collection during the remedial design phase.

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Section CS 10: Comparative Analysis of Community Soils Alternatives

Each individual remedial alternative is described and evaluated against the seven threshold and balancing criteria (Table CS 10-1) in accordance with EPA guidance (EPA, 1988).

Table CS 10 -1 Criteria for the Individual Analysis of Alternatives

Threshold Criteria		
1.	Overall Protection of Human Health and the Environment	Describes how the alternative achieves and maintains protection of human health and the environment.
2.	Compliance with ARARs	Describes how the alternative complies with ARARs, or if a waiver is required and how it is justified. The assessment also addresses other information from advisories, criteria, and guidance that the lead and support agencies have agreed is "to be considered."
Balancing Criteria		
3.	Long-term Effectiveness and Permanence	Evaluates the long-term effectiveness of alternatives in maintaining protection of human health and the environment after response objectives have been met.
4.	Reduction of Toxicity, Mobility, or Volume through Treatment	Evaluates the anticipated performance of the specific treatment technologies an alternative may employ.
5.	Short-term Effectiveness	Examines the effectiveness of alternatives in protecting human health and the environment during construction and implementation of a remedy until response objectives have been met.
6.	Implementability	Evaluates the technical and administrative feasibility of alternatives and the availability of required goods and services.
7.	Cost	Evaluates the capital and O&M costs of each alternative.
Modifying Criteria		
8.	State Acceptance	Reflects the state's apparent preferences among or concerns about alternatives.
9.	Community Acceptance	Reflects the community's apparent preferences among or concerns about alternatives.

Source: (EPA, 1988)

The comparative analysis evaluates the relative performance of the four remedial alternatives in relation to the NCP evaluation criteria. The relative performance of each remedial alternative is quantified using a score of 0 to 4. An alternative with a score of 4 is defined as fully meeting the criteria with a distinct advantage when compared to other alternatives while a score of 0 is defined as not attaining the criteria. Alternatives are scored between 0 and 4 relative to the other remedial alternatives. The relative performance of each remedial alternative is described in the following sections.

CS 10.1 Overall Protection of Human Health and the Environment

All the remedial alternatives, with the exception of Alternative 1 (No Action), are protective of human health and the environment. Alternative 1 (No Action) would not be protective of human health or the environment as it would leave soil with concentrations of arsenic and lead at levels that pose potential risks to human health and the environment. Alternative 2 (Risk-Based Remedial Approach), Alternative 3 (Area-Weighted Average/Lead Handbook Remedial Approach), and Alternative 4 (Component-Specific Not to Exceed/Risk-Based Remedial Approach) address risks associated with arsenic and lead in soil by

removing the exposure pathway and meet the RAOs for protectiveness of human health and the environment based on current land use as well as reasonably expected future land uses. These remedial alternatives meet the RAOs and are assigned a score of 4.

CS 10.2 Compliance with ARARs

All the remedial alternatives, with the exception of Alternative 1 (No Action), meet the State and Federal ARARs identified in Appendix A. For these reasons, Alternative 1 (No Action) is assigned a score of 0 while Alternative 2 (Risk-Based Remedial Approach), Alternative 3 (Area-Weighted Average/Lead Handbook Remedial Approach), and Alternative 4 (Component-Specific Not to Exceed/Risk-Based Remedial Approach) are assigned a score of 4.

CS 10.3 Long-term Effectiveness and Permanence

Alternative 1 (No Action) does not include any remedial action or long-term management measures to improve the long-term effectiveness or permanence criterion. All soil removal and replacement remedial alternatives achieve the RAOs and meet the long-term effectiveness and permanence criterion. Alternative 2 and Alternative 3 (soil removal and replacement alternatives) are protective of human health and the environment and include ICs to effectively manage residual Site risks associated with changes in current zoning and reasonably anticipated future land use with informational devices and proprietary ICs where required within the Areas of Concern. Whereas Alternative 4 (Component-Specific Not to Exceed/Risk-Based Remedial Approach) does not rely on ICs to meet the RAOs and instead includes more extensive engineered controls with lower NTE concentrations and evaluation of the property-specific, depth-weighted average to manage future land use changes and residual site risks. For these reasons, Alternative 2 (Risk-Based Remedial Approach) and Alternative 3 (Area-Weighted Average/Lead Handbook Remedial Approach) are given a score of 3 while Alternative 4 (Component-Specific Not to Exceed/Risk-Based Remedial Approach) is given a slightly higher score of 4.

CS 10.4 Reduction of Toxicity, Mobility, or Volume through Treatment

None of the remedial alternatives use treatment to reduce toxicity, mobility, or volume of arsenic and lead contaminated soils. However, all of the remedial alternatives, with the exception of Alternative 1 (No Action), include removal of arsenic and lead contaminated soils with soil disposal at a soil management area located on-Site or soil re-use as fill at OU2. The soil disposal area would be designed and engineered to protect human health and nearby groundwater and surface water resources, which would reduce the mobility and exposure to arsenic and lead contaminated soils in the CSAOIs. No treatment of soil is included in any of the remedial alternatives, and therefore, none of the alternatives will attain the goal to reduce toxicity, mobility, or volume through treatment. For these reasons, Alternative 1 (No Action) is assigned a score of 0 while Alternative 2 (Risk-Based Remedial Approach), Alternative 3 (Area-Weighted Average/Lead Handbook Remedial Approach), and Alternative 4 (Component-Specific Not to Exceed/Risk-Based Remedial Approach) are given a score of 4.

CS 10.5 Short-term Effectiveness

Standard engineered controls, including traffic control measures, dust suppression and selecting appropriate equipment are highly effective at reducing risks during implementation of the respective

remedial actions. Alternative 1 (No Action) does not attain the criterion because it does not meet the RAOs and is therefore given a score of 0. It is anticipated that, subject to obtaining landowner access, all soil removal and replacement remedial alternatives can be implemented in a single construction season based on the relatively low number of properties requiring remedial action. Therefore, all soil removal and replacement alternatives are given a score of 4.

CS 10.6 Implementability

All the remedial alternatives are based on response actions that are technically feasible and have been successfully implemented at other similar NPL sites. The soil removal and replacement portion of the remaining alternatives are rated equivalent in respect to implementability. Alternative 2, Alternative 3, and Alternative 4 (soil removal and replacement remedial alternatives) require implementation of ICs, which would require additional coordination with local government in addition to the soil removal and replacement remedial action. Implementation of ICs is technically and administratively feasible, and similar ICs programs have been successfully implemented at other similar NPL sites. Because Alternative 1 (No Action) does not require any remedial action, this remedial alternative is assigned the highest score of 4. Because Alternative 4 (Component-Specific Not to Exceed/Risk-Based Remedial Approach) is similar to remedies that have successfully been implemented at similar NPL sites and has fewer ICs, it is given a score of 3. Alternative 2 (Risk-Based Remedial Approach) and Alternative 3 (Area-Weighted Average/Lead Handbook Remedial Approach) are rated lower and given a score of 2 because of the additional coordination required during the CERCLA process to implement their more extensive ICs program.

CS 10.7 Cost

The estimated capital cost for the Alternative 1 (No Action) is $0, and this remedial alternative is assigned the highest score of 4 for this reason. The estimated capital cost for Alternative 2 (Risk-Based Remedial Approach) is estimated to be less than Alternative 3 (Area-Weighted Average/Lead Handbook Remedial Approach) and Alternative 4 (Component-Specific Not to Exceed/Risk-Based Remedial Approach); however, all removal and replacement alternatives require a high initial capital cost. Because Alternative 2 (Risk-Based Remedial Approach) is estimated to have a lower cost to implement the alternative when compared to Alternative 3 (Area-Weighted Average/Lead Handbook Remedial Approach) and Alternative 4 (Component-Specific Not to Exceed/Risk-Based Remedial Approach), Alternative 2 (Risk-Based Remedial Approach) is rated slightly higher with a score of 3 while Alternative 4 (Component-Specific Not to Exceed/Risk-Based Remedial Approach) is given a score of 2 and Alternative 3 (Area-Weighted Average/Lead Handbook Remedial Approach) is given a score of 1.

CS 10.8 Summary

The relative performance of each remedial alternative is summarized in Table CS 10-2. The remedial alternatives with the highest rating, the sum of the NCP evaluation criteria scores, are Alternative 2 – Soil Removal and Replacement (Risk-Based Remedial Approach) and Alternative 4 (Component-Specific Not to Exceed/Risk-Based Remedial Approach). All soil removal and replacement alternatives meet the RAOs and are protective of human health; however, Alternative 2 (Risk-Based Remedial Approach) had a higher rating because it was estimated to be implemented at a lower cost and Alternative 4

(Component-Specific Not to Exceed/Risk-Based Remedial Approach) had a higher rating because it was estimated to be easier to implement.

Table CS 10 - 2 Comparative Analysis of Remedial Alternatives

NCP Criteria	**Alternative 1** No Action	**Alternative 2** Soil Removal and Replacement (Risk-Based Remedial Approach)	**Alternative 3** Soil Removal and Replacement (Area-Weighted Average Arsenic/Lead Handbook Remedial Approach)	**Alternative 4** Soil Removal and Replacement (Component Specific Not to Exceed/Risk-Based Remedial Approach)
Threshold Criteria				
Overall Protection of Human Health and the Environment	0	4	4	4
Compliance with ARARs	0	4	4	4
Balancing Criteria				
Long-term Effectiveness and Permanence	0	3	3	4
Reduction of Toxicity, Mobility, or Volume through Treatment	0	1	1	1
Short-term Effectiveness	0	4	4	4
Implementability	4	2	2	3
Cost	4	3	1	2
Comparative Analysis Rating	8	21	19	22
Comparative Analysis Rank	4	2	3	1

Section CS 11: Principal Threat Waste Versus Low Level Threat Waste

The NCP establishes an expectation that EPA will use treatment to address principal threats at a site wherever practicable (NCP 300.430(a)(1)(iii)(A)). Identifying principal threat wastes combines concepts of both hazard and risk. In general, principal threat wastes are those source materials considered to be highly toxic or highly mobile, which generally cannot be contained in a reliable manner or will present a significant risk to human health if exposure occurs. Conversely, low level threat wastes are those source materials that generally can be reliably contained and present a low risk to human health in the event of exposure according to OSWER Publication 93803.3-06FS, *Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions* (EPA, 1991). The manner in which principal threats are addressed generally will determine whether the statutory preference for treatment as a principle element is satisfied.

No threshold level of risk has been established to identify principal threat waste. A general rule of thumb is to consider as a principal threat those source materials with toxicity and mobility characteristics that combine to pose a risk several orders of magnitude greater than the risk level that is

acceptable for the current or reasonably anticipated future land use, given realistic exposure scenarios (EPA, 1997).

The secondary source material identified at this Site is contaminated soil. Residential soils and soils of undeveloped lands became contaminated by releases and redistribution due to human disturbances associated primarily with operations of the former smelter/refinery. These source materials are neither highly toxic nor highly mobile, and do not pose a risk several orders of magnitude greater than acceptable risk levels. The contaminated soils are considered low level threat waste and do not constitute a principal threat waste.

Some residual concentrations of lead and arsenic remain in and around Black Eagle and some exceed health-based concentrations. These soils form the basis for the selected remedial action. These wastes, being neither highly mobile nor highly toxic, can be readily excavated and reliably contained within an engineered repository.

In summary, no principal threat wastes have been identified in OU1.

Section CS 12: Community Soils Selected Remedy

The selected remedy for achieving RAOs for residential properties with lead and arsenic contaminated soil is the Removal and Replacement alternative. EPA's preferred Removal and Replacement alternative from the FS is Alternative 4 with some modifications. Alternative 4 is protective of human health and the environment, meets ARARs and provides the best balance of criteria among other removal and replacement alternatives.

The selected remedy will remove and replace approximately 14,200 cubic yards of contaminated soils from 175 current residential properties in the Southern and Northern CSAOIs, and in the eastern portion of the Northern Outlying Area of Interest. Contaminated materials will be consolidated with similar waste within OU2 for remediation under OU2 or disposed of at a permitted off-Site facility. This ROD does not require remedial action in the Southern Outlying Area.

Alternative 4 - Soil Removal and Replacement (Component-Specific Not to Exceed/Risk-Based Remedial Approach)

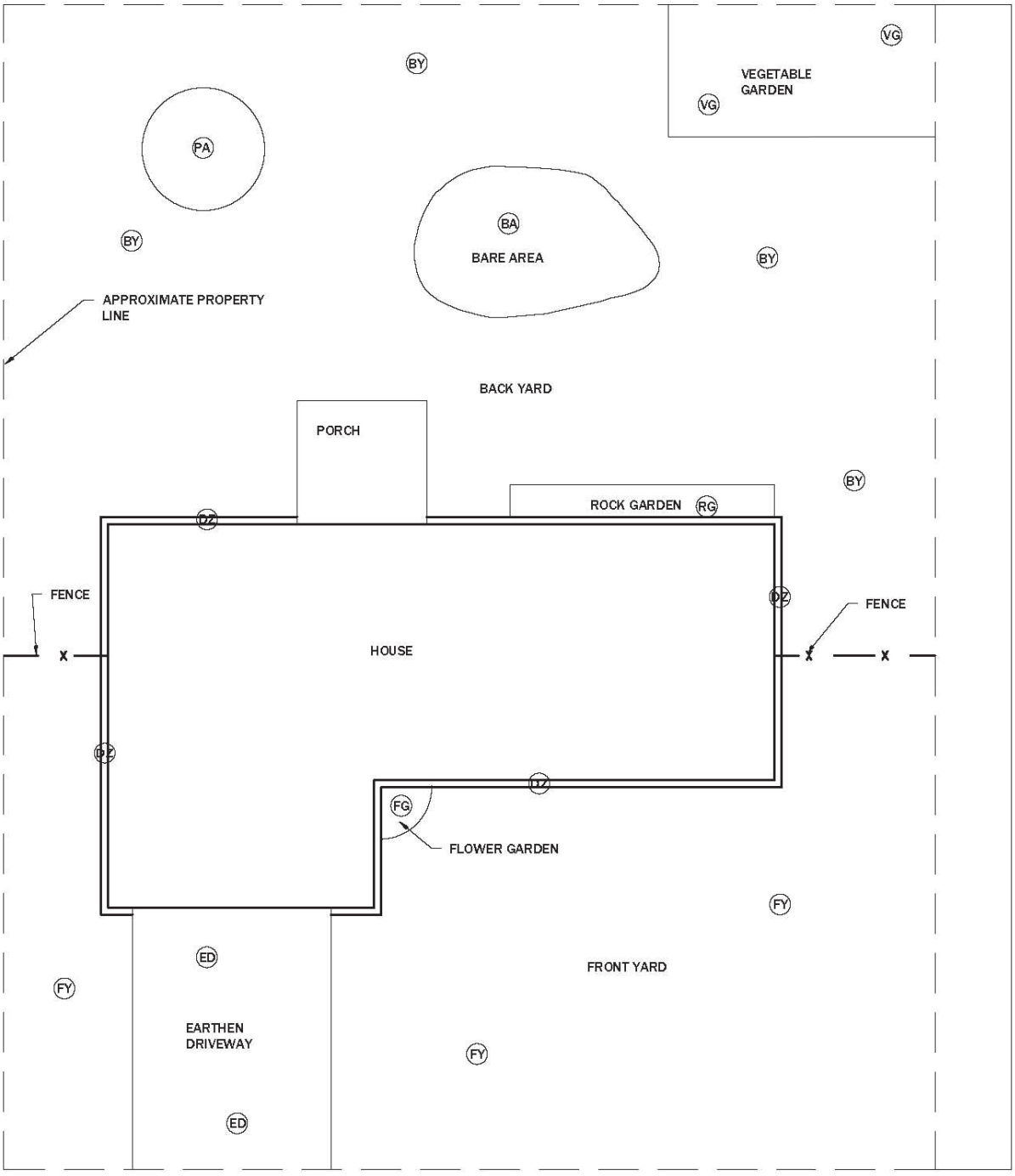
The selected remedy uses a combination of a component-specific NTE and risk-based approach to address risks on a property-specific basis. In addition, ICs may be implemented to effectively manage residual Site risks associated with changes in current zoning and reasonably anticipated future land use. The ICs for the Areas of Concern are intended to improve the overall effectiveness of the remedy and to support a successful risk management for the Site in the event of changes in current zoning or to address potential risks associated with properties for which no soil data are currently available.

CS 12.1 Residential Properties in the CSAOIs

For existing residential properties in the CSAOIs, as well as properties within the Areas of Concern that are zoned residential but currently undeveloped, a multi-step approach will be used to: 1) identify properties for remedial action; and 2) define the extent of soil removal at each of those properties. Several decision points would be associated with this multi-step, risk-based remedial approach. A typical

yard component layout is shown on Figure CS 12-1 and the remedial action decision process for residential properties is described below and illustrated with the flow chart shown on Figure CS 12-2.

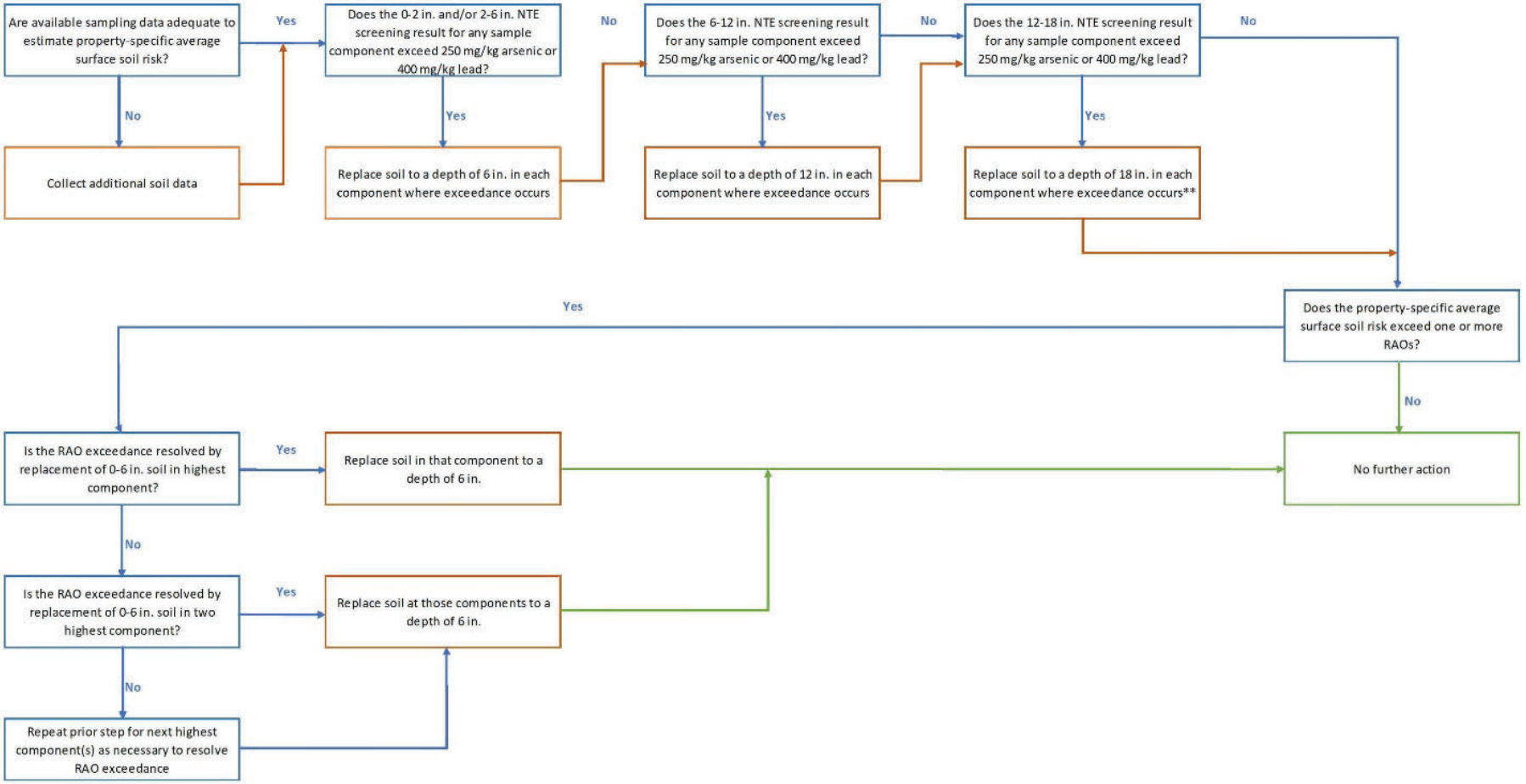
Figure CS 12-1 Typical Yard Component Diagram



LEGEND

(FY) FRONT YARD SUBSAMPLE	(RG) ROCK GARDEN SUBSAMPLE	(ED) EARTHEN DRIVEWAY SUBSAMPLE
(BY) BACK YARD SUBSAMPLE	(VG) VEGETABLE GARDEN SUBSAMPLE	(BA) BARE AREA SUBSAMPLE
(FG) FLOWER GARDEN AREA SUBSAMPLE	(PA) PLAY AREA SUBSAMPLE	(DZ) ROOF DRIP ZONE SUBSAMPLE

Figure CS 12-2 Residential Remedial Action Decisions for As and Pb Component-Specific NTE/Risk-Based Approach



Notes:
RAO = Remedial Action Objective
NTE = Not to Exceed
in. = inch
**Vegetable Gardens will be removed on a depth interval basis if the RAOs or NTE are exceeded to a maximum depth of 24 inches.

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Figure CS 12-2 assumes that soil data collected from the property are available for use in the process. At properties zoned residential, but currently undeveloped, available soil data may be limited and additional data would need to be collected prior to evaluating the property via this remedial action decision process. Note that the NTE step is applied to all residential properties regardless of the property risk.

- The initial decision step is to employ NTE soil concentrations for arsenic (NTE = 250 mg/kg[2]) and lead (NTE = 400 mg/kg[3]) to address concerns regarding potential exposures to "hot spot" concentrations in yard components of a property (including locations of current and future play areas and gardens) at any of the depth intervals up to 18 inches (24 inches in gardens). This element of the remedial action addresses deeper soil intervals and thereby eliminate the need for intensive ICs to manage future soil excavation that could result in exposure to these deeper soils. For example, a property could include 1 or 2-yard components that have distinctly higher arsenic and/or lead concentrations than the property-specific average concentration. If an NTE concentration is exceeded in any component based the arsenic or lead concentration, then the soil with the NTE exceedance(s) would be addressed by removing and replacing soil at that component to the depth necessary to eliminate the exceedance.
- The second decision step is to identify properties where, based on property-specific average, surface-soil risk estimates that exceed a 1E-05 arsenic excess cancer risk and/or have a greater than 5 percent probability that a 5 µg/dL blood lead level will be exceeded. Risks for each residential property would be assessed against the RAOs (54 mg/kg arsenic and 281 mg/kg lead) based on the average lead or arsenic concentration in the 0 to 6-inch depth interval for all yard components within the property following the NTE remedial action identified in the initial decision step.
- Property-specific risks that exceed RAOs would be subject to further evaluation, by yard component (e.g., front yard, back yard, earthen driveway). Possible yard components at a typical residential property are shown on Figure CS 12-1. If the RAO exceedance is resolved by removing and replacing surface soil in the yard component with the highest concentration of arsenic and/or lead, then no additional removal-replacement action would be necessary at that property. If the RAO exceedance is not resolved by removing and replacing soil in the highest concentration component, then the next highest yard component would be addressed by removing and replacing soil, and the same decision process, as described above, would continue until the property-specific average, surface-soil risk no longer exceeds RAOs (refer to Figure CS 12-2, above).

Implementing this alternative would consist of removing soil from residential yards that are identified as exceeding an NTE and/or not meeting the RAOs and thus posing unacceptable risks to residents. Soil in yard components that exceed NTE concentrations for arsenic and/or lead would be removed and replaced to a maximum depth of 18 inches (24 inches in gardens). Additionally, soil removal would occur to a depth of 6 inches in the highest yard component to address property-specific average, surface-soil risk estimates that exceed a 1E-05 arsenic excess cancer risk and/or have a greater than 5 percent probability that a 5 µg/dL blood lead level will be exceeded. Excavated soil would be consolidated with

[2] Arsenic NTE – Based on the Site-specific exposure assumptions used in the Baseline HHRA, this value corresponds to an arsenic cancer risk of 5E-05, which is higher than the highest risk reported in the Baseline HHRA and more conservative than the arsenic RAO for this Site.

[3] Lead NTE – Based on the Site-specific exposure assumptions used in the Baseline HHRA, this value corresponds to a predicted child geometric mean blood lead of 2.9 µg/dL and a 1.5% probability that a blood lead would exceed 8 µg/dL.

similar materials at OU2. The consolidated materials would be addressed in the OU2 remedy. Soil could also be disposed off-Site.

For residential properties where soil removal is conducted to address risk levels that exceed the RAOs (or NTEs), clean soil, with arsenic and lead concentrations that would not result in exceedance of the RAOs (or NTEs), would be used to replace the excavated soil. Implementing this alternative would require identifying a source of clean soil for fill. The replacement soil at each property would be graded to restore near original elevations and to blend with surrounding and undisturbed ground. The clean soil would be revegetated either by seeding or through the addition of sod to restore grass lawn areas; other landscaping materials would also be re-installed or replaced to restore the property to pre-removal condition.

CS 12.2 Non-Residential Properties

Non-residential properties in the Northern Outlying Area would be identified for remedial action based on whether the property-specific average soil concentration, in the top 6 inches, is below risk-based action levels for the current non-residential land use. The property-specific average soil concentration exceeds risk-based action levels, then soils shall be remediated to achieve the risk-based action levels for current non-residential land use in the top 6 inches.

- To address exposure associated with future zoning changes from commercial/industrial to residential, one of the following must be completed:
    - Confirm that the property-specific 0-12-inch depth-weighted average soil concentration meets the remedial action objectives (RAOs) for residential soils; or
    - Place ICs on the property such as restricting future residential use or providing for additional remediation at the time of residential redevelopment; or
    - Remediate soils to further reduce soil concentrations to achieve a property average concentration in the top 12 inches that meets the remedial action objectives (RAOs) for residential soils.

CS 12.3 Institutional Controls (ICs)

The extensive engineering controls that would be implemented as part of this alternative are expected to be effective in achieving the RAOs at most locations within the Areas of Concern (CSAOIs and Northern Outlying Area). However, ICs may be implemented to complement the engineering controls and to effectively manage residual Site risks associated with changes in current zoning and reasonably anticipated changes to future land use. The ICs are included to improve the overall effectiveness of the remedy and to support a successful risk management for the Site in the event of changes in current zoning. For example, ICs for the Areas of Concern may include the following:

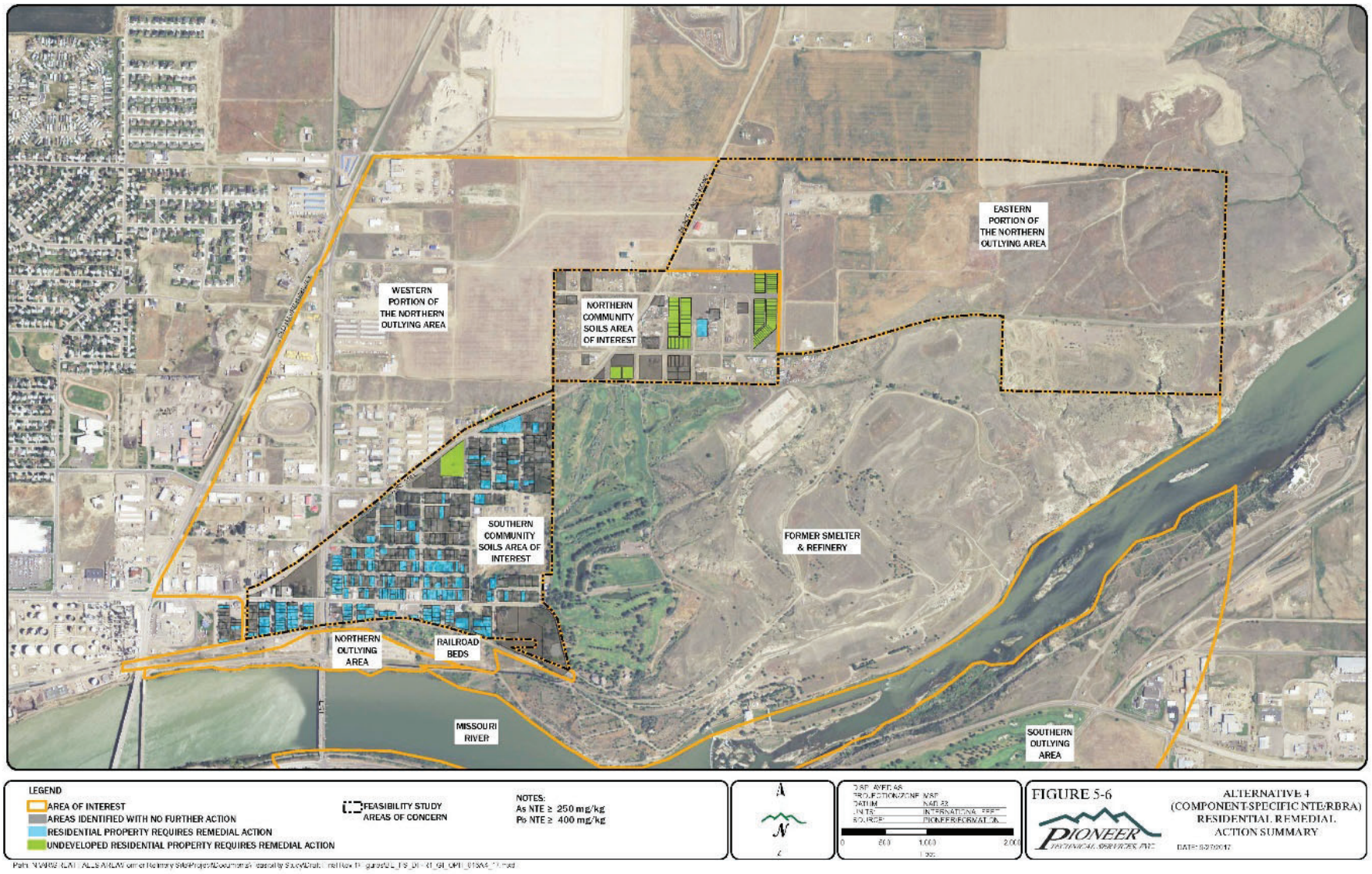
- Proprietary ICs, which may include restrictive covenants, conservation easements, or deed restrictions, that prohibit or restrict future residential land use at non-residential properties where soil arsenic and/or lead concentrations would not achieve the RAOs.
- Deed restrictions to require proper handling of soil excavated in the future from beneath the clean replacement soil (e.g., excavation of a foundation for a new home or garage).

The selected remedy results in remedial action at approximately 174 residential properties as shown on Figure CS 12-4. Non-residential properties that are not currently developed and existing data are insufficient to calculate a property-specific risk estimate that can be evaluated against the RAOs; therefore, these properties will be assessed during the remedial design phase and potentially remediated.

It was estimated that implementing the selected remedy will include removing and replacing approximately 14,200 cubic yards of soil and remediating 23 acres of impacted soil to address the risks associated with arsenic and lead in soil. Further evaluation of the appropriate extent of removal and regrading, reclamation, revegetation requirements, and disposal would be completed during remedial design.

The estimated capital cost for the remedial action is $1,745,000 and the estimated ICs capital cost is $100,000. The annual operating costs are estimated at $10,000 per year for the ICs. The estimated present worth of the remedial alternative and ICs over 50 years at a 0.5% discount rate is $2,286,000 with an expected accuracy of -30 percent to +50 percent in accordance with EPA guidance (EPA, 2000).

Figure CS 12-3 Component-Specific NTE/Risk Based Approach Residential Remedial Action Summary



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Section CS 13: Community Soils Statutory Determinations

Under CERCLA §121 and the NCP, the lead agency must select remedies that are protective of human health and the environment, comply with ARARs (unless a statutory waiver is justified), are cost-effective, and utilize permanent solutions to the extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as a principle element and a bias against off-Site disposal of untreated wastes.

The selected remedy satisfies the statutory requirements of CERCLA (EPA, 1980), notably Section 121, subsection (b), and:

- Is protective of human health and the environment;
- Complies with ARARs;
- Is cost-effective;
- Utilizes permanent solutions and alternative technologies to the maximum extent practicable.

Protection of Human Health and the Environment – The selected remedy, through soil removal and replacement, addresses risks associated with arsenic and lead in soil by removing the exposure pathway. The selected remedy is protective of human health and the environment by targeting residential properties with hotspots that exceed Site-specific NTE concentrations for arsenic and lead and/or surface soils that exceed the RAOs based on risk and by removing contaminated soil that poses risks to human health. The selected remedy is protective of human health and the environment by reducing or eliminating exposure to soils and reducing soil-derived dusts containing lead and/or arsenic above the RAOs.

Compliance with ARARs – The selected remedy meets all State and Federal ARARs identified in Appendix A, in particular those associated with disposal requirements.

Cost Effectiveness – The selected remedy is cost effective as cost is reasonable in achieving a high degree of protectiveness. The estimated capital cost for the remedial action is $1,745,000 and the estimated ICs capital cost is $100,000. The annual operating costs are estimated at $10,000 per year for the ICs.

Utilization of Permanent Solutions – The selected remedy provides a permanent solution for current and future residential properties by reducing exposure through the removal of contaminated soils and replacement with clean backfill. The selected remedy will have minimal reliance on ICs. The selected remedy will reduce the overall extent and mobility of contamination by consolidating contaminated soils within a designated soil management area or re-used as fill or cover material within OU2.

Preference for Treatment as a Principle Element – Since there are no principal threat wastes, the selected remedy does not utilize treatment as a principle element of the remedy.

Five -Year Review Requirements – A Five-Year review would be required for any anticipated residential properties that would not be remediated to the residential cleanup level and any on-Site consolidations areas.

Section CS 14: Significant Changes from the Proposed Plan for Community Soils

Based on recent changes with county zoning, portions of the North Outlying Area require action to address future residential development. Alternative 4, selected as the remedy, already provides the actions for this area to address future residential development.

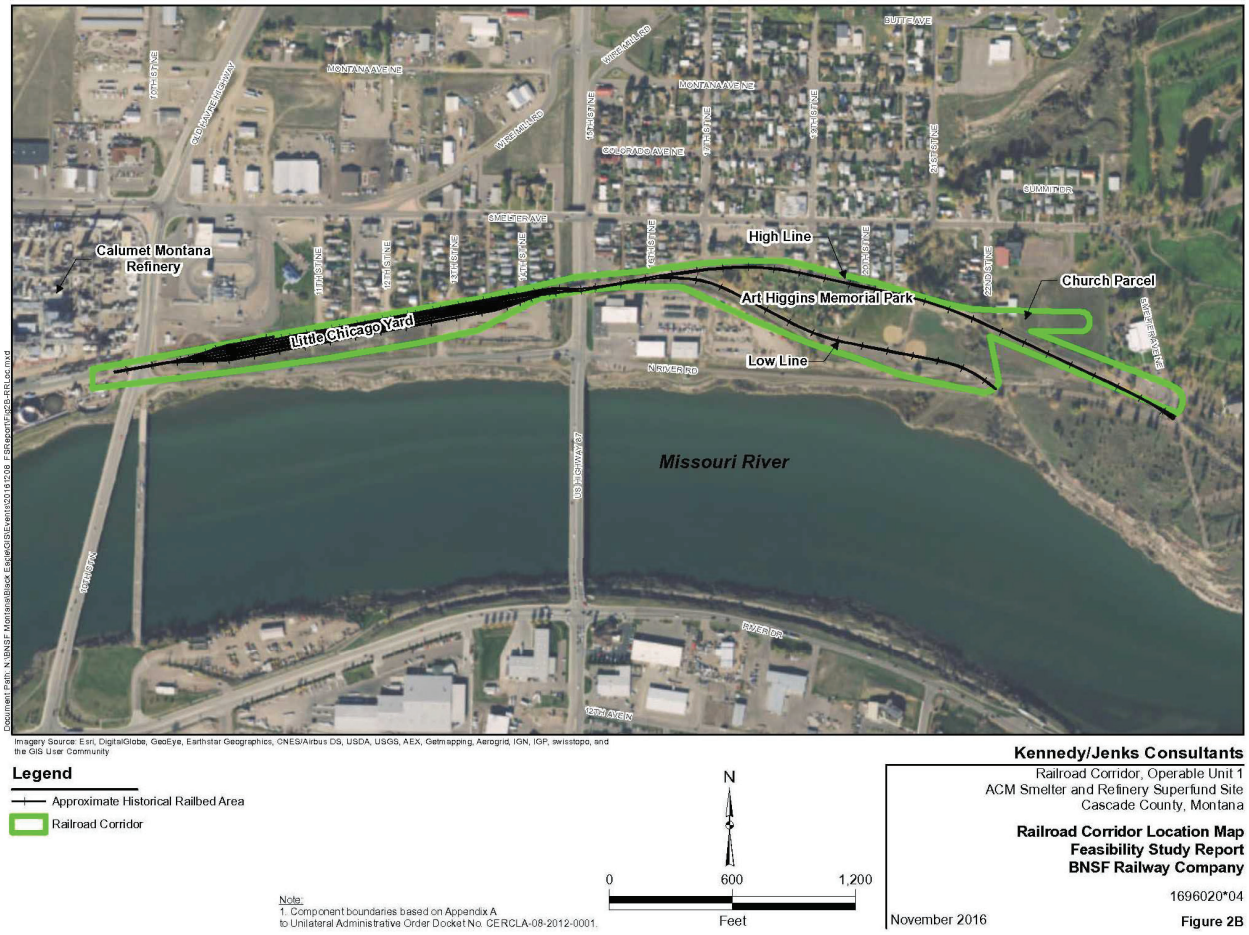
Railroad Corridor

Section RC 5: Site Characteristics

RC 5.1 RCOU1 Description and History

The Railroad Corridor portion of Operable Unit 1 (RCOU1) is located on a south-facing slope on the northern side of the Missouri River. Ground surface generally slopes from north to south, with a steepening grade from the western end near 10th Street North to the east near Art Higgins Memorial Park (Park) and the Former ACM Smelter and Refinery. Figure RC 5-1 shows RCOU1.

Figure RC 5-1 Railroad Corridor Portion of OU1



The former railroad tracks were constructed on a compacted railbed. At the western end of the Site, the former railbed material is approximately 2.5 to 3 feet thick and generally increases in thickness to the east, as the former tracks gained elevation to enter the smelter complex on the former High Line. Based on soil borings, fill above native soil ranges from 1.2 to 23 feet thick, with an average thickness of about 9.5 feet (PWT 2011).

Streets cross RCOU1 from north to south at 10th Street North, Highway 87/15th Street, and Smelter Avenue at its eastern end. Highway 87 passes through RCOU1 beneath a concrete former railroad bridge across a cut that is about 15 feet deep. Smelter Avenue and 10th Street North cross the former tracks at

grade. North River Road separates RCOU1 from the Missouri River, and unnamed neighborhood streets adjacent to the former railbed on the northern edge.

Walking trails are present within RCOU1. The Park is generally landscaped and contains a variety of recreational features, including a baseball field, play area, paved basketball court, several pavilions/picnic areas, and a gravel parking lot.

RC 5.2 RCOU1 Interim Action – Park

BNSF implemented mitigation actions at the Park in response to a letter from the ATSDR to EPA. In the letter dated 1 August 2013, ATSDR recommended measures to mitigate the potential acute pica (soil swallowing) child exposure to arsenic.

Park mitigation field activities were conducted under EPA oversight and were completed in July 2014. The following summarizes the activities:

- The mitigation activities removed the material associated with a composite of surface soil samples collected from the horseshoe pits and swing set footprints. A geotextile material was placed within the horseshoe pits and swing set footprints and covered with clean material (clean sand or wood bark).
- An engineered cover was placed on the former High Line and southern facing embankment from the divergence from the former High and Low Lines for approximately 210 feet in length.

An engineered cover was placed on the former Low Line and northern facing embankment from the divergence from the former High and Low Lines for approximately 375 feet in length and 120 feet in length, respectively.

RC 5.3 RCOU1 Interim Action – Utility Project

The Black Eagle Water and Sewer District completed a utility project in the Fall of 2020. In coordination with this effort, the EPA removal program conducted the following actions:

- Excavation of the contaminated soils within the railroad corridor including, but not limited to, the area delineated by the water district. Soils were excavated to a depth of approximately three feet.
- Transportation of contaminated soils to an approved location for waste consolidation and interim management. Soils were treated with an amendment to stabilize contamination prior to disposal, as necessary.
- Provision and transportation of non-contaminated fill to replace the excavated contaminated material. The fill was provided upon completion of the water district's sewer and water line replacement. The water district placed, compacted and graded the fill along the sanitary sewer easement.

RC 5.4 Railroad Corridor Surface Water Hydrology

The only major perennial surface water body near the Railroad Corridor portion of OU1 is the Missouri River, which is being addressed as a separate Operable Unit (OU3). The only stream believed to be perennial within OU1 (including the Railroad Corridor portion of OU1) is the main drainage which runs through Black Eagle and passes under the Railroad Corridor through a culvert.

Periodic surface water generated from storm and snowmelt events at upgradient locations within OU1 and within the Railroad Corridor generally flows overland from north to south toward the Missouri River.

A seep zone is located near the ball field at the eastern end of the Park. Based on field observations collected during the RI, the seep appears to be seasonal, with assumed surface water infiltration intersecting bedrock, including from the Community Soils portion of OU1 or another upgradient area outside the Railroad Corridor, and then seeping to the ground surface.

Several drainage areas have been identified within the Railroad Corridor. Five surface water outfalls, ranging from 20 to 36 inches in diameter, are located south of RCOU1 and discharge to the Missouri River. The stormwater conveyance system related to these outfalls is not known, but it is believed these outfalls may discharge surface water generated both within and outside the Railroad Corridor.

Based on field observations, intermittent seasonal stream flow passes beneath the Railroad Corridor near the eastern end of the Park. Water has been observed to enter a stone culvert on the northern side of the Railroad Corridor and discharge from two 36-inch-diameter corrugated metal pipes. No inlets to the culvert system have been observed within the Park.

RC 5.5 Conceptual Site Model

This section presents potential sources, release mechanisms, and exposure pathways for the Railroad Corridor portion of OU1.

RC 5.5.1 Potential COPC Sources

Based on the RI data, current historical information, and knowledge of Site conditions, potential sources of arsenic and lead in the Railroad Corridor are the following:

- PSM (likely originating at the Former ACM Smelter and Refinery) that may have historically been used in some locations for track ballast or other former railbed fill on former BNSF and/or ACM railbeds.
- PSM that may have been released or placed incidental to the Former ACM Smelter and Refinery operations in the area and been transported across the historical railbed area of the Railroad Corridor.
- Historical smelting and refining activities, and other wind-borne particulates from the Former ACM Smelter and refinery operations which discharged lead, arsenic, and other metals into the atmosphere as fine-grained particles for approximately 79 years.
- Surface water from areas upgradient of the Railroad Corridor.
- Seepage of groundwater from Community Soils portion of OU1 or other sources upgradient of the Railroad Corridor.

Natural sources of metals and anthropogenic sources (e.g., leaded gasoline, lead based paint) may have contributed to the concentrations of lead and arsenic in soil.

RC 5.5.2 Possible Release Mechanisms

Possible release mechanisms for arsenic and lead within the Railroad Corridor include direct contact, leaching, runoff (seep and surface water drainage), erosion, and air entrainment/redeposition. These possible release mechanisms and associated transport pathways are discussed below.

Direct contact: PSM and other potential sources of arsenic and lead, to the extent present, have the potential to migrate to adjacent surface and subsurface soils through physical processes such as mixing.

Leaching from smelter/refinery material: Infiltration of rain or snowmelt may potentially cause leaching of arsenic and lead vertically through the soil column.

Surface water runoff as seep water: A seasonal seep east of the ball field area of the Park (see Figure 7 of the Final RI Report), between the former High Line and former Low Line may possibly contain arsenic and lead from contact with arsenic and lead-containing soil. Arsenic and lead-containing groundwater may potentially interact with surface water in the area of the seep and associated sediment. The seasonal persistence and discharge rate of the seep is unknown (Kennedy Jenks, 2015).

Runoff and erosion at surface water drainages: An intermittent surface water drainage ditch and culvert located along the approximate projected path of 21st Street North intersects the railroad beds and the eastern side of the Park (see Figure 7 of the Final RI Report). Intermittent surface water discharge from the upgradient metals-containing residential and possibly industrial areas of OU1 to the north of RCOU1 enters the culvert along the northern side of the former High Line and likely incorporates runoff from such areas upgradient of the culvert entrance. This channel is a potential transport pathway of arsenic and lead for both surface water and sediments.

Air entrainment and deposition: Through the mechanisms of air entrainment and deposition, arsenic and lead from atmospheric sources including releases by former smelter/refinery operations, and to a lesser degree other atmospheric sources such as leaded gasoline, had the potential to impact surface soil, surface water (seeps), and sediments in the Railroad Corridor. Deposits from the releases associated with operations of the former smelter/refinery cover a broad area throughout OU1. Airborne dust associated with human activity or wind may still result in entrainment and/or deposition of particulates within the Railroad Corridor.

RC 5.5.3 Possible Transport Pathways

Various transport pathways could potentially influence the movement of COPCs from the Railroad Corridor to media including soil, surface water, sediment, and air. The potential transport pathways include the following and are discussed in greater detail in the following sections:

- Soil mixing
- Leaching and infiltration
- Surface water runoff and erosion
- Air dispersion (particulates, dust).

RC 5.6 Railroad Corridor (RCOU1) Sampling

All Railroad Corridor samples were analyzed for antimony, arsenic, cadmium, cobalt, copper, iron, lead, and zinc. Subsets of the samples were analyzed for grain size distribution, hexavalent chromium, volatile organic compounds, semi-volatile organic compounds, total organic carbon, leachability, and acid base

accounting analysis. Arsenic and lead results are discussed in this section. Other analyses are discussed along with COPC selection, described in Section RC 7.2.

RC 5.6.1 Historical Railbeds (High Line and Low Line)

The historical railbed area includes the former Little Chicago railyard located between 10th and 15th Streets Northeast and the former right-of-way that splits the former High Line from the former Low Line track segments.

Soil samples in the area of the former High Line and Low Line railbeds and Little Chicago railyard were collected along transects cut perpendicular to the historical railway alignments. These transects were generally spaced 200 feet apart along the entire length of the historical railbeds. At each transect, drilling and sampling started at the centerline of the historical railbed alignment. Then lateral step-out borings were located at 10-foot intervals north and south of the centerline. Additional 10-foot step-out borings were drilled and sampled until one of the following occurred: a step-out boring did not encounter any visually identifiable smelter/refinery material, a physical barrier such as a building or paved parking lot was encountered, or the next step-out would have been located on a residential lot. The historical railbeds and sampling locations are shown on Figure RC 5-2.

If smelter/refinery materials were visually identified, then samples were collected from ground surface to a minimum of 2 feet below the last visual evidence of smelter/refinery impact. Centerline and step-out borings with visually identified possible smelter/refinery material were sampled over the same four general depth intervals, identified as A, B, C, and D layer samples. The A layer samples were collected from the ground surface to the top of visually identified possible smelter/refinery material (if present). The B layer samples were collected from the top to the bottom of the visually identified possible smelter/refinery material. The C layer samples were collected from the bottom of visually identified possible smelter/refinery material, if present, to the bottom of visibly affected soil (i.e. staining/discoloration or other evidence of contamination). The D layer samples were collected in the interval immediately below the deepest stained soil. The total depth of step-out borings was based on field observations of the depth of possible smelter/refinery material in adjacent borings.

Step-out borings without visually identified possible smelter/refinery material were sampled to a depth of 2 feet below ground surface. Figure RC 5-3 shows the distribution of visually identified possible smelter material (PSM).

Figure RC 5-2 – Railroad Corridor Sample Locations



Path: K:\GIS Library\ACM\127.006.006\maps\RailroadCorridorSamplingLocations_20190917.mxd

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Figure RC 5-3 – Railroad Corridor Locations of Possible Smelter Material



Observed thicknesses of overburden material covering PSM varied from a few inches to over 10 feet. In general, where PSM was encountered, it typically formed a single layer near the top of the former railbed. Figures showing the distribution of overburden thicknesses are included in the Railroad Corridor RI Report (Kennedy Jenks, 2015). Multiple layers of PSM were encountered in some cases near the edges of the railbed fill placement areas. The thickness of the PSM is typically between 1 and 3 feet across the historical railbed areas.

RC 5.6.2 Church Parcel

A historical railroad switching spur may have been located off the High Line, on property currently owned by Immaculate Heart of Mary Church (Church Parcel). Historical evidence suggests that the artificial fill placed behind a newer retaining wall in the area may be between 12 and 17 feet thick and was placed by the church. Sampling locations are shown on Figure RC 5-2.

Most of the soil borings in the Church Parcel encountered more than a trace of possible smelter/refinery material, although there was not a universally present B layer. If PSM was encountered during drilling, then the Church Parcel boring was sampled for A, B, C, and D layer samples similar to the High Line and Low Line borings. If PSM was not encountered, then the boring was sampled at four designated depths (0 to 2 inches, 2 to 6 inches, 6 to 12 inches, and 12 to 18 inches below the base of imported fill).

Observed thicknesses of overburden varied from 1.0 to 1.7 feet east of the retaining wall and were between 16.2 and 17.7 feet thick west of the retaining wall. PSM was observed between 1 foot and 2.25 feet below ground surface in all four locations west of the retaining wall.

RC 5.6.3 Art Higgins Memorial Park (Park)

Lateral step-out sampling was conducted in the Park located between the historical High Line and Low Line rail beds. This sampling was completed on 50-foot step-outs from the last step out boring in the historical railbed to the north (or south) of the park area. Sampling locations are shown on Figure RC 5-2. If no PSM was encountered, then the boring was sampled from 0 to 2 inches, 2 to 6 inches, 6 to 12 inches, and 12 to 18 inches below ground surface. If a layer of PSM was encountered, then the boring was sampled in accordance with the depth intervals established for the historical railbed sampling (A, B, C, and D layers).

RC 5.6.4 Railroad Corridor Soil Sampling Results

Arsenic concentrations in surficial soils ranged from 2.6 mg/kg to 650 mg/kg. The median arsenic concentration in surficial soil is 26.5 mg/kg, which is above the Montana BTV of 22.5 mg/kg. Considering only those locations where PSM was not encountered, the maximum arsenic concentration was 458 mg/kg, and the median arsenic concentration at locations where PSM was not encountered was 15.8 mg/kg, which is below the Montana BTV. Statistical analysis confirmed that surficial arsenic concentrations were significantly higher at sample locations where PSM was encountered. In general, the highest arsenic concentrations were found near the centerline of the historical railbed alignment, with concentrations decreasing with distance away from the centerline (Kennedy Jenks, 2015).

Lead concentrations in surficial soils ranged from 3.3 mg/kg to 6,100 mg/kg. The median lead concentration in surficial soil is 120 mg/kg. Considering only those locations where PSM was not encountered, the maximum lead concentration was 2,330 mg/kg, and the median lead concentration at locations where PSM was not encountered was 48.6 mg/kg, which is above the Montana BTV of 29.8 mg/kg. As with arsenic, surficial lead concentrations were significantly higher at sample locations where PSM was encountered, as confirmed by statistical analysis. In general, the highest lead concentrations were found near the centerline of the historical railbed alignment, with concentrations decreasing with distance away from the centerline. Additional detail regarding sample analysis and results is available in the Final RI Report (Kennedy Jenks, 2015).

RC 5.7 Nature and Extent of Arsenic and Lead in Surface Soil

For purposes of the nature and extent evaluation, surficial soil is defined as the uppermost sample at a given boring location. The following were general observations for arsenic in surficial soil:

- Arsenic concentrations in surficial samples ranged from 2.6 mg/kg to 650 mg/kg. The median of arsenic surficial soil concentrations is 26.5 mg/kg.
- The highest surficial arsenic concentrations are found near the former track centerline with concentrations decreasing with distance from the centerline.
- Surficial arsenic concentrations were found to be higher in areas where PSM was encountered relative to areas where PSM was not encountered.

The following were general observations for lead in surficial soil:

- Lead concentrations in surficial samples ranged from 3.3 mg/kg to 6,100 mg/kg. The median of lead surficial soil concentrations is 120 mg/kg.
- Like surficial arsenic concentrations, the highest lead concentrations are found near the former track centerline with concentrations decreasing with distance from the centerline.
- Surficial lead concentrations were found to be higher in areas where PSM was encountered relative to areas outside of where PSM was encountered.

RC 5.8 Nature and Extent of Arsenic and Lead in Soil by Depth Interval

The following observations are based on the arsenic and lead concentrations in soil at depth:

- In areas outside the historical railbed area (or sample locations where PSM was not encountered), arsenic concentrations are lower than where PSM was encountered and generally do not vary appreciably by depth interval.
- In areas where PSM was encountered, arsenic concentrations are generally higher within the PSM relative to the overlying soil and decrease below the base of the PSM.
- In areas where PSM was encountered, lead concentrations are generally higher in the soil overlying the PSM. Lead concentrations in the PSM are higher relative to the bottom of the PSM (i.e., at the contact between PSM and underlying soil). Lead concentrations decrease below the base of the PSM.
- In areas where PSM was encountered, arsenic and lead concentrations are generally higher in the upper two feet than at greater depths.

RC 5.9 Railroad Corridor Surface Water

Total arsenic surface water concentrations ranged from 2.5 micrograms per liter (µg/L) to 5.2 µg/L. Dissolved arsenic surface water concentrations ranged from 2.3 µg/L to 4.3 µg/L. These arsenic data indicate arsenic is mostly present in surface water in the dissolved phase rather than sorbed to sediment particles. Total lead surface water concentrations ranged from 0.20 µg/L to 2.5 µg/L. Dissolved lead surface water concentrations ranged from non-detect to 0.14 µg/L. These lead data indicate lead present in surface water is mostly sorbed to sediment particles rather than in the dissolved phase.

Higher surface water concentrations of arsenic and lead were detected in samples collected at the seep located east of the ball fields in the Park between the former High Line and former Low Line. The seep may be impacted by infiltration of surface water from the Community Soils portion of OU1 or another area upgradient of the Railroad Corridor (some of the highest metals concentrations found to date have been in the upgradient Community Soils portion of OU1).

The arsenic and lead concentrations in the culvert inlet samples are similar to those in the culvert outlet samples, indicating that RCOU1 is not impacting the surface water concentrations.

RC 5.10 Railroad Corridor Sediment

Arsenic concentrations in the culvert sediment samples ranged from 21.7 mg/kg to 48.3 mg/kg. Lead concentrations in the culvert samples ranged from 50.8 mg/kg to 135 mg/kg. The detected arsenic and lead concentrations in the sediment sample collected from the seep were 39.9 mg/kg and 39.8 mg/kg, respectively.

The highest arsenic and lead concentrations were detected in the sediment samples collected from the eastern culvert outlet south of the former Low Line on the southern side of North River Road. The arsenic concentrations in the eastern culvert outlet (48.3 and 31.8 mg/kg during the October 2012 and April 2014 sample events, respectively) are higher than those in the single culvert inlet (22.3 and 24.3 mg/kg during the October 2012 and April 2014 sample events, respectively).

The lead concentrations in the eastern culvert outlet (135 and 83.8 mg/kg during the October 2012 and April 2014 sample events, respectively) are also higher than those in the single culvert inlet (53.5 and 50.8 mg/kg during the October 2012 and April 2014 sample events, respectively). In the western culvert outlet, the arsenic concentration (21.7 mg/kg) was less than that in the culvert inlet while the lead concentration (61.9 mg/kg) was higher than that in the culvert inlet during the April 2014 sample event. The sediment data indicate that RCOU1 is not significantly impacting sediment in the culvert.

RC 5.11 Railroad Corridor Bioavailability Analysis

In-vitro bioaccessibility (IVBA) testing was conducted to provide Site-specific relative bioavailability (RBA) values for arsenic and lead. The following general observations are based on the arsenic and lead RBA values:

- RBA results for arsenic ranged from 21 percent to 40 percent, and RBA results for lead ranged from -2.5 percent to 64 percent. The average arsenic and lead RBAs were 28 percent and 29 percent, respectively.
- The lead RBA results from the PSM are significantly different than the lead RBA results in the non-PSM samples.
- In contrast, the arsenic RBA results from the PSM are not significantly different than the arsenic RBA results in the non-PSM samples.

Site-specific RBA values were developed for use in the HHRA. Because the RBA values for PSM are significantly different than the other data, RBA values were derived separately for the PSM and for other soils.

Table RC 5-1 Site-Specific Relative Bioaccessibility Analysis Results

	Relative Bioaccessibility Analysis (RBA) (%)		
	West of 15th Street	East of 15th Street	Potential Smelter Material
Arsenic	27	34	24
Lead	33	45	2.4

RC 5.12 Railroad Corridor Leaching Analysis

The toxicity characteristic leaching procedure (TCLP) is a chemical analysis process used to determine whether hazardous elements present in a waste, like metals, have the potential to be transported out of the waste by means of leaching. The test involves a simulation of leaching through a landfill and can determine where the waste may be disposed and whether treatment may be required prior to disposal.

Results of TCLP analyses completed on behalf of the EPA in 2010 indicated that some of the material in the historical railroad beds is characteristically hazardous. Twelve of the 62 samples which were

analyzed by TCLP exceeded the TCLP limit for cadmium and six for lead, indicating that these sample intervals represent areas of characteristically hazardous material contained within the railroad beds (PWT, 2011).

BNSF assessed the potential for leaching to groundwater to occur for metals using results from Site-specific synthetic precipitation leaching potential (SPLP) analysis, which relate soil concentrations to aqueous leachate concentrations following application of mildly acidic water (with a pH designed to mimic that of natural rainfall).

RC 5.13 Railroad Corridor Contaminant Fate and Transport

The concentrations of arsenic detected in the PSM, at the bottom of the PSM, and below the base of the PSM demonstrate that arsenic has not migrated from the PSM into the soil below the PSM at the majority of the sample locations. As with arsenic, the concentrations of lead detected in the PSM, at the bottom of the PSM, and below the base of the PSM demonstrate that lead is not migrating from the PSM into the soil below the PSM.

Section RC 6: Current and Potential Future Land Use in the Railroad Corridor

The Railroad Corridor portion of OU1 includes the Park, located between the former High Line and former Low Line, and two segments of a paved walking trail located on the former right-of-way. The eastern segment of the walking trail overlies the former High Line directly east of the Park. The western segment of the walking trail extends westward from the former railroad bridge over Highway 87 at 15th Street North to a point between 12th and 13th Streets North, where it curves southward to North River Road. Land use within the Railroad Corridor is commercial/industrial and recreational. It is zoned for commercial or open space land use.

The former railroad bed is partially developed with two segments of a walking trail as described above. NorthWestern Energy owns and operates electrical power-related facilities on both sides of 15th Street North/Highway 87 at 1501 North River Road, Black Eagle, Montana. Part of the NorthWestern Energy property is fenced, and part of the fenced area lies within the former BNSF right-of-way that was sold to Montana Power Company in 1996.

The easternmost portion of the Railroad Corridor consists of parts of two parcels, one owned by ARCO Environmental Remediation, LLC (AERL) (the narrow area extending to the southeast, which presently includes part of a trail) and the other owned by the Church (Church Parcel). The Black Eagle Civic Club owns a parcel located between the AERL parcel and Smelter Avenue, outside the investigation boundary. The southern portion of the Church Parcel, which is within the Railroad Corridor, is currently undeveloped.

CMR operates a petroleum refinery on the western side of 10th Street North, including a truck-loading rack located north of the former railroad right of-way between 10th and 11th Streets North.

Approximately 21 residential properties outside the Railroad Corridor portion of OU1 are located adjacent to the right-of-way north and uphill of the Railroad Corridor between 11th and 22nd Streets North in the unincorporated community of Black Eagle. All such residential properties are being addressed by the Community Soils portion of OU1, as described in Section CS 5 through CS 14 of this ROD.

Section RC 7: Summary of Railroad Corridor Risk

A Baseline HHRA (which included a toxicity assessment) was conducted to determine if contaminants within the Railroad Corridor might be harmful to human health. Ecological risk assessment for this area is deferred to OU2. Additionally, the eastern-most portion of the High Line is deferred to OU2.

This Baseline HHRA focused on people working and recreating on the Railroad Corridor and their potential exposures to arsenic and lead in soil, dust, air, sediment and surface water. This Baseline HHRA focused on the following major human health pathways: incidental ingestion; dermal contact and inhalation of soils and dust.

Arsenic

For this evaluation, arsenic risks were calculated for the east and west portions of the Railroad Corridor and Community Park using the maximum soil arsenic concentration from that area. Maximum arsenic concentration from soils in the west and east portions of the Railroad Corridor were 2,580 mg/kg and 1,850 mg/kg, respectively. Based on these concentrations, there is a risk to people working and recreating on the Railroad Corridor as well as to adjacent residents and, therefore, remedial action is required. Based on the maximum arsenic concentration in soil in the park (220 mg/kg), risks are acceptable, and no remedial action is required within the park.

Lead

In accordance with the EPA's risk assessment approach for lead, potential health risks to children were evaluated using the IEUBK model. The model estimates the probability that exposure to soil in the Railroad Corridor may result in child blood lead levels greater than 8 µg/dL.

Based on the maximum soil lead concentrations from the west and east portion of the Railroad Corridor (11,200 mg/kg and 5,760 mg/kg, respectively), there is a probability of more than 90% that a child exposed to this soil would have a blood lead level greater than 8 µg/dL, and therefore, remedial action is warranted. Based on the maximum soil lead concentration from the park (388 mg/kg), no remedial action is required within the park.

Basis for Action

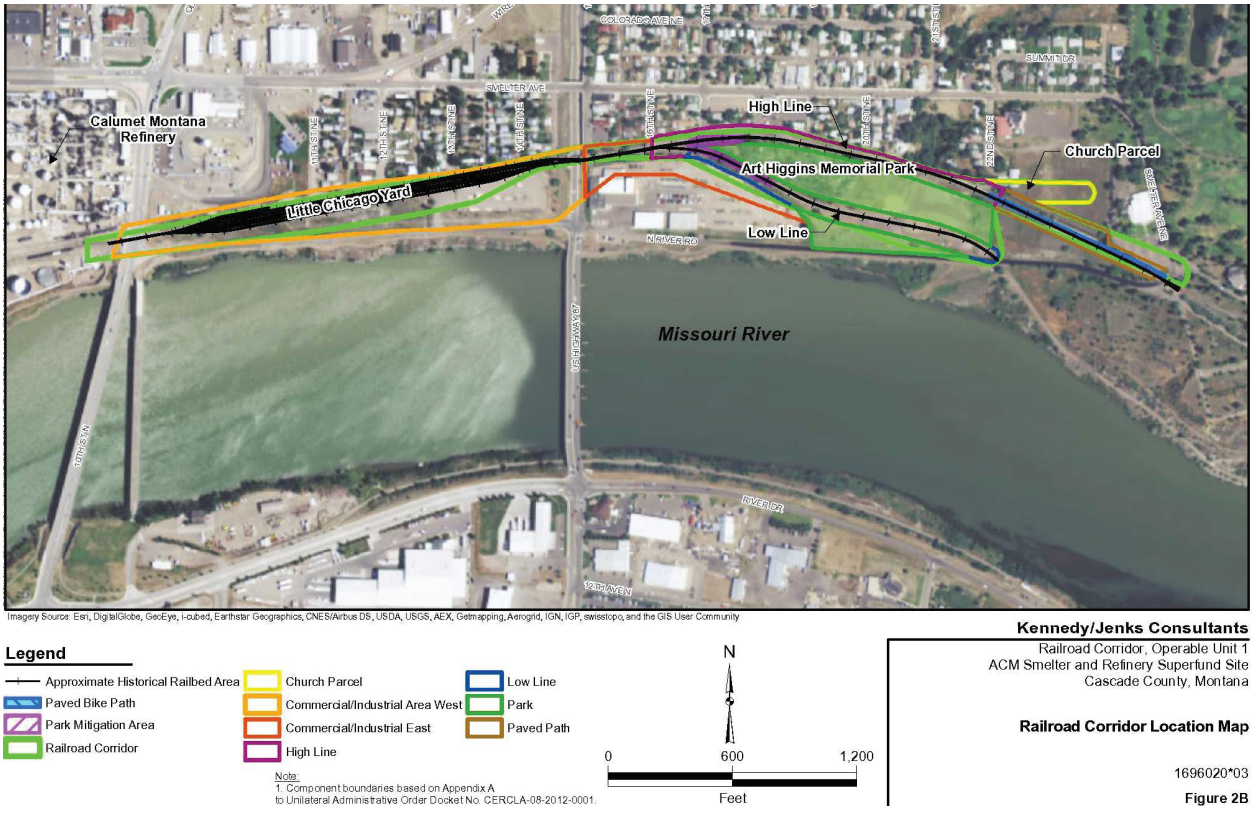
Based upon current and reasonably expected potential future land uses, remedial action is necessary for the Railroad Corridor to protect public health, welfare or the environment from actual or threatened releases of hazardous substances that may present an imminent and substantial endangerment to public health or welfare. No remedial action is required in the park except for removal of smelter materials associated with the railroad bed.

RC 7.1 Summary of Human Health Risk Assessment

The Baseline HHRA was completed to characterize the potential risks to human health that may be posed by chemicals present in or entering into environmental media. The HHRA evaluated potential exposures to arsenic and lead in surficial soil by outdoor workers, hypothetical adolescent trespassers, and recreational users (heavy user/Black Eagle resident; typical user/Great Falls or other area resident) and to arsenic and lead in both surficial and subsurface (i.e., to 5 feet below ground surface [bgs]) soil by utility workers.

The areas that were considered for potential exposures by respective populations include the Commercial/Industrial Area West, Commercial/Industrial Area East, High Line and the Church Parcel, Low Line, Paved Path, and Park as shown on Figure RC 7-1. These areas were evaluated as individual exposure areas in the HHRA. Potential future exposures by utility workers were evaluated for utility corridors that could be developed in all these exposure areas. The receptors evaluated for each exposure area were identified based on the current and likely future use of the exposure area.

Figure RC 7-1 Railroad Corridor Location Map



The results of the baseline HHRA completed for RCOU1 provided risk estimates that were derived using standard EPA risk assessment methodology, currently available toxicity values, and protective, conservative assumptions to model potential exposures. The cancer risk estimates from arsenic for some of the scenarios evaluated in the HHRA fall within the EPA's target risk range (1 in 1,000,000 to 1 in 10,000); however, individual elevated concentrations at some locations may pose a risk. While the results of the HHRA indicate that the areawide average risks from arsenic and lead are acceptable for

current risk scenarios, individual elevated concentrations of arsenic and lead may pose a risk to adjacent residential properties that are generally downwind of the railroad corridor.

Based on the current and likely future use of exposure areas and most sensitive receptors identified through the results of the HHRA, the following receptors were considered in evaluating remedial alternatives for each of the exposure areas:

- Commercial Areas East and West: Outdoor workers
- High Line (including the Church Parcel), Low Line, Paved Path, and Park: Recreational users (heavy use).

RC 7.2 Development of PRGs

PRGs are numeric expressions of the RAOs that are expected to meet acceptable risk levels required under the RAOs. PRGs were calculated using the methodology and exposure assumptions from the baseline HHRA. The arsenic PRG represents an increased cancer risk of 1 x 10^{-5}. The lead PRG represents no more than a 5 percent probability of exceeding a target blood lead level of 5 µg/dL. The calculated arsenic and lead PRGs for each of the exposure areas are summarized in Table RC 7-2.

Table RC 7-2 Preliminary Remediation Goals (PRGs) for Arsenic and Lead in Surface Soil

RCOU1 Exposure Area	Arsenic PRG[(a,b)] (mg/kg)	Lead PRG[(a,c)] (mg/kg)
Commercial Area West	160	2700
Commercial Area East	150	2000
Low Line	50	580
High Line	50	580
Park	50	580
Church Parcel	50	580
Paved Path	50	580

Notes:

(a) PRGs were calculated using the exposure assumptions from the baseline HHRA.
(b) The arsenic PRG represents an increased cancer risk of 1x10^{-5}
(c) The lead PRG represents no more than a 5 percent probability of exceeding a target blood lead level of 5µg/dL.

The PRGs were developed to be protective of the most sensitive receptor in a given exposure area based on the current and likely future use of that exposure area. In the Commercial Area West and Commercial Area East exposure areas, the PRGs are based on protection of an outdoor worker. In the High Line (including Church Parcel), Low Line, Paved Path, and Park exposure areas, the PRGs are based on protection of a recreational user (heavy use). While it is anticipated that commercial/industrial uses will continue in the Commercial Area West and Commercial Area East exposure areas, PRGs based on protection of a recreational user (heavy use) were also calculated for the Commercial Area West and Commercial Area East to evaluate conservative remedial scenarios that would be protective of any

future land use. The PRGs for a recreational user (heavy use) are used for purposes of unrestricted use calculations in the Railroad Corridor FS.

A summary of the most sensitive receptors evaluated to develop the PRGs by exposure area is provided in Table RC 7-3, below:

Table RC 7-3 RCOU1 Exposure Areas and Receptors for PRG Calculations

RCOU1 Exposure Area	Most Sensitive Receptor for PRG Calculation
Commercial Area West	Outdoor Worker
	Recreational User (Heavy)[(a)]
Commercial Area East	Outdoor Worker
	Recreational User (Heavy)[(a)]
Low Line	Recreational User (Heavy)
High Line	Recreational User (Heavy)
Park	Recreational User (Heavy)
Church Parcel	Recreational User (Heavy)
Paved Path	Recreational User (Heavy)

Note:

PRGs were developed to evaluate conservative remedial scenarios. Receptor not included in HHRA for given exposure area.

RC 7.3 Impacted Soil and Waste Areas and Volumes

The RCOU1 FS focused on locations where PSM was observed and used remedial action levels (RALs) to identify the "areas of concern" for further evaluation. The "areas of concern" are within certain areas of the former railbed and address the presence of "waste material" within RCOU1 (i.e., areas where RALs are exceeded). RALs were calculated such that arsenic and lead concentrations in soils from 0 to 2 feet bgs (i.e., surface soils) would meet the PRGs (see Table RC 7-2) on an exposure area basis. Within the Commercial Area West and Commercial Area East exposure area, areas of concern for current and likely future use were identified based on protection of an outdoor worker. Areas of concern were identified for unrestricted land use for both the commercial and other areas using the PRGs based on protection of a recreational user (heavy use) and based on the presence of PSM.

RALs were developed for each exposure area in accordance with the EPA's draft *Guidance on Surface Soil Cleanup at Hazardous Waste Sites: Implementing Cleanup Levels* dated May 2004 (EPA 2004). As defined in the draft guidance, the RAL is the maximum concentration that may be left in place within an exposure area such that the 95UCL within the exposure area is at or below the cleanup level (i.e., the PRG for the exposure area). The RAL was determined iteratively for each exposure area by removing and replacing the highest concentrations in the dataset until the 95UCL was equal to or less than the PRG. In sample locations where multiple discrete samples were collected from 0 to 2 feet bgs, each of the samples was removed from the dataset. The replacement concentrations were assumed to be at background levels: 22.5 mg/kg was used for arsenic and 29.8 mg/kg was used for lead, based on the

Montana Background Threshold Values from Table 4-4 of the Hydrometrics *Project Report: Background Concentrations of Inorganic Constituents in Montana Surface Soils* dated September 2013 (MDEQ 2013).

Upon determination of the RALs for each exposure area, the extents for areas of concern were plotted using soil data collected between 0 and 2 feet bgs. The extents for the areas of concern were plotted by grouping the samples that exceed the RALs and extrapolating halfway between the closest samples that are below the RALs. These areas of concern were the focus of the Railroad Corridor FS.

RALs were only calculated for arsenic, as arsenic was the only chemical warranting further evaluation based on the results of the HHRA. After removing the samples with arsenic concentrations exceeding the RALs, the 95UCL concentrations were re-calculated for lead for the exposure areas. As shown in Table RC 7-2, the residual lead concentrations are below the PRGs for each of the exposure areas, indicating that remedial actions addressing arsenic will also result in acceptable risks from lead.

The areal extent and volume of PSM was also calculated based on the interpreted lateral and vertical extent of PSM presented in the Railroad Corridor FS (Kennedy Jenks, 2017). The estimated volume of PSM, including overburden above the PSM, is presented in Table RC 7-4, below.

Table RC 7-4 Preliminary Impacted Surface Soil Volume Estimates

RCOU1 Exposure Area	Remediation Area	Area (square feet)	Depth[a] (feet)	Volume Arsenic Impacted Surface Soils (cubic yard)	Overburden[b] (cubic yard)	Additional PSM[c] (cubic yard)
Commercial Area West (CAW) (Figure 3)	Area to meet Arsenic RAL for Commercial/Industrial Use	31,292	2	2,318	-	-
	Area to meet Arsenic RAL for Unrestricted Use	120,998	2	8,963	-	-
	Area to remove PSM	168,000	0.25 - 5.5	-	3,500	3,500
Commercial Area East (CAE) (Figure 4)	Area to meet Arsenic RAL for Commercial/Industrial Use	5,199	2	385	-	-
	Area to meet Arsenic RAL for Unrestricted Use	18,321	2	1,357	-	-
	Area to remove PSM	29,000	0 - 2.5	-	300	300
High Line (HL) and Church Parcel (Figure 5 and 7)	Area to meet Arsenic RAL for Unrestricted Use	42,505	2	3,149	-	-
	Area to remove PSM	107,000	0 - 19	-	10,300	5,600
Low Line (LL) (Figure 6)	Area to meet Arsenic RAL for Unrestricted Use	22,799	2	1,689	-	-
	Area to remove PSM	55,000	0.25 - 20	-	5,700	1,700
Park (Figure 8)	Area to meet Arsenic RAL for Unrestricted Use	-	-	-	-	-
	Area to remove PSM	2,000	1.25 - 1.75	-	100	100
Paved Path (PP) (Figure 7)	Area to meet Arsenic RAL for Unrestricted Use	-	-	-	-	-
	Area to remove PSM	59,000	1.5 - 17	-	9,800	3,800

Notes:
(a) Depth ranges shown indicate the top and bottom depths below ground surface PSM is observed in the exposure area.
(b) Additional Overburden volume required to be excavated to get to PSM beyond the volume of arsenic impacted soils to meet the unrestriced RALs.
(c) Additional PSM volume beyond the PSM/impacted surface soils to meet the unrestricted arsenic RALs.
PSM = Possible Smelter Material
RCOU1 = Railroad Corridor Segment of Operable Unit 1
RAL = remedial action level

Section RC 8: Railroad Corridor RAOs and ARARs

Section 300.430(e) of the 1990 NCP requires that the remedial alternative development process be initiated by developing RAOs, identifying GRAs that address the RAOs, and performing an initial screening of applicable remedial technologies. The overarching goal of the remedy evaluation process is to provide the basis for selecting a remedy that is protective of human health and the environment, and also addresses ARARs. This section provides the RAOs, identifies the media and Areas of Concern, and summarizes ARARs for the Railroad Corridor portion of OU1 of the Site.

RC 8.1 Remedial Action Objectives

Before developing cleanup alternatives for this Site, the EPA establishes RAOs to protect human health and the environment. RAOs are based on available information and standards, such as ARARs, to-be considered (TBC) guidance and Site-specific risk-based levels. The EPA used 1 in 100,000 cancer risk as the point of departure determining RAOs for arsenic because 1 in 1,000,000 is below background.

RC 8.1.1 Railroad Corridor RAOs

RAOs for contamination within the Railroad Corridor were developed to attain a degree of cleanup that ensures the protection of human health and the environment to:

- Achieve an excess cancer risk no greater than 1 in 100,000 or non-cancer hazard index no greater than 1, whichever is more stringent
- Achieve a probability of less than 5 percent that an individual child would have a blood lead level exceeding 5 µg/dL.

These protective RAOs were selected for the Railroad Corridor in consideration of risk contribution to, and protection of, adjacent residential soils. Areas within the Railroad Corridor which need to be addressed to meet these RAOs are shown on Figure RC 8-5.

Figure RC 8-1 – Railroad Corridor Area of Concern



Section RC 9: Description of Railroad Corridor Alternatives

The remedial alternatives for soil within the Railroad Corridor are described in Sections RC 9.1 through RC 9.6. A more detailed description of the alternatives is presented in the Railroad Corridor FS (KJ 2017).

RC 9.1 Alternative 1: No Action

This alternative is retained for comparison with other remedial alternatives listed below.

RC 9.2 Alternative 2: Institutional and Engineering Controls

RC 9.2.1 Alternative 2IC: Institutional Controls (ICs)

This alternative includes implementation of ICs, in the form of signage and deed restrictions including a soil management plan, as well as considerations for maintenance and/or repair of existing infrastructure (e.g., water and sanitary sewer lines) that may encounter impacted material. Certain ICs in the form of signage and perpetual deed restrictions requiring routine inspection/maintenance and development in a manner that preserves the integrity of selected protective remedies, including an agency approved soil disturbance/management plan (collectively "Institutional Controls" or "ICs") are applicable to each alternative other than no action and full closure and therefore, the associated costs will not be repetitively included as part of the cost comparison of the other alternatives below.

RC 9.2.2 Alternative 2EC: Engineering Controls

This alternative includes implementation of engineering controls, such as fencing, to restrict access to areas of the Site. Impacted soils are not removed and given the Site contaminants, it is reasonable to assume minimal degradation will occur. As such, it will be necessary to implement ICs to administratively preserve and inhibit use of the impacted areas and to keep the public informed.

RC 9.3 Alternative 3: Capping

This alternative includes capping of impacted soils exceeding applicable RALs using imported clean soil/gravel, pavement, or other engineered cap (e.g., possible addition to paved path or other protective engineered capping such as the capping previously done in the park area mitigation) to prevent direct contact with or migration of impacted soil. Impacted soils are not removed via capping and given the Site contaminants (i.e., arsenic and lead), it is reasonable to assume minimal degradation will occur. As such, it will be necessary to implement ICs to preserve the integrity of the remedial capping and keep the public informed. Coordination with property owners, the County, and the Black Eagle community will occur during the design and implementation of this alternative to reasonably account for possible future uses of the Site.

RC 9.4 Alternative 4: Excavation and Off-Site Disposal

This alternative includes the complete removal of impacted soils exceeding applicable RALs from the Site to a licensed landfill. Depending on the waste characterization, the soil would be disposed of in a Subtitle D or C facility. Alternatively, hazardous waste could be treated to non-hazardous conditions (e.g., through stabilization) prior to disposal in a Subtitle D landfill. Following excavation, the Site would be backfilled with clean soil/gravel or re-graded using existing Site soil. It will be necessary to implement ICs to preserve the integrity of the backfilled areas which serve as capping for the underlying impacts and keep the public informed. Separation techniques could be used to separate rock and debris from the impacted soil, reducing the amount of material disposed in a landfill. ICs will be required. A sub-alternative has also been evaluated which includes the removal of the full extent of PSM in the RCOU1 area and would not require ICs.

RC 9.5 Alternative 5: Excavation and On-Site Disposal

This alternative includes excavation of impacted soil exceeding applicable RALs and consolidating the soil in an on-Site repository outside of the Railroad Corridor but within OU2. Depending on waste designation, the soil would be treated to non-hazardous conditions (e.g., through stabilization) prior to disposal, if necessary. Alternatively, hazardous waste, if any, could be disposed of off-Site in a Subtitle C landfill with the remaining soil placed in the on-Site landfill. Separation technologies could be used to separate rock and debris from impacted soil, reducing the amount of material disposed beneath the repository cap. It will be necessary to implement ICs to preserve the integrity of the backfilled areas which serve as capping for the underlying impacts and keep the public informed. Routine, long-term repository cap maintenance inspections will also be necessary in perpetuity. Coordination with property owners, the County, and the Black Eagle community will be conducted to reasonably account for possible future uses of the Site.

RC 9.6 Alternative 6: Focused Excavation and Off-Site/On-Site Disposal Combined with Focused Capping, Engineering Controls and Institutional Controls

This alternative includes excavation of impacted soil exceeding applicable RALs for off-Site or on-Site disposal and capping remaining areas of impacted soil. Depending on waste designation, the soil would be treated to non-hazardous conditions (e.g., through stabilization) prior to disposal at an off-Site landfill or on-Site repository. This alterative would also include implementation of engineering controls, such as fencing to restrict access to areas of the Site, and ICs. Routine, long-term cap and fence maintenance inspections will be necessary in perpetuity. Figures 34A and 34B show the locations of the proposed remedial technologies presented in this alternative. A more detailed description of this alternative is presented in Section 6.

This alternative includes both primary, stand-alone remedial technologies (capping and excavation) with engineering controls and ICs to provide flexibility in the remedial approach. Varying remediation scenarios may be developed and evaluated within Alternative 6, including incorporation of existing pavement and engineered covers that may serve as a protective cap. Ongoing coordination with property owners, the county, and the Black Eagle community will occur during the design and implementation of this alternative to reasonably account for possible future uses of the Site.

Section RC 10: Comparative Analysis of Alternatives

The retained alternatives described in Section 9 are analyzed below. Alternatives 3, 4, and 5 were each evaluated using two distinct receptor assumptions (i.e., an “A” and “B” sub-alternative). Alternative 4 was also evaluated assuming all PSM would be excavated and disposed of off Site to achieve full closure (i.e., sub-alternative “C”). The “A” sub-alternative includes implementation of the proposed remedy to be protective of the current and most likely future use of the impacted areas. This includes implementation of the remedial alternative to meet commercial/industrial use RALs at the Commercial Area West and East exposure areas (See “Area of Concern to Meet RALs for Commercial and Industrial Use” shading on Figures 3 and 4) and the unrestricted use RALs at the Low Line, High Line, and Church Parcel exposure areas (Figures 5 and 6). The “B” sub-alternative involves the proposed remedial alternative being implemented to meet the unrestricted use RALs at all the exposure areas, including the Commercial Areas West and East, even though those areas are anticipated to continue to be used for industrial/commercial purposes. Although detailed analyses were completed for the “B” remedial sub-alternatives that conservatively included expanded remediation areas to be protective of unrestricted use in the Commercial Area West and Commercial Area East, they are not included in the comparative analysis in Section 7 as they do not represent a likely future use in RCOU1. The full closure “C” sub-alternative includes implementation of the proposed remedy to meet the unrestricted use RALs, as well as remove the underlying PSM at all exposure areas.

Comparison of Alternatives

The alternatives were evaluated and compared against the criteria outlined in Section 1. Protectiveness and compliance with ARARs are threshold criteria that must be met for any remedy. The comparison of alternatives will include each alternative being compared to other alternatives for each of the five

balancing criteria. The comparative analysis serves as the basis for selecting the recommended soil remedial alternative. The results of alternatives comparison are summarized in Table RC 10-1.

Current and reasonable anticipated future uses of the Site and institutional and engineering controls have been considered when evaluating and selecting a recommended remedy. The retained remedial alternatives address the potential for direct human exposure with surface soil containing lead or arsenic to be protective of the most sensitive receptor in a given exposure area based on the current and likely future use of that exposure area. A summary of the comparison of these retained remedial alternatives is provided in Table RC 10-1. Detailed analyses were also completed for remedial alternatives that were expanded in areal extent to be protective of unrestricted use in the Commercial Area West and Commercial Area East (i.e., Alternatives 3B, 4B, and 5B), as and of full closure Alternative 4C. Please refer to the Final FS for more detail (KJ 2017).

Table RC 10-1 Comparative Analysis of Railroad Corridor Remedial Alternatives

NCP Criteria	**Alternative 1** No Action	**Alternative 2IC** Institutional Controls	**Alternative 2EC** Engineering Controls	**Alternative 3A** Capping	**Alternative 4A** Excavation & Offsite Disposal	**Alternative 5A** Excavation & On-Site Disposal	**Alternative 6** Focused Excavation & Off-site Disposal w/Cap & Access Restrictions
Threshold Criteria							
Overall Protection of Human Health and the Environment	1	-	3	5	5	5	4
Compliance with ARARs	No	Yes	Yes	Yes	Yes	Yes	Yes
Balancing Criteria							
Long-term Effectiveness and Permanence	1	-	2	4	5	4	3
Reduction of Toxicity, Mobility, or Volume through Treatment	1	-	1	1	2	1	1
Short-term Effectiveness	1	-	3	5	4	4	4
Implementability	1	-	2	4	4	3	4
Cost	5	-	4	3	2	3	3
Comparative Analysis Rating	10	-	15	22	22	20	19
Comparative Analysis Rank	5		4	1	1	2	3

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Section RC 11: Principal Threat Waste Versus Low Level Threat Waste

The NCP establishes an expectation that the EPA will use treatment to address principal threats at a site wherever practicable (NCP 300.430(a)(1)(iii)(A)). Identifying principal threat wastes combines concepts of both hazard and risk. In general, principal threat wastes are those source materials considered to be highly toxic or highly mobile, which generally cannot be contained in a reliable manner or will present a significant risk to human health if exposure occurs. Conversely, low level threat wastes are those source materials that generally can be reliably contained and present a low risk to human health in the event of exposure according to OSWER Publication 93803.3-06FS (EPA, 1991). The manner in which principal threats are addressed will generally determine whether the statutory preference for treatment as a principle element is satisfied.

No threshold level of risk has been established to identify principal threat waste. A general rule of thumb is to consider as a principal threat those source materials with toxicity and mobility characteristics that combine to pose a risk several orders of magnitude greater than the risk level that is acceptable for the current or reasonably anticipated future land use, given realistic exposure scenarios (EPA, 1997).

The secondary source material identified at this Site is contaminated soil. Residential soils and soils of undeveloped lands became contaminated by means of releases from the former smelter operation and redistribution due to human disturbances. These source materials are neither highly toxic nor highly mobile and do not pose a risk several orders of magnitude greater than acceptable risk levels. The contaminated soils are considered low level threat waste and do not constitute a principal threat waste.

Some residual concentrations of lead and arsenic remain in and around Black Eagle and some exceed health-based concentrations. Most of these wastes, being neither highly mobile nor highly toxic, can be readily excavated and reliably contained within an engineered repository. However, TCLP results indicate that at least some of the waste is mobile enough under probable landfill disposal conditions to be considered characteristically hazardous and to require treatment prior to disposal. These soils and wastes form the basis for the selected remedial action.

In summary, no principal threat wastes have been identified in OU1.

Section RC 12: Selected Remedy

The selected remedy for the Railroad Corridor is a hybrid of Alternatives 3, 4 and 5. Major components of the remedy for the Railroad Corridor include:

- Remove all visual waste materials (PSM and visually impacted soil) plus one foot of underlying soil to a maximum of 4 feet
- Regrade the Site to promote drainage and revegetate and/or stabilize remaining soils to reduce runoff and dust. Backfill soil is not required unless needed for drainage and/or soil revegetation/stabilization.
- Confirm that residual soil concentrations in the top 6 inches, after removal of waste materials, are below risk-based action levels for the current land use.

- Alternatively, allow placement of engineered covers, consisting of either a minimum of 24-inch soil cover and/or other developed features (I.e., paved trails, streets, or parking areas).
- Provide future operation and maintenance to maintain the protectiveness of engineered covers.
- Place ICs on the property such as restricting future residential use or providing for additional remediation at the time of future residential development.

Excavated materials will either be consolidated and managed with similar materials within OU2, pending a final remedy for OU2, or disposed of at a permitted off-Site facility.

Section RC 13: Railroad Corridor Statutory Determinations

Under CERCLA §121 and the NCP, the lead agency must select remedies that are protective of human health and the environment, comply with ARARs (unless a statutory waiver is justified), are cost-effective, and utilize permanent solutions to the extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as a principle element and a bias against off-Site disposal of untreated wastes.

The selected remedy satisfies the statutory requirements of CERCLA, notably Section 121, subsection (b), and:

- Is protective of human health and the environment
- Complies with ARARs
- Is cost-effective
- Utilizes permanent solutions and alternative technologies to the maximum extent practicable.

13.1 Protection of Human Health and the Environment

The selected remedy will protect human health and the environment by:

- Preventing unacceptable exposure risks to current and future human populations posed by ingestion of or direct contact with contaminated soils
- Implementation of ICs and maintenance to ensure the existing remedial features are protected and maintained, and that undeveloped lands, if developed, will be required to meet the same standard of protection previously implemented for residential soils.

The selected remedy includes components to address human health and environmental risks associated with contaminated soils in residential and non-residential areas. The selected remedy addresses elevated lead and arsenic in the railroad corridor. For the railroad corridor, the selected remedy protects human health and the environment by removal and backfill or capping of contaminated soils and PSM exceeding cleanup standards. The EPA believes that the comprehensive sampling and remediation program ensures that all properties within OU1 that exceed risk-based concentrations will ultimately be addressed.

The selected remedy will be monitored and maintained through comprehensive programs using ICs and monitoring. There are no short-term threats associated with the selected remedy that cannot be readily

controlled through applicable health and safety requirements, monitoring, and standard construction practices. In addition, no adverse cross-media impacts are expected from the selected remedy.

13.2 Compliance with Applicable or Relevant and Appropriate Requirements

Section 121(d) of CERCLA requires that remedial actions attain a degree of cleanup that ensures protection of human health and the environment and that those remedial actions comply with or appropriately waive ARARs. There are three types of ARARs: contaminant-specific, action-specific, and location-specific. The ARARs for the remedy are identified in Appendix A. The selected remedy will comply with federal and state ARARs that have been identified. No waiver of any ARAR is being sought for the selected remedy.

13.3 Cost-Effectiveness

The selected remedy is cost-effective and represents a reasonable value for the money to be spent. In making this determination, the following definition was used: "A remedy shall be cost-effective if its costs are proportional to its overall effectiveness" [NCP § 300.430(f)(1)(ii)(D)].

Overall effectiveness was evaluated by assessing three of the five balancing criteria in combination (long-term effectiveness and permanence; reduction of toxicity, mobility, and volume through treatment; and short-term effectiveness). Overall effectiveness was then compared to costs to determine cost effectiveness. The relationship of the overall effectiveness of this remedial alternative was determined to be proportional to its costs, and hence, this alternative represents a reasonable value for the money to be spent.

Net present worth costs for each alternative were compared (see Table RC 10-1). The cost of the selected remedy for the Railroad Corridor is expected to be approximately $4,089,000, which will include excavation of over 99% of the contaminated soils which exceed 250 mg/kg arsenic or 400 mg/kg lead and waste located in the main Railroad Corridor area (excluding the contaminated materials identified deeper at the Church Parcel and under the paved portion of the bike path). For comparison, Alternative 4B (Soil Excavation and Off-Site Disposal) as described in the Feasibility Study, is expected to cost approximately $3,159,000, while removing 89% of the contaminated soil and waste which exceed 250 mg/kg arsenic or 400 mg/kg lead. For comparison, Alternative 3A is expected to cost only $1,269,000. However, because all the contamination would remain on Site, this alternative scores lower than the selected remedy for long-term effectiveness and permanence, reduction in toxicity, mobility, and volume through treatment, and short-term effectiveness.

13.4 Utilization of Permanent Solutions and Alternative Treatment (or Resource Recovery) Technologies to the Maximum Extent Practicable

This determination looks at whether the selected remedy provides the best balance of trade-offs among the alternatives with respect to the balancing criteria set forth in NCP §300.430(f)(1)(i)(B), such that it represents the maximum extent to which permanence and treatment can be practicably utilized at this Site. NCP §300.430(f)(1)(ii)(E) provides that the balancing shall emphasize the factors of "long-term effectiveness" and "reduction of toxicity, mobility, or volume through treatment," and shall consider the preference for treatment and bias against off-Site disposal.

The EPA has determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at the Site. Of those alternatives that are protective of human health and the environment and comply with ARARs, the EPA has determined that the selected remedy provides the best balance of trade-offs in terms of the five balancing criteria while also considering the statutory preference for treatment as a principle element and bias against off-Site treatment and disposal and considering State and community acceptance. The selected remedy for the Railroad Corridor may include treatment of waste as necessary to meet disposal requirements. It is anticipated based on results of prior leaching analysis that at least some of the material will require treatment.

13.5 Preference for Treatment as a Principle Element

The selected remedy does not satisfy the statutory preference for treatment as a principle element of the remedy. Available treatment technologies evaluated were effective for lead or arsenic contaminated soils but not for soils with both lead and arsenic present.

For example, the use of soil amendments was considered for the Site; however, the use of amendments to reduce the toxicity, bioavailability, or mobility of lead (such as lime or phosphorus) in some cases can increase the mobility of arsenic. No treatments were identified in the feasibility studies which were effective for both arsenic and lead without also creating ancillary hazards through undesirable chemical reactions.

13.6 Five-Year Review Requirements

Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on Site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of remedial action to ensure that the remedy is, or will be, protective of human health and the environment.

Section RC 14: Significant Changes from the Proposed Plan for the Railroad Corridor

Although the selected remedy still utilizes excavation of PSM and either on-Site or off-Site disposal, the cleanup approach was modified to better represent the preferred alternatives four and five presented in the feasibility study. Specifically, the selected remedy will achieve the current land use PRGs and require ICs to limit future land use. The selected remedy also continues to allow engineered covers where such developments are managed and maintained.

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Appendix A

Applicable or Relevant and Appropriate Requirements (ARARs)

Applicable or Relevant and Appropriate Requirements (ARAR)
for ACM Smelter and Refiner Superfund Site Great Falls, Montana

Federal Location-Specific ARARs			
Location	**Requirements**	**Prerequisite**	**Citation(s)**
The Endangered Species Act (Applicable)			
Potential habitat for federally endangered or threatened species in OU1	This statute and implementing regulations provide that federal activities do not jeopardize the continued existence of any threatened or endangered species. 16 U.S.C. 1536(a) of the Endangered Species Act (ESA) requires consultation with the U.S. Fish and Wildlife Service to identify the possible presence of protected species and mitigate potential impacts on such species. Substantive compliance with the ESA means that the lead agency must identify whether a threatened or endangered species, or its critical habitat, will be affected by a proposed response action. If so, the agency must avoid the action or take appropriate mitigation measures so that the action does not affect the species or its critical habitat. If, at any point, the conclusion is reached that endangered species are not present or will not be affected, no further action is required. If threatened or endangered species, listed in 50 CFR 17, are identified during remedial design and remedial action, activities must be modified and conducted to conserve the species and their habitat, following the substantive applicable requirements outlined in 15 USC 1536 and 50 CFR 17.21, 17.31, 17.61, 17.71 and 17.82.	Actions that may negatively impact the species and their habitat.	Endangered Species Act 16 U.S.C. § 1536, and Implementing Regulations 50 CFR §§ 17.21, 17.31, 17.61, 17.71, 17.82
National Historic Preservation Act (Applicable)			
Presence of cultural resources on or eligible for the National Register of Historical Places	This statute and implementing regulations require federal agencies to take into account the effect of this response action upon any district, site, building, structure, or object that is included in or eligible for the National Register of Historic Places (generally, 50 years old or older). A cultural resource survey must be conducted to determine if cultural resources are present. If cultural resources on or eligible for the national register are present, a technical assessment must be conducted to make a determination of no effect, no adverse effect, or determination of adverse effect. If adverse effects are identified, the project planning and design must avoid, minimize, or mitigate the effects. The substantive provisions of the National Historic Preservation Act implementing regulations are applicable to the remedial action.	Identification of cultural resources by surveys.	National Historic Preservation Act (NHPA) 16 U.S.C. § 470 and Implementing Regulations 36 C.F.R. §§ 800.4, 800.5. 800.6, and 800.10(a)

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Applicable or Relevant and Appropriate Requirements (ARAR)
for ACM Smelter and Refinery Superfund Site Great Falls, Montana

Federal Location-Specific ARARs			
Location	**Requirements**	**Prerequisite**	**Citation(s)**
Archeological and Historic Preservation Act (Applicable)			
Presence of eligible scientific, prehistorical, or archaeological data discovered during site activities.	Presence of eligible scientific, prehistorical, or archaeological data discovered during site activities.	Presence of eligible scientific, prehistorical, or archaeological data discovered during site activities.	Presence of eligible scientific, prehistorical, or archaeological data discovered during site activities.
Migratory Bird Treaty (Applicable)			
Potential habitat for migratory birds	Potential habitat for migratory birds	Potential habitat for migratory birds	Potential habitat for migratory birds
Bald Eagle Protection Act (Applicable)			
Potential habitat for bald and/or golden eagles	This statute makes it unlawful for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any bald or golden eagle, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to federal regulations. In addition to immediate impacts, this requirement also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment. If bald or golden eagles are identified during remedial design and remedial action, activities must be modified and conducted to conserve the species and their habitat. The actions that must be avoided through planning and design are applicable and are outlined in this statute.	Identification of bald or gold eagles and actions that could impair the species and their habitat.	16 U.S.C. § 668(a)

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Applicable or Relevant and Appropriate Requirements (ARAR)
for ACM Smelter and Refinery Superfund Site Great Falls, Montana

Federal Location-Specific ARARs			
Location	**Location**	**Location**	**Location**
Bald Eagle Protection Act (Applicable)			
Disposal of solid waste in a 100-year floodplain	Any discrete solid waste units created or actively managed by the OU1 or RCOU1 site cleanup must comply with RCRA siting restrictions and conditions.	This requirement establishes the requirements for management units to be designed, constructed, operated, and maintained to avoid washout, if they are within or near the current 100-year floodplain	Criteria for Classification of Solid Waste Disposal Facilities and Practices 40 C.F.R. §§ 257 257.2, and 257.3-1

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State Location-Specific ARARs			
Location	**Requirements**	**Prerequisite**	**Citation(s)**
Solid Waste Management Statutes and Regulations (Potentially Relevant and Appropriate)			
Potential on-site solid waste disposal location at OU2 located within a 100-year floodplain	ARM 17.50.1004 (Relevant and Appropriate) specifies a solid waste facility located within the 100-year floodplain may not restrict the flow of the 100-year flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste that poses a hazard to human health or the environment. See also ARM 17.50.1009(1)(h) (applicable).	For any solid waste disposed of on-site in a 100-year floodplain.	Solid Waste Management Statutes and Regulations, ARM 17.50.1004
Potential on-site solid waste disposal location at OU2 located within a wetland	ARM 17.50.1005 (Relevant and Appropriate) specifies a solid waste facility may not be located in a wetland, unless there is no demonstrable practicable alternative.	For any solid waste disposed of on-site in a wetland.	Solid Waste Management Statutes and Regulations, ARM 17.50.1005
Potential on-site solid waste disposal location at OU2 located within 200 feet of a fault that has had displacement in Holocene time	ARM 17.50.1006 (Relevant and Appropriate) specifies a solid waste facility cannot be located within 200 feet (60 meters) of a fault that has had displacement in Holocene time without demonstration that an alternative setback will prevent damage to the structural integrity of the solid waste facility and will be protective of human health and the environment.	For any solid waste disposed of on-site within 200 feet (60 meters) of a fault that has had displacement in Holocene time.	Solid Waste Management Statutes and Regulations, ARM 17.50.1006
Potential on-site solid waste disposal location at OU2 located within a seismic impact zone	ARM 17.50.1008 (Relevant and Appropriate) specifies a solid waste facility may not be located in an unstable area (determined by consideration of local soil conditions, local geographic or geomorphologic features, and local artificial features or events, both surface and subsurface) without demonstration that the solid waste facility is designed to ensure that the integrity of the structural components will not be disrupted.	For any solid waste disposed of on-site in an unstable area (determined by consideration of local soil conditions, local geographic or geomorphologic features, and local artificial features or events, both surface and subsurface).	Solid Waste Management Statutes and Regulations, ARM 17.50.1008

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State Location-Specific ARARs			
Location	**Requirements**	**Prerequisite**	**Citation(s)**
Solid Waste Management Statutes and Regulations (Potentially Relevant and Appropriate)			
Potential on-site solid waste disposal location at OU2	Under ARM 17.50.1009 (Relevant and Appropriate), a facility for the treatment, storage or disposal of solid wastes: (1) must be located where a sufficient acreage of land is suitable for solid waste management, including adequate separation of wastes from underlying ground water or adjacent surface water; (2) must be located where local roads are capable of providing access in all weather conditions and local bridges are capable of supporting vehicles with maximum rated loads; (3) must be located in a manner that does not allow the discharge of pollutants in excess of state standards for the protection of state waters, public water supply systems, or private water supply systems; (4) drainage structures must be installed where necessary to prevent surface water runoff from entering waste management areas, and (5) must be located to allow for closure, post-closure, and planned uses of the land.	For any solid waste disposed of on-site	Solid Waste Management Statutes and Regulations, ARM 17.50.1009

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State Location-Specific ARARs			
Location	**Requirements**	**Prerequisite**	**Citation(s)**
Montana Nongame and Endangered Species and Wildlife Act (Applicable)			
Potential habitat for endangered or threatened species in OU1	Sections 87-5-101 et seq., MCA, states that endangered species should be protected in order to maintain and to the extent possible enhance their numbers. Sections 87-5-106, 107 and 111, MCA, (Applicable), and ARM 12.5.201 (Applicable) list endangered species and certain acts that are prohibited in areas where such species are found. Section 87-5-201, MCA, describes prohibited activities around certain wild bird, nests, and eggs.	Actions that may negatively impact the species and their habitat.	Montana Nongame and Endangered Species and Wildlife Act, Sections 87-5-101 et seq., MCA

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Applicable or Relevant and Appropriate Requirements (ARAR)
for ACM Smelter and Refinery Superfund Site Great Falls, Montana

State Action-Specific ARARs			
Action	**Requirements**	**Prerequisite**	**Citation(s)**
Stormwater Discharge Requirements (Relevant and Appropriate)			
On-site construction activities which may result in stormwater discharge.	ARM 17.24.633 (Relevant and Appropriate), provides that all surface drainage from disturbed areas that have been graded, seeded or planted must be treated by the best technology currently available (BTCA) before discharge. Sediment control through BTCA practices must be maintained until the disturbed area has been reclaimed, the revegetation requirements have been met, and the area meets state and federal requirements for the receiving stream.	For on-site construction activities which may result in the discharge of storm water.	Montana Pollutant Discharge Elimination System (MPDES), ARM 17.24.633
Air Quality Requirements (Relevant and Appropriate)			
On-site operations which may generate fugitive dust.	ARM 17.8.220 (Relevant and Appropriate) Settled particulate matter shall not exceed a thirty (30) day average of 10 grams per square meter.	For operational activities generating fugitive dust.	ARM 17.8.220
On-site operations which may generate fugitive dust.	ARM 17.8.308 (Relevant and Appropriate) provides that no person shall cause or authorize the production, handling, transportation or storage of any material; or cause or authorize the use of any street, road, or parking lot; or operate a construction site or demolition project, unless reasonable precautions to control emissions of airborne particulate matter are taken. Normally, emissions of airborne particulate matter must be controlled so that they do not "exhibit an opacity of twenty percent (20%) or greater averaged over six consecutive minutes."	For operational activities generating fugitive dust.	ARM 17.8.308

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State Action-Specific ARARs			
Action	**Requirements**	**Prerequisite**	**Citation(s)**
On-site operations which may generate fugitive dust.	ARM 17.8.221 (Relevant and Appropriate) State law provides an ambient air quality standard for settled particulate matter. Particulate matter concentrations in the ambient air shall not exceed the annual average scattering coefficient of particulate matter of 3 x 10-5 per square meter. Whenever this standard is exceeded, the activity resulting in such exceedance shall be suspended until such time as conditions improve.	For operational activities generating fugitive dust.	ARM 17.8.221
On-site operations which may generate fugitive dust.	ARM 17.24.761 (Relevant and Appropriate) specifies a range of measures for controlling fugitive dust emissions during mining and reclamation activities. Some of these measures could be considered relevant and appropriate to control fugitive dust emissions in connection with excavation, earthmoving and transportation activities conducted as part of the remedy at the site. Such measures include, for example, paving, watering, chemically stabilizing, or frequently compacting and scraping roads, promptly removing rock, soil or other dust-forming debris from roads, restricting vehicle speeds, revegetating, mulching, or otherwise stabilizing the surface of areas adjoining roads, restricting unauthorized vehicle travel, minimizing the area of disturbed land, and promptly revegetating regraded lands.	For operational activities generating fugitive dust.	ARM 17.24.761
Solid Waste Run-on and Runoff Controls (Relevant and Appropriate)			
Potential on-site solid waste disposal at OU2	Specific operational and maintenance requirements specified in ARM 17.50.1116 (Relevant and Appropriate) are requirements for run-on and runoff control systems, requirements that sites be fenced to prevent unauthorized access, prohibitions of point source and nonpoint source discharges which would violate Clean Water Act requirements, and that sites be designed, constructed, and operated in a manner to prevent harm to human health and the environment.	For any on-site solid waste disposal in an engineered repository	ARM 17.50.1116

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State Action-Specific ARARs			
Action	**Requirements**	**Prerequisite**	**Citation(s)**
Noxious Weed Requirements (Applicable)			
Performance of response activities in an area with noxious weeds	Section 7-22-2101(8)(a), MCA, and ARM 4.5.201 et seq. (Applicable) require the control and/or avoidance of certain plants classified as noxious weeds during revegetation and monitoring activities.	Applicable to any response activities conducted in an area where noxious weeds are known to be present	Section 7-22-2101(8)(a), MCA, and ARM 4.5.201 *et seq.*
Performance of response activities in an area with noxious weeds	Designated noxious weeds are listed in ARM 4.5.201 and ARM 4.5.206 through 4.5.210 (Applicable) and must be managed consistent with criteria developed under §7-22-2109(2)(b), MCA (Applicable).	Applicable to any response activities conducted in an area where noxious weeds are known to be present	Section 7-22-2101(8)(a), MCA, and ARM 4.5.201 *et seq.*

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Appendix B

Part 3 – Responsiveness Summary

Part 3 – Responsiveness Summary

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Part 3 – Responsiveness Summary

Commenters on the Proposed Plan included the Cascade County Commission, Atlantic Richfield (AR), Burlington Northern Santa Fe Railroad Company (BNSF), the Montana Department of Environmental Quality (Montana DEQ), the Black Eagle Technical Advisory Group (BETAG), and several citizens. The original submitted comments are included as an appendix to this Responsiveness Summary.

Numerous comments were similar, and comments were focused on a limited number of topics. In addition, it was recognized that the comments required comprehensive responses. Rather than respond to each comment individually (which would have resulted in repetitive responses), or respond by referring back to the first comment/response on a particular topic (which would have resulted in undue emphasis on that first comment or response), comments were grouped into the subjects shown in the table of contents. Many of these subjects are interrelated and readers are urged to review the Responsiveness Summary in its entirety.

For ease of reading, the comments are presented in normal text and EPA's responses are in italics.

Community Soils Areas

1) Support for the Proposed Remedy

Comments

Atlantic Richfield

Community Soils Comment 1: AR agrees with EPA's selection of the Feasibility Study's Alternative 4 as the Preferred Alternative for the Northern and Southern Community Soils Areas of Interest in CSOU. *See* Proposed Plan at 12.

The Preferred Alternative was developed by AR, with input from EPA and DEQ, to provide an extent of soil removal and replacement beyond that required to meet the Remedial Action Objectives (RAOs). The scope of soils removal under the Preferred Alternative minimizes the need for longer term risk-reduction measures, such as deed restrictions that prescribe future land uses or community-health programs to monitor residents' exposure to contaminants. AR remains supportive of this approach and is committed to working with the agencies and the community to obtain community cooperation to complete soil remediation in a timely manner within the Community Soils Areas of Interest.

BETAG

BETAG fully supports the remedy described in the Proposed Plan.

EPA Response to Comments Pertaining to Support for the Proposed Plan

Every effort has been made throughout the course of the project to pursue data collection and remedy planning that would ultimately be acceptable to stakeholders. The Selected Remedy, as presented in this ROD and as modified in response to public comments represents the culmination of these efforts.

2) Excavation Depth in Garden Areas

Comments

BETAG

BETAG fully supports the remedy described in the Proposed Plan. However, the brevity of the Proposed Plan seems to have led to the omission of one detail described within the supporting feasibility study. Extensive investigations were conducted on produce gardening and garden soil contamination within the Community Soils. The Feasibility Study proposed excavation of existing contaminated garden soil to a depth of 24 inches and replacement with garden quality soil. While recognizing that this detail can be captured within remedial design, we would be more comfortable seeing this detail specifically identified as part of the remedy within the EPA's Record of Decision.

Cascade County Commission

It is noted in the ATSDR Health Consultation that Black Eagle residents are concerned about metals contamination on their homegrown produce. Is any specific or special sampling of gardens proposed in the plan? EPA's Lead Sites Handbook recommends specific sampling of gardens up to a 24" inch depth and replacement of garden soils if elevated metals are present.

Montana DEQ

In the Proposed Plan, it was not specified if Vegetable Gardens will be removed on a depth interval basis if the RAOs are exceeded to a maximum depth of 24 inches. Please add language to the Record of Decision specifically stating this is a required remedy.

EPA Response to Comments Pertaining to Excavation Depth in Garden Areas

Excavation of existing vegetable garden areas to a depth of 24 inches is a required component of the remedy. This has been explicitly stated in the ROD Declaration, as well as in Sections CS 9 and CS 12 of the ROD.

3) Proposed Disposal on Operable Unit 2 (OU2) Former Facility Area of Soils Excavated from Operable Unit 1 (OU1)

Comments

Montana DEQ

Permanent disposal of contaminated soils on OU2 of the Site represents predetermination of the remedy for OU2. The ROD should state that the soils will be disposed of at an appropriate repository.

Cascade County Commission

Cascade County requests that it be informed of the location and required institutional controls for any site within the County used in the consolidation or landfilling of contaminated material from the OU-1

remediation. The Board of Cascade County Commissioners prefers the OU2 site not become the permanent repository for storage of OU1 contaminants, and instead the contaminants are deposited in a certified landfill site.

EPA Response to Comments Pertaining to Proposed Disposal on OU2 Former Facility Area of Soils Excavated from OU1

Sections CS 12 and RC 12 state that the excavated contaminated soils/wastes "will either be consolidated with similar materials within OU2, to be addressed under the OU2 remedy, or disposed of at a permitted off-site facility."

4) Additional Detail Regarding Institutional Controls (IC)

Comments

Montana DEQ

Please provide clarification on the anticipated institutional controls and plans for further remediation should land use change in the future (namely, in the Electric City Dirt Riders property and the Northern Outlying Areas of Interest).

Cascade County Commission

More details on the specific required institutional controls for this proposed remedy should be included in the remedial plan.

Atlantic Richfield

Community Soils Comment 3: The areas of OU1 where institutional controls (ICs) may be required or what those ICs may look like as part of the Preferred Alternative need to be more clearly and definitively described in the ROD in order to guide the remedial design process. The description of the Preferred Alternative for the Community Soils portion of OU1 includes the following two statements regarding ICs:

> "Institutional controls would be required for residential development of non-residential properties in Black Eagle." Proposed Plan at 11.
>
> "Institutional controls (ICs) will ensure that future residential properties are remediated at the time of development, if necessary." Proposed Plan at 12.

Neither of these statements clearly identifies an area of OU1 where EPA may require ICs as part of the remedy implemented to manage human health risk or what those controls may look like for such areas. Although some flexibility is warranted, AR requests that EPA more clearly indicate in the ROD where ICs may be required and what those ICs may look like as part of the OU1 remedy, as discussed in more detail below. *See* Community Soils Comments 5 & 6.

Atlantic Richfield

Community Soils Comment 6: AR believes private ICs could be used as a strategy to protect current and future residents within the Community Soils Areas of Interest. Private ICs, such as covenants voluntarily agreed to by landowners that restrict the future use and development of properties, can be an appropriate and protective option for certain properties within the Community Soils Areas of Interest. AR is evaluating

strategies for minimizing the locations where an ICs program would be warranted, and those strategies include soil removal or treatment (i.e., tilling with amendment addition) at locations with no current residential use but future residential use would be allowed and at vacant properties where residential use is allowed or may be allowed following recently proposed amendments to the Cascade County zoning regulations. *See* Exhibit A.

AR does not support implementation of a development permit system or other ordinance-based ICs program administered by local government, due to the inefficiencies involved in developing and implementing such a program and the limited scale of potential future residential development within the Community Soils Areas of Interest in OU1. AR requests that EPA indicate in the ROD that the ICs program will be limited to public education and health initiatives, supported by private ICs (the specifics of this approach would be fully developed during remedial design).

EPA Response to Comments Pertaining to Additional Detail Regarding ICs

Additional detail on proposed Institutional Controls has been included in this ROD, Section CS 12.3. Institutional controls (ICs) will be established for the Northern and Southern Community Soils Areas of Interest, the Northern Outlying Areas (including the Electric City Dirt Riders property), and the Railroad Corridor. ICs will ensure that future residential properties are remediated at the time of development, if necessary. In addition to informational devices, private ICs, such as covenants voluntarily agreed to be landowners, will be utilized to the maximum extent practicable; ordinance-based ICs will be established as necessary.

5) The Northern and Southern Outlying Areas

Comments

Cascade County

The Plan proposal does not require remediation of the Northern Outlying Area. Some of this area is zoned I-1 which also allows commercial uses including educational facilities (ages pre-school and higher). Are there any plans for sampling and remediation of properties that may be used in this way to ensure protection of public health, especially children? If facilities are planned in this location sometime in the future, will the location be tested and remedial cleanup conducted as part of the Institutional Controls?

BETAG

The Proposed Plan proposes Institutional Controls to address future potential residential use of currently contaminated non-residential soils. While recognizing Institutional Controls as an option that can be protective of human health, the BETAG strongly favors a comprehensive remedy that does not rely upon Institutional Controls. Cascade County has experience with Institutional Controls OU1 (Neihart) of the Carpenter-Snow Creek Superfund Site. BETAG considers the degree and extent of contamination is such that active remediation is a far less complex and protective remedy that will not burden local government and citizens with long-term program requirements. Ongoing, near-term residential development is anticipated within Black Eagle and the Northern Outlying Area. Any

additional burden placed on property owners and real estate transactions is likely to complicate and possibly constrain needed development.

Atlantic Richfield

Community Soils Comment 2: AR agrees with exclusion of the Northern and Southern Outlying Areas from required remedial actions for OU1. AR also requests removal of the Southern Outlying Area from OU1 and the ACM Site.

As noted in the Proposed Plan, in the Southern Outlying Area arsenic was not found in soil at levels representing a potential health risk, and relatively high lead concentrations in soil, where present, are not related to the former smelter/refinery operations. Accordingly, EPA determined that remedial action is not warranted for the Southern Outlying Area. *See* Proposed Plan at 9 ("Because arsenic in the South Outlying Area was not found to pose a risk, it was concluded that the maximum lead concentrations of 1150 mg/kg is not related to the smelter and does not require remedial action."). AR agrees that elevated lead levels in the Southern Outlying Area are not attributable to ACM Site operations and that no remedial action is warranted in this area. Due to the lack of ACM Site-related impacts in the Southern Outlying Area—which was arbitrarily included in the boundary of OU1 because it fell within a 1.2-mile radius of the historical smelter stack *(see* Proposed Plan at 8)—AR believes that no further investigation or remediation is required for this area now or in the future, and therefore this geographic area should be removed from the ACM Site entirely. Exclusion of the Southern Outlying Area from the ACM Site going forward is supported by the administrative record for OU1 and the Proposed Plan. If the Southern Outlying Area is removed from OU1 (and the larger ACM Site), it would not be included in the ecological risk assessment for OU1, which was deferred to the OU2 RI/FS. *See* Proposed Plan at 9 ("Ecological risk assessment for [OU1] will be conducted and included in the OU2 remedial investigation."). Accordingly, AR requests that EPA adjust the OU1 and ACM Site boundary in the ROD to exclude the Southern Outlying Area.

Although not specifically stated in the Proposed Plan, site investigation and risk assessment findings for the Northern Outlying Area were similar to the Southern Outlying Area, as neither arsenic nor lead were found at levels representing a potential health risk for non-residential receptors. *See* Proposed Plan at 7 (indicating that maximum values in the Northern Outlying Area did not exceed commercial or recreational preliminary remediation goals (PRGs)). Accordingly, AR requests that EPA expressly indicate in the ROD that remedial action is not required for the Northern Outlying Area.

Atlantic Richfield

Community Soils Comment 5: An ICs program for the Northern Outlying Area is not necessary or appropriate because existing and planned land uses are non-residential. The current land uses and zoning in the Northern Outlying Area are industrial, agricultural, or open space, and Cascade County has not proposed any changes to residential or mixed use in the near future. *See* Exhibit A. Thus, based on the most current information available from Cascade County, future residential use of parcels in the Northern Outlying Area is not expected. Accordingly, AR requests that EPA indicate in the ROD that an ICs program is not required for the Northern Outlying Area.

Similarly, an ICs program as an element of any selected remedy for the Southern Outlying Area is not indicated because the former ACM smelter/refinery is not a source of contamination in that area. *See* Community Soils Comment 2. As discussed above, AR requests that the Southern Outlying Area be removed from the Site, and that no further investigation or remedial action be required for that area. If Southern Outlying Area remains part of the OU1 and the ACM Site, at a minimum AR requests that EPA make clear in the ROD that an ICs program is not required for this area.

EPA Response to Comments Pertaining to the Northern Outlying Area

The remedy has been modified to require remedial action for non-residential soils in the North Outlying Area where future residential development is allowed. Section 12 of the ROD states that remedial action is required in the eastern portion of the Northern Outlying Area, and minimal ICs are required in that area to ensure that if land use changes in the future (e.g. construction of a preschool, as suggested by one comment) additional testing or remediation can be completed if necessary to ensure the protectiveness of the remedy for potential future residents of that area.

No remedial actions are required in the Southern Outlying Area. The Southern Outlying Area cannot be removed from the ACM Site at this time, as the Ecological Risk Assessment has not yet been completed in that area. This request is inconsistent with the following statement from the approved HHRA prepared by AR: "The scope of the HHRA and its findings are not intended to supersede USEPA's consideration of ecological risks for OU1 that has been deferred for evaluation in conjunction with OU2."

6) Requests for Additional Remediation in Lieu of ICs

Comments

BETAG

BETAG considers the degree and extent of contamination is such that active remediation is a far less complex and protective remedy that will not burden local government and citizens with long-term program requirements. Ongoing, near-term residential development is anticipated within Black Eagle and the Northern Outlying Area. Any additional burden placed on property owners and real estate transactions is likely to complicate and possibly constrain needed development.

Atlantic Richfield

Community Soils Comment 4: AR supports potential additional soil removal or soil treatment (e.g. tilling) for currently vacant locations in the Community Soils Areas of Interest that are not currently zoned residential but are likely to have residential use in the future pursuant to Cascade County's pending zoning amendments. Flexibility in the ROD that provides for additional soil remediation as part of the OU1 remedial action will further limit the areas within OU1 where long-term ICs would be necessary to protect residential receptors.

Based on the findings of the Remedial Investigation and human health risk assessment conducted for OU1 and statements in the OU1 Proposed Plan, soil remediation is only warranted when the land use is residential. The Preferred Alternative soil removal remedy described in the Proposed Plan will address potential risk in areas of current residential use. *See* Proposed Plan at 10-12.

AR has reviewed the City of Great Falls and Cascade County zoning regulations, including Cascade County's 2019 proposed changes to zoning within OU1, and understands that both current and planned future land uses in the Community Soils Areas of Interest include both residential and commercial uses. If the County's proposed zoning changes are adopted, the current residential and commercial zones within these two areas will be updated to "Mixed Use," which will allow for both residential and commercial uses, as shown on the map attached hereto as Exhibit A. Assuming the County's mixed-use regulations are adopted for these areas, AR likely will evaluate, and may elect to perform, additional soil remediation at currently vacant properties within the Community Soils Areas of Interest in order to eliminate the need for long-term ICs at such properties. Therefore, AR requests that the ROD provide for potential additional soil remediation, as determined necessary by AR, on certain non-residential properties in the Community Soils Areas of Interest where future residential use will or may occur.

EPA Response to Comments Requesting Additional Remediation in Lieu of ICs

In the Northern Outlying Areas, to address future land use change to residential, the remedy for non-residential soils requires that these soils be addressed through additional testing, remediation or IC's. The PRP may engage in additional soil remediation in lieu of long-term ICs which would otherwise be necessary to protect human health and the environment. Once properties receiving soil remediation have a property average soil concentration in the top 12 inches which meets the residential RAOs, long-term ICs will no longer be necessary for these specific properties. This has been stated explicitly in Section 12 of the ROD.

7) Indoor Dust Contamination

Comments

Cascade County Commission

In 2013/14, indoor dust sampling was conducted in 18 Black Eagle home attics. Elevated metals were detected in multiple older homes, especially those built before 1930 and in proximity to the railroad corridor. Eighteen samples does not seem adequate representation of the many older homes in the community, and assessment of the public health concerns of elevated metals in attics should be mitigated. Is there any plan for further attic sampling to define the extent of the problem? Is there any plan to remediate attics that exceed the cleanup level?

EPA Response to Comments Pertaining to Indoor Dust Contamination

A discussion of indoor and attic dust sampling and results are presented in Section CS 5.9 of the ROD. Indoor dust was sampled in 30 homes as a representative subset of the community. Within this group of homes, 18 attics were available for sampling, all of which were sampled. Attic dust was not collected at the remaining 12 homes because they did not have attics, or the attics could not be accessed safely.

The contribution of indoor dust to residential risk was included when evaluating cleanup levels for soil. It was determined that residential cleanups of exterior soil in accordance with the selected remedy will sufficiently reduce exposure so that interior cleanups are not necessary to ensure the protectiveness of the remedy.

Railroad Corridor Area Comments

8) Capping as Part of the Railroad Corridor Remedy

BNSF

The approved FS provides additional alternatives, including capping, that are comparable when evaluated using the nine criteria, and those alternatives should be included as potential alternatives in the Record of Decision. Revising the description of USEPA's Preferred Alternative in the Proposed Plan to "a modification of Railroad Corridor Alternatives 3/4/5" and describing the option to incorporate a capping strategy in the remedy for a given property would provide clear flexibility in consideration of incorporating alternatives that have been demonstrated comparable when evaluated using the nine criteria. Without revision, USEPA's Proposed Plan is arbitrary and capricious for each of the following reasons.

EPA Response to Comments Pertaining to Capping as part of the Railroad Corridor Remedy

Section RC 12 of the ROD specifically states that placement of engineered covers, in conjunction with institutional controls and future operation and maintenance, is retained as an option for properties where development and long-term management of the property is preferred by the landowner.

9) Cost and the Proposed Excavation Depth in the Railroad Corridor

Comments

Atlantic Richfield

Railroad Corridor Comment 5: Based on information known to AR at this time, it appears a remedy similar to the Capping/Institutional Controls Alternative (Alternative 3A/2IC) evaluated in BNSF's Final Feasibility Study Report would be a protective remedy for the existing industrial, commercial, or recreational use of the former railbed segments, and this alternative would cost significantly less than EPA's Preferred Alternative. AR therefore generally supports more limited removal of soil and waste material in RCOU I combined with capping of the wastes that remain along the former rail line and utilization of long-term ICs. Based on currently available information, it appears this approach would be protective of human health, more cost-effective, and is consistent with and supports the community's desired development of these parcels for long-term recreational use.

As EPA and DEQ acknowledged through approval of BNSF's Final Feasibility Study Report, capping provides other advantages over removal:

> "EPA and DEQ agree that no appreciable benefits are obtained from excavation when [potential smelter material] is left in place. Capping provides a more timely/implementable and substantially more cost-effective remedy than Excavation and Offsite Disposal. Capping is also more protective in the short-term as excavation, unlike capping, poses risks such as dust and fugitive emissions exposure during implementation. Capping is also protective in the long-term because the capping barrier will eliminate and control exposure to receptors and both alternatives require a long-term monitoring and maintenance program and Institutional Controls."

Atlantic Richfield

Railroad Corridor Comment 3: Alternative 3A/21C (Capping/Institutional Controls), with an estimated cost of $1,244,000, was the Preferred Alternative recommended for RCOU1 in BNSF's Final Feasibility Study Report (Kennedy/Jenks Consultants 2017). However, the Preferred Alternative identified by EPA in the Proposed Plan is a modification of Alternatives 4/5 and includes, among other things, excavation and removal of soil to a depth of 24 inches and, after additional sampling, excavation and further removal to a maximum depth of 48 inches. The estimated cost of this remedial action is $4,089,000, which is more than double the cost of any of the alternatives evaluated in the Feasibility Study, which was reviewed and approved by EPA. The Proposed Plan does not adequately explain EPA's rationale for selection of the Preferred Alternative over all the Feasibility Study alternatives, as required under the National Contingency Plan.

Atlantic Richfield

Railroad Corridor Comment 4: The anticipated extent of soil removal associated with the Preferred Alternative for RCOU I goes beyond that necessary to achieve the RAOs for RCOU1, regardless of future land uses within RCOU I. Soil removal in RCOU I will extend to a depth of 24 inches, with "waste" removal as deep as 48 inches, whereas soil removal in the Community Soils areas, where land use is residential, will not extend to a depth beyond 18 inches (outside of existing vegetable gardens where maximum soil removal depth is limited to 24 inches). Neither the Proposed Plan nor the RCOU1 administrative record provides a justification for soil or waste removal at depths of 24 to 48 inches.

BNSF

Comment 3: USEPA's Preferred Alternative for RCOU1 lacks a reasonable basis because it has a much higher cost than other alternatives developed in the approved FS but compares similarly to the nine evaluation criteria. The Proposed Plan recommends a modified alternative including removal of about 21,000 cubic yards (cy) of material extending down to a depth of 48 inches versus the FS that contemplates removal of about 15,000 cy to a depth of 24 inches as a conservative unrestricted use scenario. There is no basis for removal to a depth of 48 inches. USEPA guidance (2002) limits direct soil exposure to a depth of 24 inches for residential/recreational use. The RI/FS demonstrated that the lead and arsenic are not mobile and are not leaching to groundwater. Removing soil to a depth of 48 inches versus 24 inches increases the cost but otherwise does not change the evaluation of the alternative relative to the nine criteria as smelter material will remain within RCOU1. Furthermore, capping also has a similar evaluation relative to the nine criteria. The cost of USEPA's preferred alternative is over $4 million, which is more than double the cost of capping and does not change the long-term effectiveness or need for institutional controls (ICs) as smelter material deeper than 48 inches will remain within RCOU1. The Proposed Plan is inconsistent with CERCLA requirements concerning evaluation of cost relative to the other criteria.

EPA Response to Comments Pertaining to Cost and the Proposed Excavation Depth in the Railroad Corridor

The remedy retains capping as a possible alternative to soil removal and replacement in some areas and has included capping as part of the railroad corridor remedy described in Section RC 12 of the ROD.

As stated in BNSF's Final Feasibility Study Report, at the end of the same paragraph quoted in AR Railroad Corridor Comment 5, "However, in specific areas where the lateral and vertical extent of PSM is limited (e.g. less than 2 to 4 feet), some excavation may be a cost effective remedy substitute for capping." (KJ 2017).

Subsequent to the approval of the Final Feasibility Study Report for RCOU1, the EPA conducted a detailed analysis of the total quantities and locations of contaminated soils and wastes in order to determine the depth of excavation which best balanced the removal of as much waste as possible with the desire to be cost effective in the cleanup. As stated in Section 13 of the ROD, the cost of the selected remedy for the Railroad Corridor is expected to be approximately $4,089,000, which will include excavation of over 99% of the contaminated soils which exceed 250 mg/kg arsenic or 400 mg/kg lead and waste located in the main railroad corridor area (excluding the contaminated materials identified deeper at the church parcel and under the paved portion of the bike path). For comparison, without adjusting the maximum excavation depth from 2 feet to 4 feet, Alternative 4B (Soil Excavation and Offsite Disposal) as described in the Feasibility Study is expected to cost approximately $3,159,000, while removing only 89% of the same contaminated soil and waste.

The agencies have determined that excavation to a maximum of 48 inches over much of the railroad corridor is cost effective and generates valuable reductions in both the quantity of waste left in place and community risk and reduces long-term operation and maintenance cost. In the church parcel and below the paved section of the trail on the eastern end of the railroad corridor, contaminated soils and waste are located further below the surface, and additional excavation in these areas is not expected to result in a reduction in risk great enough to justify the additional costs of excavation.

Section RC 12 of this ROD also clarifies that excavation will apply to both waste (possible smelter materials) and visually impacted (e.g. stained) soils.

10) Use of Residential Risk Levels to Establish Railroad Corridor Cleanup Levels

Atlantic Richfield

Railroad Corridor Comment 2: The cleanup levels for RCOU1 soil are the same as the cleanup levels identified for residential yards in CSOU. *See* Proposed Plan at 10, 16. The stated goal in the Proposed Plan for the RCOU1 portion of OU1 is protection of human health assuming "unrestricted use" of the area. *See* Proposed Plan at 16. Based on the cleanup levels selected for RCOU1, "unrestricted use" would presumably include residential use. There is no current residential use of any of the parcels in RCOU1, and no future residential use is expected. Therefore, the RCOU1 cleanup levels are lower than necessary to protect human health in OU 1. Further, the administrative record for RCOU1 does not support adoption of residential soil cleanup levels for this part of OU 1. The human health risk assessment conducted for RCOU1 did not include evaluation of an exposure scenario for residential receptors, and no site-specific remediation goals were developed for soil assuming residential use of the RCOU1.

BNSF

Comment 2: The cleanup levels for RCOU1 lack a reasonable basis because they are unnecessary for and are inconsistent with current and anticipated uses and site-specific information as detailed in the USEPA-approved RCOU1 FS. The current and anticipated uses of the Commercial areas within RCOU1 do not justify the same cleanup levels as residential yards/unrestricted use. The Proposed Plan allows for higher concentrations of arsenic and lead in industrial and recreational areas within the Community Soils Areas of Interest. As detailed in the approved RCOU1 FS, a similar approach should be used for RCOU1, which does not have residential uses. Applying cleanup levels for unrestricted/residential use to depths greater than 24 inches below ground surface is not justified based on potential exposure and is contrary to USEPA guidance (2002). The site-specific bioavailability data for RCOU1 justify higher cleanup levels as USEPA acknowledged in approving the RCOU1 FS. Applying unadjusted cleanup levels for unrestricted/residential use that is not anticipated and consistent with future land use lacks a reasonable basis and will lead to additional costs without any reasonably based risk reduction benefits when compared to the PRP's proposed remedy.

EPA Response to Comments Pertaining to the Use of Residential Risk to Establish Railroad Corridor Cleanup Levels

The remedy has been modified to achieve the remedial action goals for the anticipated land use rather than for residential land use.

11) Use of Maximum Values in Evaluating Railroad Corridor Risk Levels

BNSF

Comment 1: A cancer risk threshold of $1x10^{-4}$ and noncancer hazard quotient threshold of 1 should be used to determine whether a remedial action is warranted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (USEPA 1991). The USEPA-approved HHRA demonstrated that risks to human health are less than the risk thresholds. Inexplicably, in the Proposed Plan, maximum detected concentrations were used to show risks greater than the thresholds; however, the unjustified use of maximum detected concentrations is in direct conflict with the USEPA-approved HHRA work plan and is contrary to USEPA risk guidance (USEPA 1989).

EPA Response to Comments Pertaining to the Use of Maximum Values in Evaluating Railroad Corridor Risk Levels

The results of the baseline HHRA completed for RCOU1 provided risk estimates that were derived using standard EPA risk assessment methodology, currently available toxicity values, and protective, conservative assumptions to model potential exposures. The cancer risk estimates from arsenic for some of the scenarios evaluated in the HHRA fall within EPA's target risk range (1 in 1,000,000 to 1 in 10,000), however, individual elevated concentrations at some locations may pose a risk. While the results of the HHRA indicate that the areawide average risks from arsenic lead are acceptable for current risk scenarios, individual elevated concentrations of arsenic and lead may pose a risk to adjacent residential properties which are generally downwind of the railroad corridor.

Additional Comments

The remaining comments were on topics not repeated by multiple commenters, and the EPA has responded to each comment individually. These comments are arranged in alphabetical order by commenter. The EPA is not able to respond to comments or portions of comments which are beyond the scope of this ROD and remedial action.

12) Additional Atlantic Richfield Comments

- AR Railroad Corridor Comment 1: The Proposed Plan states that "the former rail bed appears[sic] was constructed of smelter materials that are approximately 2.5 to 3 feet thick." Proposed Plan at 14. Although the record supports the fact that the railbeds were constructed with processing waste materials, the assertion that it was constructed with "smelter materials" is misleading because it implies that the rail lines were constructed using materials from the ACM Site. Such a suggestion is factually inaccurate.

  The railroad line from Great Falls through Black Eagle to the Boston and Montana Consolidated Copper and Silver Company (an Anaconda Company and Atlantic Richfield predecessor) property, including the Low Line and High Line on the property, was constructed in 1889 and 1890 by a predecessor of the Burlington Northern Santa Fe Railway (BNSF). The former rail lines within RCOU1 were constructed "to provide access to the Former ACM Smelter and Refinery prior to smelter construction." RCOU1 Remedial Investigation (RI) Report, § 1.1 (May 8, 2015). BNSF's RCOU I RI Report supports both that the rail line was constructed prior to construction and operation of the ACM Site and that its predecessor built up the line with several feet of waste material. *See, e.g.,* RCOU1 Remedial Investigation (RI) Report, §§ 1.1, 5.2 (May 8, 2015). These historical railroad activities, among others, form the basis for why BNSF was identified as a PRP for the Site and was ordered to perform the RI/FS for RCOU 1. *See* Proposed Plan at 3, 4.

  Boston and Montana broke ground for the copper reduction works in 1891 and began facility operations in 1893, nearly four years after the tracks were laid. *See* Proposed Plan at 3. Because the railbed predates the refinery and smelter by four years, material from Boston and Montana's operations could not have been used to construct the railbed. The source of the "smelter material" has not been confirmed, Therefore, AR requests that the ROD refer to the material used to construct the railbed as "possible smelter material" or "possible processing waste" (or something similar) and make clear that the railbed material is from an unknown source.

EPA Response

Section 2 of the ROD clarifies that the tracks were initially constructed starting in 1889 prior to construction of the new ACM facility. However, there are records that indicate that materials from the former smelter and refinery site were used in the maintenance of the railroad beds. Additionally, records also indicate that spillage of smelter and refinery materials occurred in the railroad corridor.

- AR Detailed Comment 1: Page 1, Paragraph 2: The Proposed Plan states: "This Proposed Plan identifies the preferred alternative for the first action at the site to remediate residential

properties in Black Eagle, including the abandoned railroad corridor north of the Missouri River." AR comments that prior response actions have been performed at the OU1 portion of the ACM Site, including capping of the eastern portion of the railroad corridor, soil removal at the Art Higgins Memorial Park, and soil removal prior to residential development of a portion of the Moose Lodge property.

EPA Response

Sections RC 5.2 and RC 5.3 discuss completed Interim actions in the railroad corridor.

- AR Detailed Comment 2: Page 1, Paragraph 4: The Proposed Plan states: "This Proposed Plan describes the remedial alternatives evaluated to address soil contamination from historical smelting activities and presents the rationale for EPA's preferred alternative." AR comments that ACM site operations included smelting and refining.

EPA Response

Throughout the ROD, care has been taken to refer to activities at the former facility as "smelting and refining," rather than only smelting.

- AR Detailed Comment 3: Page 3, Paragraph **1:** The Proposed Plan states: "Primary products from activities at the ACM Site were copper, zinc, arsenic, and cadmium." AR comments that although copper, zinc, and cadmium were primary products, arsenic was not one of the primary products from the historical smelting and refining activities at the ACM Site. AR requests that the reference to arsenic in the above-quoted sentence be removed.

EPA Response

The EPA agrees that arsenic was not a primary product from activities at the ACM Site. A statement similar to that mentioned in the comment above is included in Section 2 of the ROD. It has been revised for accuracy and states that "Primary products and wastes from activities at the ACM Site were copper, zinc, arsenic, lead and cadmium."

- AR Detailed Comment 4: Page 3, Paragraph 4: The Proposed Plan states: "A preliminary assessment completed in 1982 recommended that investigations be conducted at the site, and in 1983 a screening level site investigation conducted by [AR] documented both on-site and off-site ground and surface water contamination." AR believes that the references to "on-site and off-site" areas are confusing in the context of these historical investigations and that "ground" contamination refers to groundwater contamination. The referenced 1983 Screening Study report only documented investigations at the ACM refinery; no investigations were conducted to evaluate contamination outside of the facility area. Therefore, AR requests that findings of the 1983 screening investigation be more accurately described in the ROD as "...documented groundwater and surface water contamination at the ACM refinery."

EPA Response

The EPA agrees that there is potential for confusion from the way the screening study was discussed in the Proposed Plan. For clarity, Section 2 of the ROD states "A preliminary assessment completed in 1982-1983 documented groundwater and surface water contamination at the ACM facility."

- AR Detailed Comment 5: Page 3, Paragraph 4: Discussion of the history of the ACM Site in the third paragraph of the "Site Background and History" section should identify that significant reclamation was completed following closure of the facility. Reclamation and closure of the ACM Site facilities, which occurred at various times between approximately 1980 and 1999, consisted of demolition and removal of buildings; backfilling of building substructures; salvaging; on-site burial of flue dust, granulated slag, asbestos-containing material, demolition debris, and other wastes in a secure manner; capping of waste management and other areas throughout the Site; employment of erosion and stormwater controls; and revegetation. AR requests that a description of such activities be included in the ROD.

EPA Response

The EPA appreciates that significant earth moving work was completed on the former facility property (Operable Unit 2 of the ACM Site) between 1980 and 1999. However, the focus of this ROD is on Operable Unit 1, Community Soils. For this reason, the operational history of the Site is somewhat abbreviated in the OU1 ROD. The reclamation work referred to in the comment was performed under an unapproved work plan, without EPA or DEQ oversight. As such, inclusion of considerable additional information would be necessary to provide appropriate context to any mention of this reclamation work in the OU1 ROD. Therefore, the EPA determined that it would be more appropriate to postpone discussion of these activities to OU2, where they are more relevant and do not add unnecessary complexity to the discussion of the OU1 preferred alternative/selected remedy.

- AR Detailed Comment 6: Page 4, Text Box at Bottom of Page: The description included under "What are the Contaminants of Concern?" overstates the potential health effects that can realistically take place due to exposure to arsenic and lead in soil at the ACM Site. In addition, the maximum concentrations of arsenic and lead reported in this description are considerably higher than typical concentrations in OU1 soils. Finally, the statement in the last paragraph of the text box, that other contaminants (i.e., beyond arsenic and lead) "were not present at levels hazardous for human health and are not contaminants of concern for the site" might be misinterpreted as a finding for the ACM Smelter and Refining Site as a whole rather than just to OU1. AR requests that EPA qualify the language included in the text box in line with this comment.

EPA Response

A text box similar to that referenced from the Proposed Plan is not included in the ROD. The EPA has noted the preference expressed by AR that some measure of typical concentrations also be provided in those locations where maximum concentrations are given. Accordingly, Sections CS 5 and RC 5 of the ROD provides median values along with maximum values (where appropriate) when discussing Site characterization.

- AR Detailed Comment 7: Page 4, Text Box at Bottom of Page: The maximum concentrations of 1,850 mg/kg for arsenic and 7,200 mg/kg for lead identified in the text box are inconsistent with the maximum values for RCOU1 soils referenced on page 15 of the Proposed Plan (i.e., 2,580 mg/kg arsenic and 11,200 mg/kg lead). If the maximum values identified in the text box were referring to residential yard data only then that should be clarified and the maximum value for lead should be corrected to 6,270 mg/kg to match Table 4-5 of the RI report. This correction to the maximum residential property lead concentration is also applicable to paragraph 2 of page 5.

EPA Response

A text box similar to that referenced from the Proposed Plan is not included in the ROD. The ROD has been structured to prevent confusion as to which discussions apply to the community soils areas and which are specific to the railroad corridor.

- AR Detailed Comment 8: Page 6 (and throughout): The naming conventions for terms identified in the Proposed Plan, particularly in relation to the CSOU1, is inconsistent throughout the Proposed Plan. For clarity, starting on page 5, AR suggests that at least the Southern Community Soils Area of Interest, Northern Community Soils Area of Interest, Southern Outlying Area of Interest, and Northern Outlying Area of Interest be defined and then referred to in a consistent manner through the ROD.

EPA Response

Areas are identified in the Declaration and in Section 1 of the ROD, and are referred to consistently throughout.

- AR Detailed Comment 9: Pages 6-8, Figures 2-5: The figures / maps depicting areas of soil where arsenic or lead concentrations exceed PRGs are misleading because they are based on exceedances of PRGs calculated for soil in residential areas. Most of the areas within OU1 are not currently zoned for residential use. The non-residential parcels marked on Proposed Plan Figures 4 and 5 are not areas where arsenic and lead concentrations in soil represent potential health risks to people under their current and expected future land uses. At a minimum, AR requests that EPA expressly include this clarification in the ROD.

EPA Response

The EPA determined that a comparison of soil concentrations to residential cleanup levels was the most appropriate way to display soil data for the Southern Community Soils Area of Interest (CSAOI) as most of these properties are currently developed for residential use. Two of the three properties in the Northern CSAOI which exceed PRGs are vacant lots with current residential zoning, and the EPA believed that comparison to residential PRGS was most appropriate in this case as well. The Southern Outlying Area had exceedances of residential PRGs on 7 total properties, 6 of which are currently residential. The EPA acknowledges that the two properties in the Northern Outlying Area shown with residential PRG exceedances are not currently zoned residential, and a note to this effect has been added to the figure in

the ROD. However, for consistency with the other three figures, the EPA has decided to leave the Northern Outlying Area figure otherwise unchanged.

- AR Detailed Comment 10: Page 10, Last Paragraph: The Proposed plan states: "The first step is to evaluate soil concentrations of arsenic and lead against not to exceed (NTE) concentrations of 250 mg/kg arsenic or 400 mg/kg lead on a yard component basis down to a maximum of 18 inches." For clarification, AR assumes that the NTE evaluation extends to a depth of 24" in current garden areas. AR requests that EPA indicate in the ROD the required depth for NTE evaluations in current garden areas in the ROD.

EPA Response

Section CS 9 of the ROD clarifies that in existing garden areas the NTE evaluation extends down to 24 inches for all community soils remedial alternatives. Section CS 12 of the ROD clarifies that the NTE evaluation extends down to 24 inches in existing vegetable gardens for the selected remedy.

- AR Detailed Comment 11: Page 10, Last Paragraph: AR suggests that EPA include the definition of "Principal Threat Wastes" in this section. *See* U.S. EPA, *A Guide to Principal Threat and Low Level Threat Wastes, at 1* (Pub. No. 9380.3-06FS Nov. 1991).

EPA Response

Sections CS 11 and RC 11 of the ROD provide the following definition of Principal threat wastes: "In general, principal threat wastes are those source materials considered to be highly toxic or highly mobile, which generally cannot be contained in a reliable manner or will present a significant risk to human health if exposure occurs."

13) Additional Cascade County Commission Comments

- Coordination of railroad corridor remedial activities and Black Eagle sewer and water system infrastructure upgrades is important to this community and specific requirements for this coordination should be specified in the proposed plan to ensure the timing requisites are met.

EPA Response

Section CS 5 of this ROD describes work completed by the EPA Removal Program in coordination with the Black Eagle Water and Sewer District fall 2020 utility project.

14) Additional Montana DEQ Comments

- The State's risk levels for arsenic and lead should be clearly identified along with EPA's target risk range. Please address consistency with units of measurement for arsenic and lead or clarify conversions or usage of different units based on identified goals or objectives.

EPA Response

Acceptable risk levels for the site are defined as Remedial Action Objectives (RAOs) in Section 8 of the ROD. The RAOs for the Site are to achieve an excess cancer risk no greater than 1 in 100,000 or a non-cancer hazard index no greater than 1, and to achieve a probability of less than 5 percent that an

individual child will have a blood lead level exceeding 5 µg/dL. For consistency, concentrations in soil are expressed in milligrams per kilogram (mg/kg) throughout the ROD. Some project documents which are referenced in the ROD use parts per million (ppm) as another way to express concentration. 1 mg/kg is equivalent to 1 ppm. Blood lead concentrations are expressed in terms of micrograms of lead per deciliter of blood (µg/dL).

- DEQ is concerned that due to averaging, the results in the top 6 inches of Community Soils step 2 may not provide a long-term protective remedy based on the State's <1E -05 risk clean up value for arsenic (36 ppm).

EPA Response

EPA believes this remedy will be protective through its use of maximum values to identify areas of concern, within which risk was evaluated on a property-specific basis, and through the two-tiered remedial action approach utilizing both cleanup levels (which are compared to area average soil concentrations to trigger soil removal) and not to exceed concentrations (which are compared to individual soil concentration results to trigger soil removal).

- The Proposed Plan does not adequately explain the relationship between the preliminary remediation goals (PRGs) and the remedial action objectives (RAOs) and the ultimate remediation decision. Further, the basis of the PRG calculations is not clear (i.e., risk levels, hazard indices, and blood lead concentrations) and should be provided. DEQ proposes that the arsenic PRG of 175 mg/kg be used as the Not to Exceed RAO since it is actually based upon site-specific conditions.

EPA Response

Additional detail regarding the process of establishing PRGs to achieve the RAOs has been included in Sections CS 8 and RC 8 of the ROD.

- DEQ accepts cumulative excess cancer risk no greater than 1 in 100,000, not 1.44 in 100,000 and a non-cancer hazard index of 1. In addition, DEQ determines lead cleanup levels based upon an individual child having less than a 5 percent probability of having a blood lead level exceeding 5 ug/dL. The arsenic RAO of 54 mg/kg does not meet this requirement and DEQ has consistently stated that the RAO for arsenic should be 36 mg/kg. The statement on page 9 of the Proposed Plan regarding the blood lead level of 8 ug/dL is not consistent with the basis of the lead RAO of 281 mg/kg. The cumulative risk levels and blood lead levels should also apply to the non-residential exposures at the site.

EPA Response

In accordance with EPA's Risk Assessment Guidance, Part D, calculated excess cancer risk is expressed in whole number (i.e., the risk range of 1 in 10,000 to 1 in 1, 000,000). DEQ's calculated excess cancer risk of 1.44 in 100,00 is correctly expressed as 1 in 100,000 which meets EPA's remedial action objective of 1 in 100,000 excess cancer risk.

- The proposed remedy is not well described in the Proposed Plan and should be outlined more specifically in the ROD. DEQ considers the top 24 inches to be surface soil. DEQ does not consider 6 inches of clean material to be a permanent remedy. Based on the State's definition of surface soil, the proposed remedy will result in exceedances in area-specific regions of residential yards, in residential soils deeper than 6 inches and in areas evaluated for recreational and commercial uses. Please

modify step 2 of alternative 4 for excavation to a depth of 18 inches consistent with Remedial Investigation database.

EPA Response

RI data suggests that the majority of contamination in residential soils is in the top 18 inches of the surface. The proposed clean up strategy is based on specific assumptions about people's behavior and exposure to soil contamination. The Not to Exceed (NTE) concentrations for arsenic and lead represent concentrations at which there is an unacceptable risk with a brief, acute exposure. The NTEs are also generally with EPA's acceptable risk range and are applied down to 18 inches (24 inches in gardens). The final conservative cleanup standards are applied to the top 6 inches of soil and will be protective of the community by removing soils at concentrations above which chronic exposures may present an unacceptable risk.

The Not to Exceed (NTE) concentrations for arsenic and lead represent concentrations at which there is an unacceptable risk with a brief, acute exposure. Calculations supporting the selected PRG and NTE concentrations for community soils and railroad corridor areas are presented in the respective HHRAs (Formation 2015, KJ 2015). While people are likely to be exposed to the top few inches of soil frequently, making the most representative surface soil exposure scenario long-term (i.e. chronic) exposure, this is less likely with deeper soils. It is believed that exposure to deeper soils is likely to happen less frequently and for shorter durations. NTE concentrations were established to address potential hotspots within deeper intervals. Further, in order to be exposed to deeper soils, a resident will have to dig down through shallower soils. This physical reality means that mixing can be assumed to occur, and that there is not a pathway by which residents can be exposed only to the soils located 6-12 or 12-18 inches below ground.

15) Additional Comments From Area Residents

Sarah Carter

So, in reading the documents, it's scary to think I live and recreate in an area contaminated with lead and arsenic. My home is located in the Southern community soil area of interest. My home is highlighted in red as having a lead concentration higher than 500 ppm. I have not received any notice and frankly, I'm concerned about the health risks of such contamination.

In regard to the Superfund site, just make it safe and usable. Rivers edge trail and the dam area is nice for walking, running. If all the recreational places in this area could connect with a walking path it would be such a benefit and would make each area more user friendly.

EPA Response

Residents who live at properties where soil concentrations exceed the Site PRGs will be contacted during the Remedial Design/Remedial Action stage of the project to coordinate for residential cleanups.

Dana L Olsen

[page one] Introduction

Every law book, I've ever read says on should do their own work. I claim Charlie Coleman did not identify the landowner of refinery site, when the ash became problematic. I required a rebuttal.

Noting a company can sell contaminated property, but unless it documented normally no liability transfers. That is presumptuous and in law no presumption are ignored.

I said in a phone call on July 23, 2019 why wasn't the landowner present. He said an oil company was present, without having them identify themselves.

A controversy exists, because EPA refuses to recognize the Black Eagle contamination occurred from engineering too small a stack. Liability may attach to engineers. No time line for conspiracy.

A remedy: re-open public meeting. Get the owners on record. Instead of investigating our President again, assign a federal prosecutor?

[page two] I said at the public meeting (June 2019) trespass on private property cannot be infered*[sic]* by local governments. One can buy title insurance. When you buy insurance, you don't do legal work: they do it for you!

In my opinion EPA has not done legal; the work. I know EPA has attorneys.

Remedy: this should wo under a legal review and pertainent*[sic]* information given out. (disclosure) or referral to Interior Dept.

A controversy exists whether an abandon line (railroad) is subject to negotiations before the public comments.

I believe this is unlawful, when the county (Cascade) is negotiating terms, before public comment occurs. If EPA is using the Commerce clause, and the Supremacy clause then it violate OPEN Meeting Act Requirement in some states (like Alaska). Atlantic Richfield operates in Alaska.

[page 3] I filed at the Nineth*[sic]* Circuit (2002) a petition regarding: the law of several states Federal jurisdiction being eliminated by Congress. Told I had no lower court decision.

Why does EPA use the law of several states, yet an individual cannot. This seems biased with prejudice. The Bill of rights is against states.

In seeking to address my home damage from the National Guard blowing up military bombs in Alaska why is it that I can be held to the Federal tort Claim Act, and others not? I filed with Governor Murkowski office. It is a Federal record. I claim denial of equal protection.

I said the seller of the homes has a duty to disclose contamination. (State Law Realty license) If he didn't disclose; yet it was public knowledge (I gave testimony) at June 2019 Public Meeting about engineering failure. Yet EPA document says they have the record. I claim they do not have the records yet. They must depose others.

[page 4] EPA hand-out action plan says the Montana Governor requested the clean-up. This infers that this is state action and may confuse commenters in representing their interests.

Remedy: re-open public meeting after EPA deposes on engineering failure. A Finding of Fact would signify that the issue was administrative. [We] as oppose to a NEPA challenge. One cannot proceed before the other is settled.

Clustering of industrial sites has been a favorite tactic of industrial activities. This way since the burden of proof is on the plaintiff, they get their case dismissed under Federal Civil Rule 12(b)(6). One must have facts.

EPA human health risk assessment is flawed. Dioxin is produced burning at high temperatures. An oil company can't support the oil refinery, by using a false real party in interest. Dioxin can cause Parkinson Disease. A real nasty, fatal disease.

[page 5] Mr. Coleman wanted to substitute his judgement for that of the VA. Dioxin. Noting that President Trump and Montana U.S Senator spent over his VA nominee. The issue may rise in hot tempers. I appreciate my President, Donald Trump; because he signed in executative*[sic]* order to screen for mental issues on exiting veterans. Parkinson's causes hallucinations. And some states refuse to recognize Veteran health issues, even the VA ignored pleas for assistance.

The issue of EPA human risk assessment is flawed because my sister Lori speaks of a relative and a close friend that had high arsenic (blood) levels. For EPA too*[sic]* ignore the fact that Great Falls was affected is with bias, without legal merit and dubious to the integrity of the Environmental Protection Agency.

[page 6] The VA inspect homes near dioxin sources for veterans. EPA ignores dioxin, why? If the VA can be sued on guarantee of a home, and realators*[sic]* get state licences*[sic]* to sell, even to Federal government.

The issue of gallium arsenide being used for veteran micro-chip implants[4] so adrenalin*[sic]* would flow for better soldier, precludes movement to tribalize, or NEPA challange*[sic]*-raise status. Minority business jobs to displace contaminants, causing harm to others.

Praceleus (1527) said, like things react greater than unlike things. Father of Pharmacology & Mining book expert (100 years).

[page seven] Elana Freeland recently said on Coast to Coast A.M 975 FM that Testla*[sic]* Science journals confiscated upon his death went to Trump's uncle. The Montana Governor is still arguing for Paris Climate Accord, despite Executive Privilige*[sic]*. Some still disbelieve technology is being used to harm U.S interests.

Why is ash a spill if its engineering failure for the railroad?

One of the distinctions about writing about science is that it is observed and written as such. Even in Candide Voltaire speaks of sheep flying in quantum mechanics. I love the part when he says 300 mathematicians and 3,000 engineers won't get it. He *[sic]* talking about anti-gravity not soil science.

[page eight] If a group of people keep trying for tribal status arriving from Canada. I have nothing in common with them. My grandpa (dad side) immigrant from Canada Mother side – cousins of her dad living in Canada.

French Canadians – might use French common law, yet U.S Federal law uses English Common law. The Malpasset Tragedy – dam broke engineering faulted in Malpasset tragedy p.166 "Why buildings/structures fall down. Individual sue for criminal liability, English use tort.

Since the Montana Attorney General is elected. Remedy – sent inquiry for opinion. EPA sponsored.

[page 9] Fluoride collects inside of stacks of combustion. EPA requires stack cleaning. This substance is natural in the water. The fluoride model is flawed because of re-active chemicals, and radiation from 100 nuclear bomb tests that made Cascade County a hot spot. The prevailing winds brought Nevada mushroom cloud particles to Montana.

Instead of real trials on fluoride values [dubbed a protector of teeth]. Sort of like putting potassium chloride on dirts*[sic]* roads to make them hard. Since teeth have pouricity*[sic]* (air spaces) the fluoride is reactive and is pulled into the reactive oxygen air pockets. It cements the pocket into a non-flexible teeth. So as one ages the air pockets collapse from natural aging. If one has a square jaw, he will break off this teeth.

[4] Under an Ionized Sky (p321) 2019. Elana Freeland.

The reason for no dentures is that the adhensive*[sic]* is a lot like gallium arsenside*[sic]*. It is made up of zinc, which triggers the immune function. Dental adhensives*[sic]* used zinc, and it can cause problems in hyperbolic-metabolic process.

[page 10] The crystalline properties cause neuro-transmitters to activate the immune function. Water flowing across cells [northern people] keeps them from freezing. Also found in plants and animals. In fact salmon process this, and they use this enzyme to keep [heart] organs vital for organ transplants. So, irregardless*[sic]* of the County position fluoride is bad, it comes from stacks and came from the one in Great Falls.

I don't think you can ignore the other problems with stack liabilities. EPA, and the County health department, have a legal problems separate from clean-up.

My front teeth, only a crown and two others remain. Even a non-cavity front tooth cracked and broke off. It abcessed*[sic]* and was removed.

I wanted you to see while local parties are not good parties, and should be striken*[sic]* from the record. Ignorance is bliss is not going to work. The County health center might care for Black Eagle residents; but not me!

[page 11] Stem cell and titanium posts are for me in Seattle. I need sympanthy*[sic]*: not criticism. They refuse to pay, except for dentures.

Being a horticulturalist, I've helped researchers in Montana understand sugars knowledge could be used to make wheat make two heads; instead of just one. (polarity and reversals). Apparently, they thought it was worth researching, as the Montana Legislature funded it.

In looking at Black Eagle, aggressive soil ground covers should be utilized. But since water is charged for, the more suitable ground covers, might not work. If your cheap, then what? Digging ash out of the ground in soil means it will be burned, giving others health problems. Incineration is biomediation*[sic]* and one can't stop it.

To me, planning and zoning are more important than social programs.

[page 12] Hill 57 residents bought cheap housing and isn't that what everyone needs. I think they kept the housing to cover the engineer flaw! But the company should have demolitionized*[sic]* Company housing. The Company wanted profit and the takers cheap housing. EPA blissfully not doing a NEPA at the appropriate time. Doing one now won't help anyone. Industry is necessary. Mining is necessary. Engineering needs to explore.

Even as a young child, I played with mud. Exploring why it sticks together. How much fluid would support my berry mud pie. I saw fluidicity*[sic]*, movement and marveled.

I melted snow on my grandma free-standing furnace. She knew I was inquisitive and let me learn on my own. Thank you, Grandma Marie. Perhaps the County can re-invent curosity*[sic]*.

EPA Response

Most of the comments or commentary are not relevant to the proposed plan or pertain to information provided in the administrative record

Appendix C

CSOU1 Statement of Work (SOW)

REMEDIAL DESIGN/REMEDIAL ACTION
STATEMENT OF WORK
Community Soils Portion of Operable Unit 1
of the ACM Smelter and Refinery Site

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1. INTRODUCTION

1.1 Purpose of SOW. This Statement of Work ("SOW") sets forth the procedures and requirements for Settling Defendants implementation of the Work under the Consent Decree for the Community Soils Portion of Operable Unit 1 of the ACM Smelter and Refinery Superfund Site ("Decree").

1.2 Structure of the SOW

- Section 2 (Community Involvement) sets forth EPA's and Settling Defendants' responsibilities for community involvement.
- Section 3 (Coordination and Supervision) contains the provisions for selecting the Supervising Contractor and Project Coordinators regarding the Work.
- Section 4 (Remedial Design) sets forth the process for developing the Remedial Design.
- Section 5 (Remedial Action) sets forth requirements regarding the completion of the Remedial Action, including primary deliverables related to completion of the Remedial Action.
- Section 6 (Reporting) sets forth Settling Defendants' reporting obligations.
- Section 7 (Deliverables) describes the contents of the supporting deliverables and the general requirements regarding Settling Defendants' submission of, and EPA's review of, approval of, comment on, and/or modification of, the deliverables.
- Section 8 (Schedules) sets forth the schedule for submitting the primary deliverables, specifies the supporting deliverables that must accompany each primary deliverable, and sets forth the schedule of milestones regarding the completion of the Remedial Action.
- Section 9 (State Participation) addresses the Montana Department of Environmental Quality's ("MDEQ") participation.
- Section 10 (Attachments) lists the attachments to this SOW.
- Section 11 (References) provides a list of references, including URLs.

1.3 Scope of the Remedy. The Scope of the Remedy includes the remedial action activities identified and described in Section CS 12 of the Record of Decision (Community Soils Selected Remedy) and further detailed in this Section 1.3 and the Remedial Action Work Plan/Final Design Report ("RAWP/FDR") attached to this SOW. For purposes of the Decree, the Scope of the Remedy does not include the remedial action activities for the Railroad Corridor identified and described in Section RC 12 of the Record of Decision (Railroad Corridor Selected Remedy).

Specifically, and as further described below, the Scope of the Remedy includes removing and replacing contaminated soils from current residential properties in the Northern and Southern Community Soils Areas of Interest ("CSAOI") and in the eastern portion of the Northern Outlying Area. The Community Soils Portion of Operable Unit 1 ("OU1") of the ACM Smelter and Refinery Site ("Site"), as described in the Scope of the Remedy, is referred to in this SOW and attachments as "CSOU1."

Major components of the remedy to address current residential soils in the Northern and Southern CSAOI (as shown on figure CS 12-3 of the OU1 Record of Decision)

- Step 1 - Remove soils in any yard component exceeding the "Not to Exceed" ("NTE") action level of 250 mg/kg arsenic and 400 mg/kg lead to a maximum depth of 18 inches (maximum 24 inches in gardens).
- Step 2 – Calculate the residual risk that may be present after Step 1 and remove any additional soil to achieve a yard average concentration, in the top 6 inches, less than 54 mg/kg arsenic and 281 mg/kg lead.

Major components of the remedy for current non-residential soils in the Northern and Southern CSAOI and eastern portion of the Northern Outlying Area (as shown on Figure CS 12-3 of the OU1 Record of Decision)

- Confirm that the property average soil concentration, in the top 6 inches, is below risk-based action levels for the current non-residential land use or remediate soils to achieve the risk-based action levels for current non-residential land use in the top 6 inches.
- To address a potential land use change to residential, one of the following must be completed:
    - Confirm that the property-specific 0 to12-inch depth-weighted average soil concentration meets the remedial action objectives ("RAOs") for residential soils, or
    - Place Institutional Controls ("ICs") on the property, including, but not limited to, restricting future residential use or providing for additional remediation at the time of residential redevelopment, or
    - Remediate soils to further reduce soil concentrations to achieve a property average concentration in the top 12 inches that meets the RAOs for residential soils.

Common components

- Excavated materials will be consolidated with similar materials on Site within Operable Unit 2 ("OU2") (Former Smelter and Refinery facility). The consolidated materials will be addressed as part of the OU2 remedy.

1.4 The terms used in this SOW that are defined in CERCLA, in regulations promulgated under CERCLA, or in the Decree, have the meanings assigned to them in CERCLA, in such regulations, or in the Decree, except that the term "Paragraph" or "¶" means a paragraph of the SOW, and the term "Section" means a section of the SOW, unless otherwise stated.

2. COMMUNITY INVOLVEMENT

2.1 As requested by EPA, Settling Defendants shall conduct community involvement activities under EPA's oversight as provided for in, and in accordance with this Section. Such activities must include designation of a Community Involvement Coordinator ("CI

Coordinator"). The Site has been identified as an area of potential Environmental Justice ("EJ") concern based on the results of the EJ Screen report.

2.2 Community Involvement Responsibilities.

(a) EPA has the lead responsibility for developing and implementing community involvement activities at the Site. Previously during the Remedial Investigation and Feasibility Study ("RI/FS") phase, EPA developed a Community Involvement Plan ("CIP") for the Site. In accordance with 40 C.F.R. § 300.435(c), EPA shall review the existing CIP and determine whether it should be revised to describe further public involvement activities during the Work that are not already addressed or provided for in the existing CIP, including, the Technical Assistance Grant ("TAG").

(b) **Settling Defendants' CI Coordinator**. As requested by EPA, Settling Defendants shall, within 15 days, designate and notify EPA of Settling Defendants' CI Coordinator ("Settling Defendants' CI Coordinator"). Settling Defendants may hire a contractor for this purpose. Settling Defendants' notice must include the name, title, and qualifications of the Settling Defendants' CI Coordinator. Settling Defendants' CI Coordinator shall coordinate his/her activities with EPA's CI Coordinator, provide support regarding EPA's community involvement activities, and, as requested by EPA's CI Coordinator, provide draft responses to the public's inquiries including requests for information or data about the Site. The Settling Defendants' CI Coordinator has the responsibility to ensure that when they communicate with the public, the Settling Defendants protect any "Personally Identifiable Information" ("PII") (*e.g.,* sample results from residential properties) in accordance with "EPA Policy 2151.0: Privacy Policy."

(c) As requested by EPA, Settling Defendants shall participate in community involvement activities, including participation in: (1) public meetings that may be held or sponsored by EPA to explain activities at or relating to the Site; and (2) activities EPA decides are necessary to protect and address the concerns of potential EJ and disadvantaged communities. Settling Defendants' support of EPA's community involvement activities may include providing online access to initial submissions and updates of deliverables to: (1) any Community Advisory Groups, (2) any Technical Assistance Grant ("TAG") recipients and their advisors, and (3) other entities to provide them with a reasonable opportunity for review and comment. EPA may describe in its CIP Settling Defendants' responsibilities for community involvement activities. All community involvement activities conducted by Settling Defendants at EPA's request are subject to EPA's oversight. Upon EPA's request, Settling Defendants shall establish, as early as is feasible, a community information repository at or near the Site, as provided in the CIP, to house one copy of the administrative record. The initial location of this community repository shall be at the Black Eagle Community Center, 2332 Smelter Ave, Black Eagle, MT 59414.

(d) **Information for the Community**. As requested by EPA, Settling Defendants shall develop and provide to EPA information about the design and implementation of the Remedial Action including: (1) any validated data from monitoring of impacts to communities as provided in the Community Impacts Mitigation Plan under ¶ 7.7(c); (2) a copy of the Community Impacts Mitigation Plan required under ¶ 7.7(c); (3) schedules prepared under Section 8; (4) dates that Settling Defendants completed each task listed in the schedules; and (5) digital photographs of the Work being performed, together with descriptions of the Work depicted in each photograph, the purpose of the Work, the equipment being used, and the location of the Work. The EPA Project Coordinator may use this information for communication to the public via EPA's website, social media, or local and mass media. The information provided to EPA should be suitable for sharing with the public and the education levels of the community as indicated in EJ Screen.

3. COORDINATION AND SUPERVISION

3.1 Project Coordinators

(a) Settling Defendants' Project Coordinator[s] must have sufficient technical expertise to coordinate the Work. Settling Defendants' Project Coordinator may not be an attorney representing any Settling Defendant in this matter and may not act as the Supervising Contractor. Settling Defendants' Project Coordinator may assign other representatives, including other contractors, to assist in coordinating the Work.

(b) EPA shall designate and notify the Settling Defendants of EPA's Project Coordinator[s] and Alternate Project Coordinator[s]. EPA may designate other representatives, which may include its employees, contractors, and/or consultants, to oversee the Work. EPA's Project Coordinator/Alternate Project Coordinator will have the same authority as a remedial project manager and/or an on-scene coordinator, as described in the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"). This includes the authority to halt the Work and/or to conduct or direct any necessary response action when it is determined that conditions at the Community Soils portion of the Site constitute an emergency or may present an immediate threat to public health or welfare or the environment due to a release or threatened release of Waste Material.

(c) MDEQ shall designate and notify EPA and the Settling Defendants of its Project Coordinator[s] and Alternate Project Coordinator[s]. MDEQ may designate other representatives, including its employees, contractors and/or consultants to oversee the Work. For any meetings and inspections in which EPA's Project Coordinator participates, MDEQ's Project Coordinator also may participate. Settling Defendants shall notify MDEQ reasonably in advance of any such meetings or inspections.

(d) Settling Defendants' Project Coordinator[s] shall communicate with EPA's and MDEQ's Project Coordinators at least monthly until Certification of Remedial Action Completion.

3.2 Supervising Contractor. Settling Defendants' proposed Supervising Contractor must have sufficient technical expertise to supervise the Work and a quality assurance system that complies with the most recent version of *Quality Systems for Environmental Data and Technology Programs -- Requirements with Guidance for Use* (American National Standard), ANSI/ASQC E4 (Feb. 2014).

3.3 Procedures for Disapproval/Notice to Proceed

(a) Settling Defendants shall designate, and notify EPA, within 30 days after the Effective Date, of the names, titles, contact information, and qualifications of the Settling Defendants' proposed Project Coordinator[s] and Supervising Contractor, whose qualifications shall be subject to EPA's review for verification based on objective assessment criteria (*e.g.*, experience, capacity, technical expertise) and do not have a conflict of interest with respect to the project.

(b) EPA shall issue notices of disapproval and/or authorizations to proceed regarding any proposed Project Coordinator and Supervising Contractor, as applicable. If EPA issues a notice of disapproval, Settling Defendants shall, within 30 days, submit to EPA a list of supplemental proposed Project Coordinators and/or Supervising Contractors, as applicable, including a description of the qualifications of each. Settling Defendants may select any coordinator/contractor covered by an authorization to proceed and shall, within 21 days, notify EPA of Settling Defendants' selection.

(c) EPA may disapprove any proposed Project Coordinator, the Supervising Contractor, or both, based on objective assessment criteria (*e.g.*, experience, capacity, technical expertise), if they have a conflict of interest regarding the project, or any combination of these factors.

(d) Settling Defendants may change their Project Coordinator and/or Supervising Contractor, or both, by following the procedures of ¶¶ 3.3(a) and 3.3(b).

(e) Notwithstanding the procedures of ¶¶ 3.3(a) through 3.3(d), Settling Defendants have proposed, and EPA has authorized Settling Defendants to proceed, regarding the following Project Coordinator and Supervising Contractor:

Luke Pokorny
Atlantic Richfield Company
317 Anaconda Road
Butte, MT 59701
(406) 723-1832
Luke.Pokorny@bp.com

Woodard & Curran
1800 West Koch Street, Suite 6
Bozeman, MT 59715
(406) 586-8364

4. REMEDIAL DESIGN

4.1 Settling Defendants shall communicate regularly with EPA to discuss design issues as necessary, as directed or determined by EPA.

4.2 **Final (100%) Remedial Design**. The approved Remedial Action Work Plan/Final Design Report ("RAWP/FDR") is attached to this SOW as Attachment 1.

5. REMEDIAL ACTION

5.1 **Remedial Action Work Plan**. The approved RAWP/FDR is attached to this SOW and includes:

(a) A Remedial Action Construction Schedule including Gantt chart;

(b) An updated health and safety plan that covers activities during the Remedial Action;

(c) Individual Site Work Plans ("ISWPs") for properties where existing data indicates the need for Remedial Action. Each ISWP includes a property layout map and associated soil sampling results, identification of the yard components that are subject to removal/replacement, and identification of the depth and anticipated quantities of Remedial Action materials that will be removed; and

(d) Plans for satisfying substantive requirements of permits for on-Site activity.

5.2 **Independent Quality Assurance Team ("IQAT")**. Settling Defendants shall notify EPA of Settling Defendants' designated IQAT. Settling Defendants may hire a third party for this purpose. Settling Defendants' notice must include the names, titles, contact information, and qualifications of the members of the IQAT. The IQAT will have the responsibility to determine whether Work is of expected quality and conforms to applicable plans and specifications. The IQAT will have the responsibilities as described in ¶ 2.1.3 of the *Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties*, EPA/540/G-90/001 (Apr. 1990).

5.3 **Meetings and Inspections**

(a) **Preconstruction Conference**. Settling Defendants shall hold a preconstruction conference with EPA and others as directed or approved by EPA and as described in the *Remedial Design/Remedial Action Handbook*, EPA 540/R-95/059 (June 1995). Settling Defendants shall prepare minutes of the conference and shall distribute the minutes to all Parties.

(b) **Periodic Communications**. During the construction portion of the Remedial Action (Remedial Action Construction), Settling Defendants shall communicate regularly with EPA, and others as directed or determined by EPA, to discuss construction issues. Settling Defendants shall distribute an agenda and list of attendees to all Parties prior to each meeting or telephone call. Settling Defendants shall prepare minutes of the meetings or calls and shall distribute the minutes to all Parties.

(c) **Inspections**

(1) EPA or its representative shall conduct periodic inspections of the Work. At EPA's request, the Supervising Contractor or other designee shall accompany EPA or its representative during inspections.

(2) Settling Defendants shall provide personal protective equipment needed for EPA personnel and any oversight officials to perform their oversight duties.

(3) Upon notification by EPA of any deficiencies in the Remedial Action Construction, Settling Defendants shall take all necessary steps to correct the deficiencies and/or bring the Remedial Action Construction into compliance with the approved RAWP/FDR, any approved design changes, and/or any approved ISWPs. If applicable, Settling Defendants shall comply with any schedule provided by EPA in its notice of deficiency.

5.4 Permits

(a) As provided in CERCLA § 121(e), and Section 300.400(e) of the NCP, no permit is required for any portion of the Work conducted entirely on-Site *(i.e.*, within the areal extent of contamination or in very close proximity to the contamination associated with the Site and necessary for implementation of the Work). Where any portion of the Work that is not on-site requires a federal or state permit or approval, Settling Defendants shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals.

(b) Settling Defendants may seek relief under the provisions of Section X (Force Majeure) of the Decree for any delay in the performance of the Work resulting from a failure to obtain, or a delay in obtaining, any permit or approval referenced in ¶ 5.4(a) and required for the Work, provided that they have submitted timely and complete applications and taken all other actions necessary to obtain all such permits or approvals.

(c) Nothing in the Decree or this SOW constitutes a permit issued under any federal or state statute or regulation.

5.5 Emergency Response and Reporting

(a) **Emergency Action**. If any event occurs during performance of the Work that causes or threatens to cause a release of Waste Material on, at, or from the Site and that either constitutes an emergency situation or that may present an immediate threat to public health or welfare or the environment, Settling Defendants shall: (1) immediately take all appropriate action to prevent, abate, or minimize such release or threat of release; (2) immediately notify the authorized EPA officer (as specified in ¶ 5.5(c)) orally; and (3) take such actions in consultation with the authorized EPA officer and in accordance with all applicable provisions of the Health and Safety Plan and any other deliverable approved by EPA under this SOW.

(b) **Release Reporting**. Upon the occurrence of any event during performance of the Work that Settling Defendants are required to report under CERCLA § 103 or Section 304 of the Emergency Planning and Community Right-to-Know Act ("EPCRA"), Settling Defendants shall immediately notify the authorized EPA officer orally.

(c) The "authorized EPA officer" for purposes of immediate oral notifications and consultations under ¶ 5.5(a) and ¶ 5.5(b) is the EPA Project Coordinator, the EPA Alternate Project Coordinator (if the EPA Project Coordinator is unavailable), or the EPA Emergency Response Unit, Region 8 (if neither EPA Project Coordinator is available).

(d) For any event covered by ¶ 5.5(a) and ¶ 5.5(b), Settling Defendants shall: (1) within 14 days after the onset of such event, submit a report to EPA describing the actions or events that occurred and the measures taken, and to be taken, in response thereto; and (2) within 30 days after the conclusion of such event, submit a report to EPA describing all actions taken in response to such event.

(e) The reporting requirements under ¶ 5.5 are in addition to the reporting required by CERCLA § 103 or EPCRA § 304.

5.6 Off-Site Shipments

(a) Settling Defendants may ship hazardous substances, pollutants, and contaminants from CSOU1 to an off-Site facility only if they comply with CERCLA § 121(d)(3), and 40 C.F.R. § 300.440. Settling Defendants will be deemed to be in compliance with CERCLA § 121(d)(3) and 40 C.F.R. § 300.440 regarding a shipment if Settling Defendants obtain a prior determination from EPA that the proposed receiving facility for such shipment is acceptable under the criteria of 40 C.F.R. § 300.440(b).

(b) Settling Defendants may ship Waste Material from CSOU1 to an out-of-state waste management facility only if, prior to any shipment, they provide notice to the appropriate state environmental official in the receiving facility's state and to the EPA Project Coordinator. This notice requirement will not apply to any

off-Site shipments when the total quantity of all such shipments does not exceed 10 cubic yards. The notice must include the following information, if available: (1) the name and location of the receiving facility; (2) the type and quantity of Waste Material to be shipped; (3) the schedule for the shipment; and (4) the method of transportation. Settling Defendants also shall notify the state environmental official referenced above and the EPA Project Coordinator of any major changes in the shipment plan, such as a decision to ship the Waste Material to a different out-of-state facility. Settling Defendants shall provide the notice after the award of the contract for Remedial Action construction and before the Waste Material is shipped.

(c) Settling Defendants may ship Investigation Derived Waste (IDW) from CSOU1 to an off-Site facility only if they comply with CERCLA § 121(d)(3), 40 C.F.R. § 300.440, *EPA's Guide to Management of Investigation Derived Waste*, OSWER 9345.3-03FS (Jan. 1992), and any IDW-specific requirements contained in the Record of Decision. Wastes shipped off-Site to a laboratory for characterization, and RCRA hazardous wastes that meet the requirements for an exemption from RCRA under 40 CFR § 261.4(e) shipped off-Site for treatability studies, are not subject to 40 C.F.R. § 300.440.

5.7 Certification of Remedial Action Completion

(a) **Remedial Action Completion Inspection**. The Remedial Action is "Complete" for purposes of this ¶ 5.7 when it has been fully performed and the Performance Standards have been achieved. Settling Defendants shall schedule an inspection for the purpose of obtaining EPA's Certification of Remedial Action Completion. The inspection must be attended by Settling Defendants and EPA and/or their representatives.

(b) **Remedial Action Report**. Following the inspection, Settling Defendants shall submit a Remedial Action Report to EPA requesting EPA's Certification of Remedial Action Completion. The report must: (1) include statements by Settling Defendants' Project Coordinator that the Remedial Action is complete; (2) include as-built drawings; (3) be prepared in accordance with Section 2 (Remedial Action Completion) of EPA's *Close Out Procedures for NPL Sites* guidance, OLEM Directive 9320.2-23 (June 2022), as supplemented by *Guidance for Management of Superfund Remedies in Post Construction*, OLEM 9200.3-105 (Feb. 2017); (4) contain monitoring data and other appropriate information to demonstrate that Performance Standards have been achieved; and (5) be certified in accordance with ¶ 7.5 (Certification).

(c) If EPA concludes that the Remedial Action is not Complete, EPA shall so notify Settling Defendants. EPA's notice must include a description of any deficiencies. EPA's notice may include a schedule for addressing such deficiencies or may require Settling Defendants to submit a schedule for EPA approval. Settling Defendants shall perform all activities described in the notice in accordance with

the schedule, which schedule may be modified by written agreement between EPA and Settling Defendants.

(d) If EPA concludes, based on the initial or any subsequent Remedial Action Report requesting Certification of Remedial Action Completion, that the Remedial Action is Complete, EPA shall so certify to Settling Defendants. This certification will constitute the Certification of Remedial Action Completion for purposes of the Decree, including Section XIII of the Decree (Covenants by Plaintiffs). Certification of Remedial Action Completion will not affect Settling Defendants' remaining obligations under the Decree.

5.8 Periodic Review Support Plan ("PRSP"). Settling Defendants shall submit the PRSP for EPA approval. The PRSP addresses the studies and investigations that Settling Defendants shall conduct to support EPA's reviews of whether the Remedial Action is protective of human health and the environment in accordance with CERCLA § 121(c) (also known as "Five-Year Reviews"). Settling Defendants shall develop the plan in accordance with *Comprehensive Five-year Review Guidance*, OSWER 9355.7-03B-P (June 2001), and any other relevant five-year review guidances.

5.9 Certification of Work Completion

(a) **Work Completion Inspection**. Settling Defendants shall schedule an inspection for the purpose of obtaining EPA's Certification of Work Completion. The inspection must be attended by Settling Defendants and EPA and/or their representatives.

(b) **Work Completion Report**. Following the inspection, Settling Defendants shall submit a report to EPA requesting EPA's Certification of Work Completion. The report must: (1) include statements by Settling Defendants' Project Coordinator that the Work, including all O&M activities, is complete; and (2) be certified in accordance with ¶ 7.5 (Certification). If the Remedial Action Report submitted under ¶ 5.7(b) includes all elements required under this ¶ 5.9(b), then the Remedial Action Report suffices to satisfy all requirements under this ¶ 5.9(b).

(c) If EPA concludes that the Work is not complete, EPA shall so notify Settling Defendants. EPA's notice must include a description of the activities that Settling Defendants must perform to complete the Work. EPA's notice must include specifications and a schedule for such activities or must require Settling Defendants to submit specifications and a schedule for EPA approval. Settling Defendants shall perform all activities described in the notice or in the EPA-approved specifications and schedule, which schedule may be modified by written agreement between EPA and Settling Defendants.

(d) If EPA concludes, based on the initial or any subsequent report requesting Certification of Work Completion, that the Work is complete, EPA shall so certify in writing to Settling Defendants. Issuance of the Certification of Work Completion does not affect the following continuing obligations: (1) activities

under the PRSP; (2) obligations under Sections VI (Property Requirements), and XVI (Records) of the Decree; (3) Institutional Controls obligations as provided in the Institutional Control Implementation and Assurance Plan ("ICIAP"); and (4) reimbursement of EPA's Future Response Costs under Section IX (Payments for Response Costs) of the Decree.

6. REPORTING

6.1 **Progress Reports**. Commencing with the month following the Effective Date of the Decree and until EPA approves the Remedial Action Construction Completion, Settling Defendants shall submit progress reports to EPA on a monthly basis no later than the 10th day of each month, or as otherwise requested by EPA. The reports must cover all activities that took place during the prior reporting period, including:

(a) The actions that have been taken toward achieving compliance with the Decree;

(b) A summary of all results of sampling, tests, and all other data received or generated by Settling Defendants;

(c) A description of all deliverables that Settling Defendants submitted to EPA;

(d) A description of all activities relating to Remedial Action Construction that are scheduled for the next six weeks;

(e) An updated Remedial Action Construction Schedule, together with information regarding percentage of completion, delays encountered or anticipated that may affect the future schedule for implementation of the Work, and a description of efforts made to mitigate those delays or anticipated delays;

(f) A description of any modifications to the work plans or other schedules that Settling Defendants have proposed or that have been approved by EPA; and

(g) A description of all activities undertaken in support of the CIP during the reporting period and those to be undertaken in the next six weeks.

6.2 **Notice of Progress Report Schedule Changes**. If the schedule for any activity described in the Progress Reports, including activities required to be described under ¶ 6.1(d), changes, Settling Defendants shall notify EPA of such change at least seven days before performance of the activity.

7. DELIVERABLES

7.1 **Applicability**. Settling Defendants shall submit deliverables for EPA approval or for EPA comment as specified in this SOW. If neither is specified, the deliverable does not require EPA's approval or comment. Paragraphs 7.2 (In Writing) through 7.4 (Technical Specifications) apply to all deliverables. Paragraph 7.5 (Certification) applies to any deliverable that is required to be certified. Paragraph 7.6 (Approval of Deliverables) applies to any deliverable that is required to be submitted for EPA approval.

7.2 **In Writing**. As provided in ¶ 66 of the Decree, all deliverables under this SOW must be in writing unless otherwise specified.

7.3 **General Requirements for Deliverables.** All deliverables must be submitted by the deadlines in the Remedial Action Schedule, as applicable. Settling Defendants shall submit all deliverables to EPA in electronic form. Technical specifications for sampling and monitoring data and spatial data are addressed in ¶ 7.4. All other deliverables shall be submitted to EPA in the electronic form specified by the EPA Project Coordinator. If any deliverable includes maps, drawings, or other exhibits that are larger than 8.5" by 11", Settling Defendants shall also provide EPA with paper copies of such exhibits.

7.4 **Technical Specifications**

(a) Sampling and monitoring data should be submitted in standard regional Electronic Data Deliverable ("EDD") format. Other delivery methods may be allowed if electronic direct submission presents a significant burden or as technology changes.

(b) Spatial data, including spatially-referenced data and geospatial data, should be submitted: (1) in the ESRI File Geodatabase format; and (2) as unprojected geographic coordinates in decimal degree format using North American Datum 1983 ("NAD83") or World Geodetic System 1984 ("WGS84") as the datum. If applicable, submissions should include the collection method(s). Projected coordinates may optionally be included but must be documented. Spatial data should be accompanied by metadata, and such metadata should be compliant with the Federal Geographic Data Committee ("FGDC") Content Standard for Digital Geospatial Metadata and its EPA profile, the EPA Geospatial Metadata Technical Specification. An add-on metadata editor for ESRI software, the EPA Metadata Editor ("EME"), complies with these FGDC and EPA metadata requirements and is available at https://edg.epa.gov/EME/.

(c) Each file must include an attribute name for each site unit or sub-unit submitted. Consult https://www.epa.gov/geospatial/geospatial-policies-and-standards for any further available guidance on attribute identification and naming.

(d) Spatial data submitted by Settling Defendants does not, and is not intended to, define the boundaries of the Site.

7.5 **Certification**. All deliverables that require compliance with this paragraph must be signed by the Settling Defendants' Project Coordinator, or other responsible official of Settling Defendants, and must contain the following statement:

> I certify under penalty of law that this document and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and

complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information.

7.6 Approval of Deliverables

(a) **Initial Submissions**

(1) After review of any deliverable that is required to be submitted for EPA approval under the Decree or this SOW, EPA shall: (i) approve, in whole or in part, the submission; (ii) approve the submission upon specified conditions; (iii) disapprove, in whole or in part, the submission; or (iv) any combination of the foregoing.

(2) EPA also may modify the initial submission to cure deficiencies in the submission if: (i) EPA determines that disapproving the submission and awaiting a resubmission would cause substantial disruption to the Work; or (ii) previous submission(s) have been disapproved due to material defects and the deficiencies in the initial submission under consideration indicate a bad faith lack of effort to submit an acceptable deliverable.

(b) **Resubmissions**. Upon receipt of a notice of disapproval under ¶ 7.6(a) (Initial Submissions), or if required by a notice of approval upon specified conditions under ¶ 7.6(a), Settling Defendants shall, within 30 days or such longer time as specified by EPA in such notice, correct the deficiencies and resubmit the deliverable for approval. After review of the resubmitted deliverable, EPA may: (1) approve, in whole or in part, the resubmission; (2) approve the resubmission upon specified conditions; (3) modify the resubmission; (4) disapprove, in whole or in part, the resubmission, requiring Settling Defendants to correct the deficiencies; or (5) any combination of the foregoing.

(c) **Implementation**. Upon approval, approval upon conditions, or modification by EPA under ¶ 7.6(a) (Initial Submissions) or ¶ 7.6(b) (Resubmissions), of any deliverable, or any portion thereof: (1) such deliverable, or portion thereof, will be incorporated into and enforceable under the Decree; and (2) Settling Defendants shall take any action required by such deliverable, or portion thereof. The implementation of any non-deficient portion of a deliverable submitted or resubmitted under ¶ 7.6(a) or ¶ 7.6(b) does not relieve Settling Defendants of any liability for stipulated penalties under Section XII (Stipulated Penalties) of the Decree.

(d) If: (1) an initially submitted deliverable contains a material defect and the conditions are met for modifying the deliverable under ¶ 7.6(a)(2); or (2) a resubmitted deliverable contains a material defect; then the material defect constitutes a lack of compliance for purposes of this Paragraph.

7.7 Supporting Deliverables. Settling Defendants shall submit each of the following supporting deliverables for EPA approval, except as specifically provided. Settling

Defendants shall develop the deliverables in accordance with all applicable regulations, guidances, and policies (see Section 11 (References)). Settling Defendants shall update each of these supporting deliverables as necessary or appropriate during the course of the Work, and/or as requested by EPA.

(a) **Health and Safety Plan ("HASP")**. The HASP describes all activities to be performed to protect on site personnel and area residents from physical, chemical, and all other hazards posed by the Work. Settling Defendants shall develop the HASP in accordance with EPA's *Emergency Responder Health and Safety Manual* and Occupational Safety and Health Administration ("OSHA") requirements under 29 C.F.R. §§ 1910 and 1926. The HASP covers Remedial Design activities and should be, as appropriate, updated to cover activities during the Remedial Action and updated to cover activities after Remedial Action completion. The HASP is included as an appendix to the RAWP/FDR. EPA does not approve the HASP but has reviewed it to ensure that all necessary elements are included and that the plan provides for the protection of human health and the environment. The HASP includes the Emergency Response Plan ("ERP"), which describes procedures to be used in the event of an accident or emergency at the Site, including but not limited to:

(1) Name of the person or entity responsible for responding in the event of an emergency incident;

(2) Plan and date(s) for meeting(s) with the local community, including local, State, and federal agencies involved in the cleanup, as well as local emergency squads and hospitals;

(3) Spill Prevention, Control, and Countermeasures ("SPCC") Plan (if applicable), consistent with the regulations under 40 C.F.R. part 112, describing measures to prevent, and contingency plans for, spills and discharges;

(4) Notification activities in accordance with ¶ 5.5(b) (Release Reporting) in the event of a release of hazardous substances requiring reporting under CERCLA § 103 or EPCRA § 304; and

(5) A description of all necessary actions to ensure compliance with ¶ 5.5 of the SOW in the event of an occurrence during the performance of the Work that causes or threatens a release of Waste Material from the Site that constitutes an emergency or may present an immediate threat to public health or welfare or the environment.

(b) **Quality Assurance Project Plan ("QAPP")**. The QAPP must include a detailed explanation of Settling Defendants' quality assurance, quality control, and chain of custody procedures for all treatability, design, compliance, and monitoring samples. Settling Defendants shall develop the QAPP in accordance with EPA Directive CIO 2105.1 (Environmental Information Quality Policy, 2021), the

most recent version of *Quality Management Systems for Environmental Information and Technology Programs – Requirements with Guidance for Use*, ASQ/ANSI E-4 (Feb. 2014, and *Guidance for Quality Assurance Project Plans*, EPA QA/G-5, EPA Office of Environmental Information (Dec. 2002). Settling Defendants shall collect, produce, and evaluate all environmental information at the Site in accordance with the approved QAPP. The QAPP is included as an appendix to the RAWP/FDR. The QAPP also includes the Field Sampling Plan ("FSP"), which addresses all sample collection activities. The QAPP is written so that a field sampling team unfamiliar with the project would be able to gather the samples and field information required. Settling Defendants developed the FSP portion of the QAPP in accordance with *Guidance for Conducting Remedial Investigations and Feasibility Studies*, EPA/540/G 89/004 (Oct. 1988).

(c) **Community Impacts Mitigation Plan ("CIMP")**. The CIMP describes all activities including any to address concerns of EJ and disadvantaged communities to be performed: (1) to reduce and manage the impacts from Remedial Action implementation (*e.g.*, air emissions, traffic, noise, odor, temporary or permanent relocation) to residential areas, schools, playgrounds, healthcare facilities, or recreational or impacted public areas within CSOU1 ("Community Areas") from and during remedy implementation, (2) to conduct monitoring in Community Areas of impacts from Remedial Action implementation, (3) to expeditiously communicate validated Remedial Action implementation monitoring data, (4) to make adjustments during Remedial Action implementation in order to further reduce and manage impacts from Remedial Action implementation to affected Community Areas, (5) to expeditiously restore community resources damaged during remediation such as roads and culverts, and (6) to mitigate the economic effects that the Remedial Action will have on the community by structuring remediation contracts to allow more local business participation. The CIMP contains information about impacts to Community Areas that is sufficient to assist EPA's Project Coordinator in performing the evaluations recommended under the *Superfund Community Involvement Handbook*, OLEM 9230.0-51 (March 2020), pp. 53-56. The CIMP is included as an appendix to the RAWP/FDR.

(d) **Construction Quality Assurance Plan ("CQAP") and Construction Quality Control Plan ("CQCP")**. The purpose of the CQAP is to describe planned and systemic activities that provide confidence that the Remedial Action construction will satisfy all plans, specifications, and related requirements, including quality objectives. The purpose of the CQCP is to describe the activities to verify that Remedial Action construction has satisfied all plans, specifications, and related requirements, including quality objectives. The CQAP/CQCP ("CQA/CP") is included as an appendix to the RAWP/FDR and:

(1) Identifies, and describe the responsibilities of, the organizations and personnel implementing the CQA/CP;

(2) Describes the Performance Standards required to be met to achieve Completion of the Remedial Action;

(3) Describes the activities to be performed: (i) to provide confidence that Performance Standards will be met; and (ii) to determine whether Performance Standards have been met;

(4) Describes verification activities, such as inspections, sampling, testing, monitoring, and production controls, under the CQA/CP;

(5) Describes industry standards and technical specifications used in implementing the CQA/CP;

(6) Describes procedures for tracking construction deficiencies from identification through corrective action;

(7) Describes procedures for documenting all CQA/CP activities; and

(8) Describes procedures for retention of documents and for final storage of documents.

(e) **Institutional Controls Implementation and Assurance Plan ("ICIAP")**. Settling Defendants' approved ICIAP is included as an appendix to the RAWP/FDR. The ICIAP describes plans to implement, maintain, monitor, and enforce the Institutional Controls ("ICs") at CSOU1. The ICIAP includes plans to commence implementing ICs as early as is feasible following the Effective Date of the Consent Decree. The ICIAP also includes procedures for effective and comprehensive review of implemented ICs, procedures for the solicitation of input from affected communities regarding the implementation of ICs, procedures to periodically review and determine if the ICs are having their intended effect, and if not, procedures for the development, approval and implementation of alternative, more effective ICs. Settling Defendants developed the ICIAP in accordance with *Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites*, OSWER 9355.0-89, EPA/540/R-09/001 (Dec. 2012), and *Institutional Controls: A Guide to Preparing Institutional Controls Implementation and Assurance Plans at Contaminated Sites*, OSWER 9200.0-77, EPA/540/R-09/02 (Dec. 2012). The ICIAP will be updated as necessary to include the following additional requirements:

(1) Locations of recorded real property interests (e.g., easements, covenants) including accurate mapping and geographic information system (GIS) coordinates of such interest; and

(2) Legal descriptions and available parcel maps.

(f) **Individual Site Work Plans ("ISWPs").** The Parties anticipate that additional ISWPs beyond those included in the RAWP/FDR will be submitted for EPA review and approval. Settling Defendants shall develop ISWPs for properties where new data indicates the need for Remedial Action. Each additional ISWP for residential properties will include a property layout map and associated soil

sampling results, identification of the yard components that are subject to removal/replacement, and identification of the depth and anticipated quantities of Remedial Action materials that will be removed. ISWPs for non-residential properties will include soil sampling results and identify subareas for Remedial Action.

7.8 Modification of Deliverables. Any revisions to a deliverable must be adopted in accordance with Section XIX of the Decree (Modifications to Decree).

8. SCHEDULES

8.1 Applicability and Revisions. All deliverables and tasks required under this SOW must be submitted or completed by the deadlines or within the time durations listed in the Remedial Design and Remedial Action Schedules set forth below. Settling Defendants may submit proposed revised Remedial Design Schedules or Remedial Action Schedules for EPA approval. Upon EPA's approval, the revised Remedial Design and/or Remedial Action Schedules supersede the Remedial Design and Remedial Action Schedules set forth below, and any previously-approved Remedial Design and/or Remedial Action Schedules.

8.2 Remedial Design Schedule

	Description of Deliverable, Task	**¶ Ref.**	**Deadline**
1	Final (100%) Remedial Design	4.2	The approved Remedial Action Work Plan/Final Design Report is attached to this SOW as Attachment 1.

8.3 Remedial Action Schedule

	Description of Deliverable / Task	¶ Ref.	Deadline
1	RAWP/FDR	5.1	The approved Remedial Action Work Plan/Final Design Report is attached to this SOW as Attachment 1.
2	Commence Implementation of ICIAP	7.7(e)	Effective Date of the Decree
3	Designate Project Coordinator/Supervising Contractor	3.1 and 3.2	Settling Defendants have selected and EPA has approved Luke Pokorny as the Project Coordinator and Woodard & Curran as the Supervising Contractor (see ¶ 3.3(e) above)
4	Award Remedial Action contract		120 days after EPA Notice of Authorization to Proceed with Remedial Action
5	Designate IQAT	5.2	30 days after the Effective Date of the Decree
6	Pre-Construction Conference	5.3(a)	60 days after the award of the Remedial Action contract
7	Start of Work		120 days after the Effective Date of the Decree
8	Completion of Construction		5 years after the Effective Date of the Decree
9	RA Completion Inspection	5.7(a)	30 days after Completion of Remedial Action
10	Remedial Action Report	5.7(b)	120 days after RA Completion Inspection
11	Work Completion Inspection	5.9(a)	30 days after completion of Work
12	Work Completion Report	5.9(b)	120 days after Work Completion Inspection
13	Periodic Review Support Plan	5.8	12 months after Start of Remedial Action Construction

9. STATE PARTICIPATION

9.1 **Copies**. Settling Defendants shall, at any time they send a deliverable to EPA, send a copy of such deliverable to MDEQ. EPA shall, at any time it sends a notice, authorization, approval, disapproval, or certification to Settling Defendants, send a copy of such document to MDEQ.

9.2 **Review and Comment**. MDEQ will have a reasonable opportunity for review and comment prior to:

(a) Any EPA notice to proceed under ¶ 3.3 (Procedures for Disapproval/Notice to Proceed);

(b) Any EPA approval or disapproval under ¶ 7.6 (Approval of Deliverables) of any deliverables that are required to be submitted for EPA approval; and

(c) Any disapproval of, or Certification of Remedial Action Completion under ¶ 5.7 (Certification of Remedial Action Completion), and any disapproval of, or Certification of Work Completion under ¶ 5.9 (Certification of Work Completion).

10. ATTACHMENTS

10.1 Attachment 1: the approved Remedial Action Work Plan/Final Design Report, including appendices.

11. REFERENCES

11.1 The following regulations and guidance documents, among others, apply to the Work. Any item for which a specific URL is not provided below is available on one of the three EPA web pages listed in ¶ 11.2:

(a) A Compendium of Superfund Field Operations Methods, OSWER 9355.0-14, EPA/540/P-87/001a (Aug. 1987).

(b) CERCLA Compliance with Other Laws Manual, Part I: Interim Final, OSWER 9234.1-01, EPA/540/G-89/006 (Aug. 1988).

(c) Guidance for Conducting Remedial Investigations and Feasibility Studies, OSWER 9355.3-01, EPA/540/G-89/004 (Oct. 1988).

(d) CERCLA Compliance with Other Laws Manual, Part II, OSWER 9234.1-02, EPA/540/G-89/009 (Aug. 1989).

(e) Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties, OSWER 9355.5-01, EPA/540/G90/001 (Apr.1990).

(f) Guidance on Expediting Remedial Design and Remedial Actions, OSWER 9355.5-02, EPA/540/G-90/006 (Aug. 1990).

(g) Guide to Management of Investigation-Derived Wastes, OSWER 9345.3-03FS (Jan. 1992).

(h) Permits and Permit Equivalency Processes for CERCLA On-Site Response Actions, OSWER 9355.7-03 (Feb. 1992).

(i) Guidance for Conducting Treatability Studies under CERCLA, OSWER 9380.3-10, EPA/540/R-92/071A (Nov. 1992).

(j) National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, 40 C.F.R. part 300 (Oct. 1994).

(k) Guidance for Scoping the Remedial Design, OSWER 9355.0-43, EPA/540/R-95/025 (Mar. 1995).

(l) Remedial Design/Remedial Action Handbook, OSWER 9355.0-04B, EPA/540/R-95/059 (June 1995).

(m) EPA Guidance for Data Quality Assessment, Practical Methods for Data Analysis, QA/G-9, EPA/600/R-96/084 (July 2000).

(n) Comprehensive Five-year Review Guidance, OSWER 9355.7-03B-P, EPA/540-R-01-007 (June 2001).

(o) Guidance for Quality Assurance Project Plans, EPA QA/G-5, EPA Office of Environmental Information (Dec. 2002) https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5.

(p) Institutional Controls: Third-Party Beneficiary Rights in Proprietary Controls, OECA (Apr. 2004).

(q) EPA Guidance on Systematic Planning Using the Data Quality Objectives Process, QA/G-4, EPA/240/B-06/001 (Feb. 2006).

(r) EPA Requirements for Quality Management Plans, QA/R-2, EPA/240/B-01/002 (Mar. 2001, reissued May 2006).

(s) EPA National Geospatial Data Policy, CIO Policy Transmittal 05-002 (Aug. 2005), https://www.epa.gov/geospatial/epa-national-geospatial-data-policy.

(t) Principles for Greener Cleanups (Aug. 2009), https://www.epa.gov/greenercleanups/epa-principles-greener-cleanups.

(u) Close Out Procedures for National Priorities List Sites, OSWER 9320.2-22 (May 2011).

(v) Recommended Evaluation of Institutional Controls: Supplement to the "Comprehensive Five-Year Review Guidance," OSWER 9355.7-18 (Sep. 2011).

(w) Plan EJ 2014: Legal Tools, EPA Office of General Counsel (Dec. 2011), https://www.epa.gov/environmentaljustice/plan-ej-2014-legal-tools.

(x) Construction Specifications Institute's MasterFormat [**specify 2020 or a later edition**], available from the Construction Specifications Institute, http://www.csinet.org/masterformat.

(y) Updated Superfund Response and Settlement Approach for Sites Using the Superfund Alternative Approach, OSWER 9200.2-125 (Sep. 2012)

(z) Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites, OSWER 9355.0-89, EPA/540/R-09/001 (Dec. 2012), https://semspub.epa.gov/work/HQ/175446.pdf.

(aa) Institutional Controls: A Guide to Preparing Institutional Controls Implementation and Assurance Plans at Contaminated Sites, OSWER 9200.0-77, EPA/540/R-09/02 (Dec. 2012), https://semspub.epa.gov/work/HQ/175449.pdf.

(bb) EPA's Emergency Responder Health and Safety Manual, OSWER 9285.3-12 (July 2005 and updates), https://www.epaosc.org/_HealthSafetyManual/manual-index.htm.

(cc) Broader Application of Remedial Design and Remedial Action Pilot Project Lessons Learned, OSWER 9200.2-129 (Feb. 2013).

(dd) Quality Management Systems for Environmental Information and Technology Programs -- Requirements with Guidance for Use, ASQ/ANSI E-4 (February 2014), available at https://webstore.ansi.org/.

(ee) Guidance for Management of Superfund Remedies in Post Construction, OLEM 9200.3-105 (Feb. 2017), https://www.epa.gov/superfund/superfund-post-construction-completion.

(ff) Advanced Monitoring Technologies and Approaches to Support Long-Term Stewardship (July 20, 2018), https://www.epa.gov/enforcement/use-advanced-monitoring-technologies-and-approaches-support-long-term-stewardship.

(gg) Superfund Community Involvement Handbook, OLEM 9230.0-51 (March 2020). More information on Superfund community involvement is available on the Agency's Superfund Community Involvement Tools and Resources web page at https://www.epa.gov/superfund/superfund-community-involvement-tools-and-resources.

(hh) EPA directive CIO 2105.1 (Environmental Information Quality Policy, 2021), https://www.epa.gov/sites/production/files/2021-04/documents/environmental_information_quality_policy.pdf.

11.2 A more complete list may be found on the following EPA web pages:

(a) Laws, Policy, and Guidance at https://www.epa.gov/superfund/superfund-policy-guidance-and-laws;

(b) Search Superfund Documents at https://www.epa.gov/superfund/search-superfund-documents; and

(c) Test Methods Collections at: https://www.epa.gov/measurements/collection-methods.

11.3 For any regulation or guidance referenced in the Decree or SOW, the reference will be read to include any subsequent modification, amendment, or replacement of such regulation or guidance. Such modifications, amendments, or replacements apply to the Work only after Settling Defendants receive notification from EPA of the modification, amendment, or replacement.

Attachment 1

Remedial Action Work Plan/Final Design Report

ACM SMELTER & REFINERY SITE OU1 COMMUNITY SOILS

Final Remedial Action Work Plan / Final Design Report

Prepared for:

Atlantic Richfield Company

317 Anaconda Road

Butte, Montana 59701

Prepared by:

Woodard & Curran

601 Riverside Drive South

Great Falls, Montana 59405



0231336

Atlantic Richfield Company

July 2023

Woodard & Curran

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Revision Summary

Revision No.	Author	Version	Description	Date
Rev 0	Woodard & Curran	Draft	Issued for Agency Review	October 12, 2022
Rev 1	Woodard & Curran	Draft Final	Issued for Agency Review	March 17, 2023
Rev 2	Woodard & Curran	Revised Draft Final	Issued for Agency Review and Approval	May 8, 2023
Rev 3	Woodard & Curran	Final	Issued for Agency Approval	June 6, 2023
Rev 4	Woodard & Curran	Final	Final Edit, Issued for Agency Approval	July 13, 2023

List of Acronyms

ACM	Anaconda Copper Mining Company
AOC	Administrative Settlement Agreement and Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirement
ARC	Atlantic Richfield Company
BMP	Best Management Practice
BNSF	Burlington Northern Santa Fe
CCR	Construction Completion Report
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CI	Community Involvement
CIP	Community Involvement Plan
COC	Contaminant of Concern
COI	Contaminant of Interest
COPC	Contaminant of Potential Concern
CQAP	Construction Quality Assurance Plan
CQCP	Construction Quality Control Plan
CSAOI	Community Soils Area of Interest
CSOU1	OU1 Community Soils
DWA	Depth-Weighted-Average
ECDR	Electric City Dirt Riders
EPA	U.S. Environmental Protection Agency
FS	Feasibility Study
GIS	Geographic Information System
GPS	Global Positioning System
GRA	General Response Action
HASP	Health and Safety Plan
HHRA	Human Health Risk Assessment
IC	Institutional Control
ICIAP	Institutional Controls Implementation and Assurance Plan
IQAT	Independent Quality Assurance Team
ISWP	Individual Site Work Plan
µg/dL	micrograms per deciliter
MDEQ	Montana Department of Environmental Quality
mg/kg	milligrams per kilogram
NAAQS	National Ambient Air Quality Standards
NCP	National Oil and Hazardous Substances Pollution Continency Plan
NOA	Northern Outlying Area
NTE	Not to Exceed
OUs	Operable Units
OU1	Operable Unit 1
OU2	Operable Unit 2
OU3	Operable Unit 3
PEL	Permissible Exposure Limit
PII	Personally Identifiable Information

PRG	Preliminary Remediation Goal
PRSP	Periodic Review Support Plan
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RA	Remedial Action
RAO	Remedial Action Objective
RAWP/FDR	Remedial Action Work Plan/Final Design Report
RCOU1	Railroad Corridor (of OU1)
RD/RA	Remedial Design/Remedial Action
RI	Remedial Investigation
ROD	Record of Decision
sf	square feet
SHPO	State Historic Preservation Officer
SOA	Southern Outlying Area
SOW	Statement of Work
TSP	Total Suspended Particles
UAO	Unilateral Administrative Order

1. INTRODUCTION

This Remedial Action Work Plan/Final Design Report (RAWP/FDR) describes the scope of the remedy, the basis of the design, and the technical approach for implementation of the selected remedy for the Community Soils Portion of Operable Unit 1 (OU1) of the Anaconda Copper Mining Company (ACM) Smelter and Refinery Superfund Site (Site) in and near Black Eagle, Cascade County, Montana. This RAWP/FDR was developed by Atlantic Richfield Company (ARC) and includes remedial action activities identified and described in Section CS 12 of the OU1 Record of Decision (ROD) (EPA, 2021).

In 2021, the U.S. Environmental Protection Agency (EPA) and the Montana Department of Environmental Quality (MDEQ) (collectively, the Agencies) issued the OU1 ROD (EPA, 2021) which presents the selected remedy for the Community Soils Portion of OU1 (CSOU1). ARC is conducting the Remedial Design/Remedial Action (RD/RA) for CSOU1 pursuant to and in accordance with the Consent Decree for the Community Soils Portion of OU1 of the Site and associated Statement of Work (SOW) (EPA, 2023). The RD/RA for CSOU1 addresses arsenic and lead contamination in soils in residential and non-residential areas.

As depicted on Figure 1, OU1 is subdivided into the following areas:

- Northern Outlying Area;
- Northern Community Soils Area of Interest;
- Southern Community Soils Area of Interest;
- Railroad Corridor (RCOU1); and
- Southern Outlying Area.

The RCOU1 portion of OU1 is excluded from, and therefore not addressed under, the CSOU1 Consent Decree, the SOW, or this RAWP/FDR.

Environmental data were collected in the Northern Community Soils Area of Interest and the Southern Community Soils Area of Interest (collectively, the Community Soils Areas of Interest, CSAOIs), and the Northern Outlying Area (NOA) and the Southern Outlying Area (SOA) as part of the OU1 Remedial Investigation (RI) (Formation, 2015).

Residential soil investigation activities included collecting soil samples at 422 residential properties, which consisted of yard component sampling from four separate depth intervals (0 to 2, 2 to 6, 6 to 12, and 12 to 18 inches) for a total of nearly 8,000 samples. One four-point composite sample was collected per individual yard area (i.e., front yard, back yard) if the yard surface area was less than or equal to 625 square feet (sf) (e.g., 25 x 25 feet). If the yard area exceeded 625 sf, additional subsamples were collected to meet the sample collection density of one per 625 sf specified in the Agency approved Black Eagle Residential Soils Sampling and Analysis Plan (Pioneer, 2011) and the RI Sampling and Analysis Plan (Formation, 2013). For all other residential areas (i.e., flower garden, rock garden, vegetable garden, earthen driveway, and play area), a minimum of two subsamples were collected, regardless of surface area. All subsamples were combined into a single composite sample representing each individual yard component and depth interval. A four-point composite sample was collected from within the drip zone of each property. The drip zone subsample locations were situated between 6 and 30 inches from the exterior wall of the house and near the mid-point of each side of the house.

Non-residential properties (e.g., commercial, agricultural, recreational, and vacant land) in the CSAOIs and Outlying Areas were sampled at the same depth intervals as the residential properties, for a total of 756 additional samples. The sampling density, as specified in the RI Sampling and Analysis Plan (Formation, 2013), was based on the size of the non-residential property and the transport pathway. For small properties within the Southern CSAOI, two to four five-point composite soil samples were collected for each property. For larger properties within the Northern CSAOI, composite soil samples were collected on a 100 x 100-foot grid. For properties in the NOA, composite samples were collected on a 400 x 400-foot grid aligned in the primary wind direction (SW-NE) from the stack. Five-point composite soil samples were collected at each sample location—one subsample from the center and the other four subsamples approximately 25 feet from the center point in four divergent directions.

Soil samples were analyzed for the Contaminants of Interest (COIs) identified by EPA for the OU1 RI (i.e., antimony, arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, silver, and zinc). Both arsenic and lead in residential soil were reported at concentrations that exceeded human health risk-based screening levels for residential soil at various depths. A baseline Human Health Risk Assessment (HHRA) was conducted to determine if arsenic and lead in soil might be harmful to people living, working, and recreating within OU1. Potential risk levels were estimated, and risk-based Preliminary Remediation Goals (PRGs) were calculated for each exposure scenario (Ramboll Environ, 2016). Areas of concern were identified as part of the Feasibility Study (FS), and remedial alternatives were developed and evaluated to address impacted soil in these areas (Pioneer and Formation, 2017).

Based on Agency review of the remedial alternatives evaluated in the OU1 FS, and public comment on the Proposed Plan (EPA, 2019), the EPA identified the preferred alternative for cleanup. The EPA issued the OU1 ROD (EPA, 2021) in 2021 which presents the selected remedy for the CSAOIs and NOA of OU1 (Pioneer and Formation, 2017). The Scope of the Remedy does not include RA activities in the SOA or the western portion of the NOA (with the exception of ten properties in the western portion of the NOA that will be evaluated for residential use and addressed under this RAWP/FDR if reconnaissance confirms the presence of an occupied residential structure). The western portion of the NOA includes areas west of Black Eagle Road, while the eastern portion of the NOA includes areas east of Black Eagle Road. The selected remedy involves removing and replacing impacted soil from residential and undeveloped properties in and near Black Eagle as described in Section 2 of this RAWP/FDR. The remedial approach and the components of the RD are discussed in greater detail in Sections 3 and 5 of this RAWP/FDR.

This RAWP/FDR summarizes arsenic and lead soil sampling analytical results, data gaps, and the RA design components. These RA design components are applicable to properties in the CSAOIs and portions of the NOA located within OU1 (collectively known as, OU1 Community Soils or CSOU1). Appendix A provides a map that shows the boundary of the CSOU1 area.

1.1 Purpose and Scope

The purpose of this RAWP/FDR is to present the components of the remedy necessary to successfully implement the RA for CSOU1. The work described in this RAWP/FDR implements the remedy for the residential and non-residential soils necessary to provide for protection of human health and the environment in a manner consistent with the OU1 ROD, the Consent Decree, and the SOW. The designs described herein address the following specific elements of the SOW (EPA, 2023):

- RD implementation;

- RA management roles and responsibilities;
- Remedial construction, operations, and post-construction monitoring and maintenance;
- Sampling and analysis plan for data gaps;
- RA construction schedule;
- Permitting requirements;
- RA decision process including landowner access and communications;
- Health and Safety Plan (HASP);
- Soil or aggregate covers and other remedial measures for specified soils within CSOU1;
- Greener cleanup measures to mitigate environmental impacts during construction;
- Monitoring and control measures to protect human health and the environment;
- Photographic documentation of the RA; and
- Quality Assurance/Quality Control (QA/QC) planning for data collection and construction remedy implementation.

In the event of conflict between this RAWP/FDR and the Consent Decree and/or the SOW, the Consent Decree and/or the SOW shall control.

1.2 Site Location and Description

The Site is located on the north bank of the Missouri River and includes the unincorporated community of Black Eagle near Great Falls, Montana. Under the OU1 RI/FS Administrative Settlement Agreement and Order on Consent (AOC), EPA subdivided the Site into the following Operable Units (OUs) to manage the RI/FS process required under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA):

- OU1: CSAOIs, Outlying Areas, and RCOU1;
- Operable Unit 2 (OU2): Former Smelter and Refinery; and
- Operable Unit 3 (OU3): Missouri River adjacent to and downstream of OU2.

The CSAOIs, Outlying Areas, and RCOU1 within Black Eagle were assigned to OU1. RI/FS activities for the CSAOIs and Outlying Areas of OU1 were completed by ARC in accordance with the AOC (EPA, 2011). The RI and FS for the RCOU1 were conducted under a separate Unilateral Administrative Order (UAO) between Burlington Northern Santa Fe Railway Company (BNSF) and EPA.

As shown on Figure 1, CSOU1 includes the Northern CSAOI, the Southern CSAOI, and portions of the NOA. The SOA and the remaining portion of the NOA are also shown on Figure 1. This RAWP/FDR addresses both CSAOIs and the eastern portion of the NOA of OU1. The western portion of the NOA and the SOA are not subject to RA. However, ARC has identified ten properties in the western portion of the NOA that will be evaluated for residential use and addressed under this RAWP/FDR if reconnaissance confirms the presence of an occupied residential structure.

The CSAOIs are located on the north side of the Missouri River. The Southern CSAOI is located immediately west of the Former Smelter and Refinery, which is OU2 of the ACM Superfund Site (Figure 1). The Southern CSAOI is primarily residential and includes the eastern portion of the community of Black Eagle, which was built as a company town for the copper smelter starting in 1891. Homes in the older, central part of Black Eagle were generally constructed before 1920, and the majority of homes within OU1 were constructed prior to 1950. These homes are a mix of brick and wood-frame structures, typically set on 30-foot by 150-foot lots along avenues and 40-foot by 150-foot lots on streets (URS, 2007). The Northern CSAOI is located on the north side of the Former Smelter and Refinery and is predominantly undeveloped land with some commercial and residential properties intermixed.

The NOA is located north of the Missouri River and outside of the Great Falls city limits. The NOA includes the unincorporated areas of Cascade County that surround the CSAOIs and the Former Smelter and Refinery (*see* Figure 1). The NOA includes commercial, industrial, agricultural, and recreational properties, as well as undeveloped land and a few residential use properties. The primary recreational property in the NOA is the Electric City Dirt Riders (ECDR) off-road racetrack. The land use classification for OU1 is included on Figure 2.

1.3 Site History

The Great Falls Reduction Works operated as a copper smelter and refinery from approximately 1893 to 1917 and then primarily as a copper and zinc refinery until 1980. Specialty metals and copper and aluminum products were also produced. Emissions from the copper smelter were vented from a 186-foot-tall stack located on top of Indian Butte (ACM, 1943). In 1908, the original stack was replaced by a 506-foot-tall stack that was used from 1909 until the zinc plant closed in 1972. Demolition of the zinc plant facilities began in 1973. After closure of the facility in 1980, large-scale demolition, salvage, and reclamation activities were performed in the 1980s and 1990s (Anderson, 2010). The COIs identified for the OU1 RI (Formation, 2015) were metals and metalloids potentially associated with historical smelting and refining operations.

1.4 Feasibility Study Remedy Evaluation Process

The National Oil and Hazardous Substances Pollution Continency Plan (NCP), Section 300.430(e) requires that the remedial alternative development process begin with development of Remedial Action Objectives (RAOs), identification of General Response Actions (GRAs) that address RAOs, and screening of applicable remedial technologies (EPA, 1990). The remedy evaluation process provides the basis for selecting a remedy that is protective of human health and the environment. Applicable or Relevant and Appropriate Requirements (ARARs) are addressed as part of the remedy evaluation process to ensure all ARARs are met (or waived) upon completion of remedial action. Engineering controls and/or treatment technologies may be combined with institutional controls (ICs) to develop remedial alternatives. ICs are non-engineering mechanisms that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy. Remedial alternatives developed for the CSOU1 use both engineering controls and ICs (Pioneer and Formation, 2017).

1.5 Remedial Action Objectives

Based on the findings of the OU1 RI and HHRA, EPA developed the following RAOs for the CSOU1 (EPA, 2021):

- Achieve an excess cancer risk no greater than 1 in 100,000 or non-cancer hazard index no greater than 1, whichever is more stringent; and
- Achieve a probability of less than 5 percent that an individual child would have a blood lead level exceeding 5 micrograms per deciliter (µg/dL).

The selected remedy in the OU1 ROD for the CSOU1 is Alternative 4 – Soil Removal and Replacement (Component-Specific Not to Exceed /Risk-based Remedial Approach) with some modifications. The remedial approach developed to achieve the cleanup levels is summarized in Section 2 of this RAWP/FDR. Sections 1 and 2 of this RAWP/FDR comprise the design criteria report as described in the *Remedial Design/Remedial Action Handbook* (EPA, 1995).

1.6 Document Organization

This RAWP/FDR is Attachment 1 to the SOW. In addition to the introduction, this RAWP/FDR consists of the following sections:

- Section 2 – Selected Remedy,
- Section 3 – Basis of Design,
- Section 4 – Project Management and Communications,
- Section 5 – Final Design Report,
- Section 6 – Reporting and Record Keeping,
- Section 7 – Remedial Action Schedule, and
- Section 8 – References.

All tables and figures are located at the end of the document. Supporting information, design criteria, and supporting deliverables required by the SOW are provided in the following appendices:

- Appendix A – Map of CSOU1 Boundary,
- Appendix B – [blank],
- Appendix C – Quality Assurance Project Plan,
- Appendix D – Construction Quality Assurance Plan and Construction Quality Control Plan,
- Appendix E – Individual Site Work Plans, Landowner Access Agreement and Data Notification Letter (Examples), and Statement of Completion (Example),
- Appendix F – OU1 Type A Cover Soil Sampling Results,
- Appendix G – Standard Drawings,
- Appendix H – Technical Specifications,
- Appendix I – Health and Safety Plan,
- Appendix J –Institutional Control Implementation and Assurance Plan, and
- Appendix K – Community Impacts Mitigation Plan.

2. SELECTED REMEDY

The following summarizes the major components of residential and non-residential RA from the OU1 ROD (EPA, 2021):

Major components of the remedy to address current residential soils in the CSOU1 include:

- Step 1 – Remove soils in any yard component exceeding the Not to Exceed (NTE) action level of 250 milligrams per kilogram (mg/kg) arsenic and 400 mg/kg lead to a maximum depth of 18 inches (maximum 24 inches in gardens).
- Step 2 – Calculate the residual risk that may be present after Step 1 and remove any additional soil to achieve a yard average concentration, in the top 6 inches, less than 54 mg/kg arsenic and 281 mg/kg lead.

Major components of the remedy for current non-residential soils in the CSOU1 include:

- Confirm that the property average soil concentration, in the top 6 inches, is below risk-based action levels for the current non-residential land use or remediate soils to achieve the risk-based action levels for current non-residential land use in the top 6 inches.
- To address a potential land use change to residential, one of the following must be completed for properties where such a change in use could be reasonably anticipated:
    - Confirm that the property-specific 0 to 12 inch depth-weighted-average (DWA) soil concentration meets the RAOs for residential soils, or
    - Place ICs on the property, including, but not limited to, restricting future residential use or providing for additional remediation at the time of residential redevelopment, or
    - Remediate soils to further reduce soil concentrations to achieve a property average concentration in the top 12 inches that meets the RAOs for residential soils.

Excavated materials removed from residential and non-residential properties during RA will be consolidated within OU2. The consolidated materials will be addressed as part of the OU2 remedy. If needed, clean cover materials, either soil or aggregate, will be used to backfill residential areas disturbed during RA activities and will be procured and then stockpiled within OU2. Materials (e.g., soil, aggregate, sod, etc.) will be sourced from local vendors when feasible.

3. BASIS OF DESIGN

The OU1 RI and FS Reports (Formation, 2015); (Pioneer and Formation, 2017) fulfill the following general objectives:

- Determine the nature and extent of contamination and any threat to the public health, welfare, or the environment caused by the release or threatened release of hazardous substances, pollutants, or contaminants at or from the CSAOIs and Outlying Areas by conducting the RI; and
- Identify and evaluate alternatives for RA to prevent, mitigate, or otherwise respond to or remedy any release or threatened release of hazardous substances, pollutants, or contaminants at or from the CSAOIs and Outlying Areas by conducting the FS.

The residential and non-residential soil sampling results from the OU1 RI and the remedial alternative developed in the OU1 FS and identified by EPA as the selected remedy to mitigate contaminants in soil are the basis of design and are summarized in this Section. Data gaps are also evaluated, and additional soil sampling is proposed where applicable.

3.1 Remedial Investigation Results Summary

This Section presents a summary of the OU1 RI findings specific to CSOU1 from the RI Report (Formation, 2015) and the OU1 ROD (EPA, 2021). Additional details are presented in the RI Report.

The OU1 ROD summarizes the investigative findings and the nature and extent of arsenic and lead in soil from the RI Report as follows:

> Environmental data were collected in the CSAOIs and Outlying Areas from 2011 through 2013 as part of the OU1 RI. Environmental samples included soil samples from residential and non-residential locations in the CSAOIs and Outlying Areas, groundwater from water supply wells, surface water and sediment from the Black Eagle and ECDR drainages and storm water culverts, and indoor dust samples from homes in the CSAOIs. In addition, exterior paint tests for lead were conducted on selected homes in the CSAOIs. The soil investigation involved collecting soil samples from four separate depth intervals (0 to 2, 2 to 6, 6 to 12, and 12 to 18 inches) at 422 residential properties (nearly 8,000 samples total), as well as from multiple properties with diverse non-residential uses (e.g., commercial, agricultural, recreational, and vacant land) in both the CSAOIs and Outlying Areas (an additional 756 samples).
>
> Environmental samples were analyzed for some or all of the 14 COIs (antimony, arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, silver, and zinc) identified by EPA for the OU1 RI. Chemical data collected throughout OU1 were analyzed to identify the Contaminants of Potential Concern (COPCs) for each environmental media and describe the spatial distribution of COPCs in each of the media investigated. Arsenic was identified as a COPC in soil, sediment, and surface water. Lead was identified as a COPC in soil and surface water. No contaminants of interest were identified as COPCs in groundwater/drinking water.

> Arsenic and lead were identified as the Contaminants of Concern (COCs) in residential soil and were reported at concentrations that exceeded risk-based screening levels for residential soil. Arsenic concentrations exceeded the risk-based screening level of 0.61 mg/kg in nearly all the residential soil samples. The majority of lead concentrations in residential soil were less than the risk-based screening level of 400 mg/kg. Arsenic and lead concentrations in non-residential soil also exceeded risk-based screening levels. Arsenic concentrations were higher than the screening level of 0.61 mg/kg at all locations in the non-residential areas sampled in OU1. Lead concentrations were higher than the screening level of 400 mg/kg at some Outlying Area sample locations.

OU1 ROD, § 5.6.

During the OU1 RI, residential attics were sampled and analyzed to determine if exposure to attic dust could result in unacceptable risk levels for people living, working, and recreating in the CSAOIs. The data suggest impacted attic dust did not exceed levels of potential concern for CSAOI residents (EPA, 2021). The spatial distribution of arsenic and lead in residential soil is consistent with historical air emissions originating from the former facility and generally correspond to the spatial distribution of older homes (pre-1920), where undisturbed soil would have accumulated the greatest load from historical smelter emissions (Formation, 2015). Fill material of undetermined origin, described as "ash", also may contribute locally to arsenic found in yard soil at some of the properties sampled. Elevated lead concentrations in soil may be related to historical use of lead-based paint on the exteriors of homes and/or other historical sources of lead in the community (e.g., leaded gasoline emissions). Lead-based paint was banned for residential use in 1978; however, most of the homes in Black Eagle were built before this date. Given the age of housing stock within Black Eagle (1891-1950), it was expected that lead-based paint had been and/or was still present on the exteriors of homes and other structures in residential areas. Lead-based paint was confirmed to be present on a total of 30 percent of the exterior painted surfaces tested during the RI.

The spatial distribution of arsenic and lead in non-residential soil generally is consistent with aerial deposition of historical air emissions originating from the facility (Formation, 2015). Arsenic and lead were found at relatively higher concentrations in soil in certain non-residential properties, including: the ECDR property just east of the former facility, vacant land north of the former facility where bricks and other debris were observed in soil, and vacant land built upon fill materials along RCOU1 that borders the south end of Black Eagle. Contributions from sources other than historical air emissions, including fill and construction materials from other locations and/or the Former Smelter and Refinery property may be the source of the higher metals concentrations observed in OU1 non-residential soil.

3.2 Selected Remedy – Component-Specific NTE / Risk-Based Remedial Approach

As noted earlier, the OU1 FS provided a detailed analysis of four remedial alternatives for the CSOU1. Alternative 4 – Soil Removal and Replacement (Component-Specific NTE/Risk-Based Remedial Approach) with some modifications was identified by EPA as the selected remedy and is summarized in this Section. Residential and Non-Residential RA decision processes are described in further detail in Section 5.

3.2.1 Approach for RA (Residential)

The selected remedy implements a two-step approach using component-specific NTE and risk-based analysis to address risk levels on a property-specific basis. For the 179 residential properties for which Individual Site Work Plans (ISWPs) already have been prepared and approved by EPA (see Appendix E to

this RAWP/FDR), RA will be implemented in accordance with those ISWPs. For properties where additional sampling is required and access is granted, ISWPs will be prepared for EPA review and approval as necessary following sampling data analysis.

Analysis of soil data collected as part of the OU1 RI showed that RA is required at approximately 179 residential properties in the CSOU1. These properties are identified in Table 1 and shown on Figure 3. The orange shading of analytical sampling results in Table 1 identifies the samples where the NTE values for arsenic and/or lead were exceeded. The residential RA decision process is shown on Figure 4.

The selected remedy as described in the OU1 ROD consists of two decision steps for RA at residential properties: Step 1 and Step 2 (two-step remedy) (EPA, 2021). Each residential ISWP shows or will show the yard components and depths that require removal for that specific property. The following summarizes the residential RA approach from the OU1 ROD (EPA, 2021):

- The initial decision step is to employ NTE soil concentrations for arsenic (NTE = 250 mg/kg) and lead (NTE = 400 mg/kg) to address concerns regarding potential exposures to "hot spot" concentrations in yard components of a property (including locations of current and future play areas and gardens) at any of the depth intervals up to 18 inches (24 inches in gardens). This element of the RA addresses deeper soil intervals and thereby eliminates the need for intensive ICs to manage future soil excavation that could result in exposure to these deeper soils. For example, a property could include 1 or 2 yard components that have distinctly higher arsenic and/or lead concentrations than the property-specific average concentration. If an NTE concentration is exceeded in any component based on the arsenic or lead concentration, then the soil with the NTE exceedance(s) would be addressed by removing and replacing soil at that component to the depth necessary to eliminate the exceedance.
- The second decision step is to identify property-specific component averages that exceed the RAOs of 54 mg/kg arsenic and 281 mg/kg lead based in the top 6 inches following the NTE RA identified in the initial decision step.
- Property-specific risks that exceed RAOs would be subject to further evaluation, by yard component (e.g., front yard, back yard, earthen driveway). The surface soil with the highest concentration of arsenic and/or lead will be replaced in the highest concentration component or components to resolve the exceedance. If RA is planned, the ISWP will be developed to plan for implementation of the most effective RA to resolve the exceedance(s) (i.e., address both the 6 inch and 12 inch exceedances simultaneously where possible).

Table 1 identifies Step 1 and Step 2 component-specific RA for residential properties that have sample data. Table 1 first compares the arsenic and lead concentrations for each component interval to arsenic and lead NTEs. For example, the concentrations of arsenic for BE-001-BY in the 0 to 2 inch, 2 to 6 inch, 6 to 12 inch and 12 to 18 inch intervals are compared to the 250 mg/kg NTE. Similarly, the concentrations of lead for BE-001-BY in each interval is compared to the 400 mg/kg NTE. Where concentrations exceed either NTE, the table cell is highlighted orange. Those intervals highlighted orange, and any shallower interval in that component will be removed and replaced with approved Type A cover soil which has an average concentration of 28 mg/kg arsenic and 40 mg/kg lead. For BE-001-BY, the 0 to 2 inch interval exceeds the 400 mg/kg lead NTE. Because there will be no 0 to 2 inch removals, the 0 to 6 inch BE-001-BY soils will be removed and replaced with the approved Type A cover soil.

Table 1 then identifies the component arsenic and component lead concentrations in the 0 to 2 and 2 to 6 intervals after any Step 1 removals. For BE-001-BY the 0 to 2 and 2 to 6 inch intervals are to be removed in Step 1, therefore the average concentrations for cover/replacement soil (28 mg/kg arsenic and 40 mg/kg lead) are used in these columns for this component. Alternatively, for BE-001-BA, the original component arsenic and lead concentrations in the 0 to 2 and 2 to 6 intervals are used because those soils won't be removed. Steps 2A and 2B in Table 1 then compare the 0 to 6 inch DWA concentrations of arsenic and lead to the residential RAOs of 54 mg/kg arsenic and 281 mg/kg lead. The 0 to 6 inch DWA is an average over all property components. For example for BE-001, [1/3 times (0 to 2 inch arsenic concentration for all components summed) plus 2/3 times (2 to 6 inch arsenic concentration for all components summed)] divided by 6 total components will provide the 0 to 6 inch DWA over the entire property. If the DWA exceeds either of the RAOs, the table cell is highlighted in a light red and the property will require RA to resolve that exceedance. Steps 2A and 2B also identify when exceedances of RAOs occur, if this is a new property (Yes) which means that no Step 1 RA was identified for this property. With this approach, projected Step 1 and Step 2 RA can be determined for each property simultaneously before RA begins by using the known concentrations of arsenic and lead in the approved replacement Type A cover soil. The procured Type A cover soil is discussed further in Section 5.3.6.

3.2.2 Approach for RA (Non-Residential)

Table 2 presents a summary and evaluation of 55 non-residential properties, based upon currently available data, within CSOU1 and defines which properties require: no RA; RA for the top 6 inches to address current non-residential use risk; RA or ICs to address exceedances of residential RAOs in the top 12 inches for potential future conversion to residential or to restrict or prohibit that conversion for properties where such a conversion could be reasonably anticipated; or if the property requires additional soil analytical data or other property information to make a determination. Of the non-residential properties, 11 require no RA, 1 is identified for RA or ICs in order to meet residential RAOs, 9 are identified for RA (no ICs) to meet residential RAOs, and 34 are identified as requiring additional data (i.e., samples) or information (actual land use, buildings, etc.) in order to make a determination if RA or ICs are required. The 55 non-residential properties and associated categories are shown on Figure 5.

The non-residential RA decision process is shown on Figure 6. Non-residential properties (e.g., commercial, agricultural, recreational, etc.) are to be evaluated for RA based on the property-specific DWA arsenic and lead soil concentration, in the top 6 inches. If the property-specific DWA soil concentration in the top 6 inches is above risk-based action levels for the current non-residential use (e.g., 120 mg/kg arsenic and 1766 mg/kg lead for outdoor worker) then the property will be subject to RA.

In addition, non-residential properties that are not currently developed/used for commercial or industrial purposes (i.e., undeveloped, vacant lot) and therefore where a potential future conversion to residential use could be reasonably anticipated will be further evaluated for RA based on the property-specific DWA arsenic and lead soil concentrations in the top 12 inches by comparing to residential RAOs.

- If the 0 to 6 inch property-specific DWA exceeds risk-based action levels for the current use and the 0 to 12 inch property-specific DWA exceeds the RAO residential criteria (54 mg/kg arsenic or 281 mg/kg lead), then the property will be subject to RA to resolve the 0 to 6 inch exceedance. The 0 to 12 inch exceedance may be resolved by that RA, additional RA, or ICs may be implemented. The purpose of the RA and/or ICs for the top 12 inches is to address a potential future zoning change to residential or unlimited use. If RA is implemented, soils in the highest concentration subarea or subareas may be removed and/or replaced to the depth necessary to resolve the

exceedance(s) or tillage may be implemented to resolve the exceedance(s). Alternatively, ICs may be implemented. If RA is planned, the ISWP will be developed to plan for implementation of the most effective RA to resolve the exceedance(s) (i.e., address both the 6 inch and 12 inch exceedances simultaneously where possible).

- If the 0 to 6 inch property-specific DWA does not exceed the risk-based action levels but the 0 to 12 inch property-specific DWA does exceed the RAO residential criteria, then the 0 to 12 inch exceedance may be resolved by RA or application of ICs to address a future zoning/land use change.
- If neither the 0 to 6 inch property-specific DWA exceeds the risk-based action levels nor the 0 to 12 inch property-specific DWA exceeds the RAO residential criteria, then no further remedial action is required.

Tillage could be appropriate for certain large non-residential areas in the eastern portion of the NOA. Soil tilling involves mixing surface soil with underlying soil to achieve the RAO to depth of 12 inches and would be used for large properties in the NOA where soil removal is not practicable or may not be cost effective. Tilling the upper 12 inches of the soil horizon would reduce higher concentrations in the surface soil horizon by mixing with lower concentration subsurface soil to reduce the property-specific DWA. Monitoring soil arsenic and lead concentrations before and after tilling may be needed to ensure its effectiveness with respect to reducing soil arsenic and/or lead concentrations to levels that meet the RAOs. Procedures for confirmation sampling of non-residential properties where tillage was conducted are provided in the CSOU1 QAPP (Appendix C). The tilled soil would be revegetated by seeding to restore the vegetation at the property. Removal or tillage is not practicable or may not be cost effective for properties where arsenic or lead in soil occurs at depths greater than 12 inches.

ICs may be used for non-residential properties that: are not currently used for commercial or industrial purposes and where removal or tillage are not practicable, or property owners do not want RA implemented on their property but are amenable to ICs. Non-residential properties that are currently used for commercial or industrial purposes are not expected to need protection for conversion to future residential uses because changes in current zoning to allow such uses are not reasonably anticipated. . Additional information on the implementation of ICs is provided in the Institutional Controls Implementation and Assurance Plan (ICIAP) in Appendix J.

Non-residential properties were sampled using an Agency-approved grid system or by determining the number of samples necessary given the properties' location and size, as described in the OU1 RI Sampling and Analysis Plan (Formation, 2015). Non-residential properties in the Northern CSAOI were sampled using a 100 x 100-foot grid system. Five-point composite samples were taken from each grid (one subsample from the center and the other four subsamples approximately 25 feet from the center point in four divergent directions). Non-residential properties in the Southern CSAOI were sampled at a frequency of two to four composite samples per non-residential property rather than using grid sampling. Non-residential properties in the NOA were sampled using a 400 x 400-foot grid system with the same five-point composite sample procedure as used in the Northern CSAOI (Formation, 2015). Non-residential property ISWPs will be developed to show the extent of removal or tillage necessary for each property to meet the non-residential risk-based action levels and/or RAO criteria by removing the most contaminated areas.

The number of properties requiring RA may increase due to sampling of properties that were not sampled during the OU1 RI or properties that require additional sampling (Formation, 2015). These properties are described in the data gap analysis for non-residential soil in Section 3.2.4.

3.2.3 Data Gap Analysis Residential

Some properties were either not sampled during the OU1 RI and/or require additional soil sampling and analyses to determine whether RA is needed. The properties that require sampling in the CSOU1 are shown on Figure 7, included on Table 3, and will be addressed under the CSOU1 Quality Assurance Project Plan (QAPP) (Appendix C). Two previously sampled residential properties are missing data from one or more component depth interval(s), each and require supplemental sampling. These two properties are included on Figure 7, Table 3, and are also noted on Table 1.

As part of the OU1 RI, all residential yard components were sampled to depths of 18 inches. However, as described in the OU1 ROD, gardens are subject to removal to a maximum depth of 24 inches. Therefore, there is a data gap for the 18 to 24 inch depth interval for all garden yard components in the CSOU1.

The garden component soil analytical results gathered during the OU1 RI show relatively uniform distribution of arsenic and lead concentrations across the 0 to 18 inch depth interval in comparison to other yard components. To address the 18 to 24 inch depth interval data gap of garden components for properties sampled during the OU1 RI, the 12 to 18 inch depth interval data will be used to determine if removal to 24 inches is necessary. For example, if previously collected data show that a garden component exceeds the NTE level for lead or arsenic in the 12 to 18 inch depth interval, the component will be removed to a depth of 24 inches. If the 12 to 18 inch depth interval concentrations for lead and arsenic do not exceed the NTE level, then removal will stop at 12 inches. For additional data collected in garden components going forward under the CSOU1 QAPP, samples will be collected to 24 inches. Any garden component with lead or arsenic exceedances of the NTE value will be subject to removal to the deepest interval of NTE exceedance (i.e., 0 to 6 inch, 6 to 12 inch, 12 to 18 inch, or 18 to 24 inch depth intervals).

3.2.4 Data Gap Analysis Non-Residential

Many non-residential properties in the NOA and the CSAOIs were sampled as part of the OU1 RI. However, multiple properties were not sampled and there are insufficient data to determine whether RA is needed for these unsampled properties. There are approximately 46 acres of non-residential land in the NOA and CSAOIs that have not been sampled. Approximately 183 acres of non-residential land in the NOA and CSAOIs require additional information or additional samples to determine whether RA is needed. Properties that need to be sampled to fill the non-residential data gap are shown on Figure 7 and are included on Table 3. Additional sampling and analysis will be performed in these areas to determine the extent of contamination and the proposed RA, if necessary. Properties identified as requiring additional soil data will be addressed under the CSOU1 QAPP (Appendix C).

4. PROJECT MANAGEMENT AND COMMUNICATIONS

The organization chart and chain of communication for this RA are shown on Figure 8. The purpose of this Section is to provide guidance to efficiently manage the RA, including defining lines of authority, communication, project coordination, permitting and regulatory requirements, project meetings, and inspections. The following Subsections describe the roles and responsibilities of the organizations and personnel involved in the RA.

4.1 Lines of Authority, Communication and Coordination

The organizations involved in this CSOU1 RA include:

- EPA Region VIII;
- MDEQ;
- ARC;
- Landowners;
- Project Coordinator (ARC);
- Supervising Contractor;
- Independent Quality Assurance Team (IQAT); and
- Construction Subcontractor(s).

In accordance with the SOW, the Agencies will oversee and provide various approvals of the RA based on their field observations and inspections and review of reports submitted by ARC, which will include construction QA/QC results. The CSOU1 Construction Quality Assurance Plan (CQAP) and Construction Quality Control Plan (CQCP) are included as Appendix D. ARC will periodically provide QA/QC results and other information to EPA and MDEQ to keep them informed of the progress of the RA. Progress reports will be completed by ARC and submitted to the Agencies monthly as described in Section 6. The Agencies also will be responsible for reviewing project schedules and submittals, including the Construction Completion Report (CCR) and the RA Report submitted by ARC. EPA will address all communications to the ARC Project Coordinator or designated project representative.

ARC, or its designated project representative, will be responsible for providing construction management and verifying that the RA complies with the Performance Standards set forth in the OU1 ROD. ARC will manage the project to focus on attaining the objectives listed in Section 1. ARC and EPA will coordinate provision of all project-related communications to the Agencies, the public, and all other stakeholders. RA activities will be coordinated by ARC to adhere to the RA schedule and any modifications to the schedule approved by EPA.

As described in section 2 of the SOW, the ARC Community Involvement (CI) Coordinator's role will be defined in EPA's Community Involvement Plan (CIP), but is expected to include coordinating with EPA's CI Coordinator and providing support regarding EPA's CI activities, implementing public outreach educational programs, responding to the public's inquiries including requests for project information and data, and protecting any "Personally Identifiable Information" (PII) in accordance with EPA Policy 2151.0: Privacy Policy.

The IQAT will report directly to ARC and will provide ARC with technical assistance on the project by performing IQAT oversight of the Construction Subcontractor's work. The IQAT will evaluate the Subcontractor's compliance with this RAWP/FDR, and all applicable Performance Standards as described in *Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties* (EPA, 1990). The IQAT will approve the Statement of Completion form for each property, along with ARC and EPA, to confirm the work satisfied QA/QC requirements. Any deviations from this RAWP/FDR shall require the approval of both ARC and EPA.

The Supervising Contractor will be responsible for performing designated activities associated with the RA in accordance with this RAWP/FDR. The Supervising Contractor Project Coordinator will be responsible for communicating directly with the ARC Project Coordinator and/or IQAT Team Leader on issues and concerns regarding RA activities. The Supervising Contractor will be responsible for scheduling project activities with its Subcontractor's to complete certain work tasks in accordance with the RA Schedule. The Supervising Contractor must have sufficient technical expertise to supervise the Work and a quality assurance system that complies with the most recent version of *Quality Systems for Environmental Data and Technology Programs – Requirements with Guidance for Use* (ANSI, 2014). The Supervising Contractor shall designate a primary contact person as its Project Coordinator. This person shall have full authority to make all necessary field decisions and to direct the RA work.

The Design Engineer will provide technical assistance throughout the duration of the RA work. The Design Engineer shall verify the Construction Subcontractor's compliance with the Standard Drawings and Technical Specifications as detailed in Appendices G and H to this RAWP/FDR, respectively.

4.2 Project Permitting and Regulatory Requirements

All work associated with this RAWP/FDR for the CSOU1 RA is anticipated to be completed within the Site. Accordingly, pursuant to CERCLA Section 121(e)(1), and Section 300.400(e) of the NCP, no permitting will be required (EPA, 1990).

4.3 Project Meetings

A preconstruction meeting between representatives from ARC, EPA, MDEQ, the Supervising Contractor and the Construction Subcontractor will be scheduled before initiating any CSOU1 RA work. The purpose of the preconstruction meeting is to define all parties' respective responsibilities and the procedures to be used to complete the RA work as described in EPA's *Remedial Design/Remedial Action Handbook* (EPA, 1995) and this RAWP/FDR. Topics to be discussed at the meeting will include scheduling, critical milestone dates, submittal procedures, record keeping, health and safety procedures, and material and equipment delivery and storage procedures. In accordance with the SOW, during the RA work, periodic communications between ARC, EPA, MDEQ, the Supervising Contractor, and Construction Subcontractor will be ongoing to discuss any construction issues. The list of attendees and meeting minutes will be distributed to all parties.

Progress meetings will be held weekly during RA construction. The progress meeting agendas prepared by the Supervising Contractor generally will include: the status of work items initiated to date, scheduled work items for the following week, problems encountered and proposed solutions, any health and safety lessons learned that have arisen in the past week, and/or issues pertinent to work scheduled for the following week. In addition, the Supervising Contractor will distribute a list of attendees and prepare minutes for all meetings. The list of attendees and meeting minutes will be distributed to all parties.

4.4 Inspections

As described in the SOW, the Agencies will perform periodic inspections of the RA work described in this RAWP/FDR. Upon notification of any RA deficiencies, ARC will take the necessary steps to correct the deficiencies identified by EPA and MDEQ to comply with this RAWP/FDR.

ARC will schedule an inspection for EPA and MDEQ after all RA construction activities have been completed to review the construction of the remedy and whether the remedy is functioning properly and as designed. AR then will submit a Remedial Action CCR, for the purpose of obtaining EPA's approval that Remedial Action Construction is Complete.

ARC will schedule an inspection for EPA and MDEQ after all RA activities have been completed, including when all Performance Standards have been met. Following submittal of the RA Report, ARC will seek Certification of Remedial Action Completion from EPA.

5. FINAL DESIGN REPORT

5.1 Area of Remedial Action

CSOU1 RA activities will take place in the CSAOIs and the eastern portion of the NOA (*see* Figure 1). The eastern portion of the NOA is the area east of Black Eagle Road, whereas the western portion is the area west of Black Eagle Road.

As previously noted, the western portion of the NOA and the entire SOA are not subject to RA(with the exception of 10 properties located in the western portion of the NOA that will be evaluated for current residential use and addressed under this RAWP/FDR if reconnaissance confirms the presence of an occupied residential structure).

The eastern portion of the NOA consists mostly of agricultural land, with two exceptions. These exceptions are the Former Great Falls Municipal Landfill and the ECDR racetrack. The Former Great Falls Municipal Landfill was operated by the City of Great Falls on leased land. The current zoning of the property is exempt. The ECDR racetrack is owned by ECDR and the current land use is recreational. Future land use at both properties is not reasonably anticipated to change (EPA, 2021).

5.1.1 Residential RA Decision Process

The following presents a step-by-step description of the procedures for RA activities at residential properties within CSOU1 (*see* Figure 4). The first step in implementing the remedy at a particular property is to determine whether available soil analytical data are sufficient for RA decision-making for the property. Sampling of properties identified as requiring additional soil data collection will be addressed under the CSOU1 QAPP (Appendix C). After determining that available soil analytical data are sufficient for RA decision making for the property, RA will proceed as follows:

1. For properties where sufficient soil analytical data exist, the residential yard components (i.e., front yard, play area) will be (or have been) reviewed at depth intervals of 0 to 6 inches, 6 to 12 inches and 12 to 18 inches to determine if soil concentrations exceed residential NTEs of 250 mg/kg arsenic or 400 mg/kg lead for any intervals, and if any yard components require removal under Step 2 to meet the RAOs. This evaluation for available data is provided in Table 1.
2. Develop notification letters, landowner agreements, ISWPs, and other informational materials and mail to affected landowners.
3. After landowner agreements have been signed, and access has been granted, the Construction Subcontractor will perform the RA construction in accordance with the ISWP, this RAWP/FDR, and the Standard Drawings (Appendix G) and Technical Specifications (Appendix H). RA will be implemented in those yard components that exceed 250 mg/kg arsenic and/or 400 mg/kg lead (Step 1) or exceed the DWA of 54 mg/kg arsenic and 281 mg/kg lead in the 0 to 6 inch depth interval (Step 2). Soil components will be removed until the property average meets the RAOs. Landowners are expected to review the ISWP and notify ARC of any discrepancies between the yard component RA presented in the plan and RA construction. After notification of any changes, ARC personnel will investigate the property to determine if additional soil sampling is needed prior to commencing RA. Additional sampling procedures are discussed in the CSOU1 QAPP (Appendix C). If additional soil sampling is required, a revised ISWP will be generated to reflect modifications to the RA plan and re-distributed to the landowner for approval. If the layout of yard components or

structures has been modified by the landowner, but the existing data are determined to be representative of the soil, RA will commence according to the ISWP. For example: if a landowner had a shed on their property during the OU1 RI, and the shed was subsequently removed leaving unsampled soil exposed, ARC personnel will investigate the newly exposed soil to determine if additional sampling is necessary to characterize the soil. If the soil appears to be representative of the yard component where the shed was located, then the unsampled area where the shed was removed will be included in that yard component.

4. Impacted soil will be excavated, transported, and consolidated within OU2 as described in Section 5.3.7.
5. The yard component areas where material was excavated will be backfilled with EPA-approved Type A cover soil in accordance with the ISWP, Standard Drawings (Appendix G) and Technical Specifications (Appendix H). Sod, native seed, or aggregate will be placed on top of the backfill material according to the ISWP and as agreed upon with the landowner.
6. A Statement of Completion form will be completed for each property after RA is complete.

5.1.2 Non-Residential RA Decision Process

The following presents a step-by-step description of the procedures to be followed when conducting the RA activities for non-residential properties within the CSOU1 (*see* Figure 6). The first step in implementing the remedy at a particular property is to identify whether available soil analytical data are adequate for RA decision-making. Properties identified as requiring additional soil data will be addressed under the CSOU1 QAPP (Appendix C). After determining that available soil analytical data are sufficient for RA decision making for the property, RA will proceed as follows:

1. If the property is non-residential, and sufficient soil analytical data exist, the property specific average soil concentrations in the top 6 inches will be compared to the risk-based action levels for the current non-residential use (e.g., 120 mg/kg arsenic and 1766 mg/kg lead for outdoor worker). The property will be subject to RA if the risk-based action levels are exceeded.
2. In addition, if the non-residential property is not currently developed/used for commercial/industrial purposes and the property specific 0 to 12 inch DWA soil concentrations exceed the residential soil RAOs of 54 mg/kg arsenic and/or 281 mg/kg lead, then the property will be subject to RA in the top 12 inches. Alternatively, ICs may be implemented to address exceedances of residential RAOs in the top 12 inches.
3. Develop notification letters, landowner agreements, ISWPs, and other informational materials and mail to affected landowners.
4. Once landowner agreements have been signed, and access has been granted, perform the RA construction in accordance with the ISWP developed for the property, this RAWP/FDR, and the Standard Drawings (Appendix G) and Technical Specifications (Appendix H). For properties currently developed/used for non-residential purposes that exceed the applicable current use risk-based action levels, RA will consist of removing soil at the highest concentration subarea(s) to a depth of 6 inches to resolve the exceedance(s). For properties not currently developed/used for commercial or industrial purposes that exceed the residential RAO criteria, RA will consist of: removing soil at the highest concentration subarea(s) to the depth(s) necessary to resolve the exceedance; or mixing soils in the upper 12 inches by tillage to resolve the exceedance; or application of ICs to the property

restricting future use as residential property or tracking for sampling/RA as needed if land use is changed to residential in the future.

5. Excavate, transport, and consolidate impacted soil within OU2 (*see* Section 5.3.7).
6. Place native seed on all non-residential RA areas.
7. A Statement of Completion form will be completed for each property after RA is complete.

5.2 Landowner Communication

In accordance with Paragraph 12 of the Consent Decree, ARC will use best efforts to obtain signed access agreements from owners of each property in the CSOU1 where RA is required. Access agreements also will be submitted to landowners of properties that require soil sampling and analysis to determine if RA is required. Included in this agreement will be a copy of the ISWP developed for that particular property. This ISWP also will include the regulatory justification for RA (i.e., the elevated concentrations of arsenic and/or lead on the property). By signing the access agreement, the landowner agrees to the RA construction on their property and on the property boundaries and yard components or subareas shown on the ISWP. An example access agreement letter is provided in Appendix E, along with the ISWPs for the properties that require RA. If ARC is not able to obtain access to a property through best efforts, it will notify EPA and request EPA's assistance.

Upon completion of the RA work, each individual landowner will be encouraged to inspect the work completed on their property and then sign a Statement of Completion to acknowledge that the work was completed to their satisfaction and in accordance with the ISWP. The EPA Field Oversight representative and ARC Project Coordinator also will sign the Statement of Completion to assure all work was completed in accordance with the regulatory requirements.

5.3 Design of Project Components

Where defined in ISWPs, clean cover materials, either soil and/or aggregate will be used to backfill and regrade areas disturbed during RA activities. For residential properties, the extent of soil removal and soil or aggregate replacement will be determined by the depth of the soil removed in areas requiring RA. The minimum depth for soil removal will be 6 inches and the maximum depth will be 18 inches, except for existing garden areas where a maximum of 24 inches will be removed. For non-residential properties, soil may be removed to a depth of 6 or 12 inches or tilled to a depth needed to meet RAOs in the top 12 inches. In some cases, non-residential properties may not require replacement of removed soils and may only require regrading to blend with existing contours.

Yard components or subareas and removal depths specific to each individual property will be clearly defined in the ISWP provided to each landowner. As previously noted, ISWPs will be developed for specific areas requiring RA and will be provided to the EPA Field Oversight representative for review and approval prior to RA construction. Any modifications made to ISWPs during implementation of the RA will be approved by the EPA Field Oversight representative and captured (or documented) in as-built drawings. The final as-built ISWPs will be included in the RA CCR, as described in Section 6.1.1.

5.3.1 RA Implementation

A soil sampling map was created for each individual residential and non-residential property sampled during the OU1 RI. These maps show how each residential property was divided into individual components (i.e., front yard, back yard, garden, etc.), and the spatial data were used for CSOU1 RAWP/FDR design herein. All residential yard component locations were delineated in the field and surveyed and mapped using a resource-grade Global Positioning System (GPS) during the OU1 RI. The existing maps will be used to verify (or modify, as appropriate) the layout of each yard/parcel.

Each ISWP includes the following information (where applicable):

- Layout and surface area applicable to each individual component (e.g., front yard, back yard, earthen driveway, flower garden, vegetable garden, lawn area, landscaped area, alley, parking lot, drip zone, etc.);
- House footprint and location;
- Garage footprint location;
- Footprint and location of sidewalks, walkways, etc.;
- Footprint and location of miscellaneous structures (e.g., patios, concrete pads, sidewalks, decks, etc.);
- Any noticeably dissimilar soil material types or surface conditions (i.e., bare ground areas, locations of obvious imported fill materials, etc.);
- Soil sampling results applicable to each component at each depth interval;
- RA requirements (i.e., individual components subject to removal/replacement and associated depth interval); and
- RA material quantities (soil, sod, aggregate, etc.).

RA implementation will proceed as follows:

- A pre-construction walkthrough of the property to identify removal areas, underground utilities, and other construction considerations related to RA planning for the property. A description of requirements for notifying utility owners and locating utilities that may be affected by the RA is included as subsection 160.00 of the Technical Specifications (Appendix H). Appropriate construction equipment will be mobilized to the property.
- RA will commence by removing the components as shown in the ISWP to the corresponding depths. During excavation, all recorded surveyed markers, sidewalks, and impermeable components will be left undisturbed. As outlined in Table 4, soil around trees, shrubs, and hedges will be excavated to the design depth from the surrounding area to the plant drip line, and the excavation will be tapered to zero depth at the plant. Rooting areas will be hand excavated to protect the plant.

- Where defined in the ISWPs, approved Type A cover soil will be transported to the property and installed to adhere to the Technical Specifications (Appendix H). Cover soil will be applied over the exposed roots of trees, shrubs, and hedges and re-wetted as soon as possible (Table 4). Sod or other cover material will then be installed adhering to Technical Specifications.

- Construction equipment will be demobilized from the property.

During the RA process, photographic documentation will be recorded by the Supervising Contractor. Photographic documentation includes pre-RA photos, active construction RA photos, and post-RA photos for each property where RA takes place. Photos will be recorded and retained for use in the CCR.

Arsenic and lead soil sampling information and location/survey data, sample location maps, ISWPs, and as-built drawings will be maintained in ARC's Geographic Information System (GIS), which is the primary database for tracking, and future reference for, CSOU1 RA activities.

5.3.2 Soil Covers

Where identified in ISWPs, clean soil covers will minimize risk of human exposure and restore topography by replacing impacted soils. Soil covers and vegetative or aggregate caps will be placed as shown on the Standard Drawings (Appendix G). More details regarding the specifications for Type A cover soil, if additional cover soil needs to be procured, can be found in the Technical Specifications (Appendix H).

Backfill in lawn areas will not be compacted to a specific density and moisture content. Rather, soil will be rolled and slightly compacted using small, hand-operated equipment to achieve a smooth surface that matches the surrounding topography. The surfaces of backfilled areas will be hand raked in such a manner that they are suitable for sod placement (i.e., smooth, without abrupt edges, etc.). Sod or aggregate will then be placed over the backfilled area. If necessary, and as agreed upon with the landowner, or if the landowner elects to not maintain the sod cover, native seed may be used as an alternative vegetative cover in certain areas.

5.3.3 Backfill and Grading

Where identified in ISWPs, clean cover materials, either soil or aggregate, will be used to backfill and regrade areas disturbed during RA activities in a manner that will promote effective drainage. Backfill will be placed according to the Technical Specifications (Appendix H). Backfill areas will be regraded to match the surrounding topography with a maximum slope of approximately 5H:1V for most areas, or as agreed upon by ARC and the landowner. For large non-residential parcels, backfill will typically not be required and the excavated area will be graded to blend in with the existing topography before being seeded with native vegetation. A description of specific procedures for backfilling and grading is included as subsection 202.00 of the Technical Specifications (Appendix H).

5.3.4 Aggregate Covers

Areas such as walkways, driveways, and rock gardens may require aggregate cover. In areas receiving aggregate cover, deeper excavations may receive clean soil with aggregate installed on top with a minimum depth of 6 inches. Areas receiving soil backfill that are also receiving surface aggregate will be rolled and compacted to specific compaction requirements stated in the Technical Specifications (Appendix H) before the surface aggregate is installed. Compaction will be accomplished utilizing hand-operated equipment.

5.3.5 Revegetation

After placement and grading of backfill, or grading on non-residential properties, is completed, sod or native seeding will be installed. Vegetative cover is designed to minimize erosion, and therefore proper grading will be an integral part of the revegetation process. As outlined in Table 4, cover soil will be applied over the exposed roots of trees, shrubs, and hedges and re-wetted as soon as possible. Sod will be applied as shown in the Standard Drawings (Appendix G). A description of specific procedures for fertilizing and seeding backfilled areas is included as subsection 320.00 of the Technical Specifications (Appendix H).

5.3.6 Clean (Type A) Soil Stockpiles

ARC has procured approximately 16,000 cubic yards of Type A Cover Soil that meets all Technical Specifications for cover soil as described in Appendix H. The original source of the soil material was a 120-acre agriculture tract of land north of Black Eagle and stockpiled by Shumaker Trucking and Excavation Company. As noted earlier, EPA approved the use of this soil in a letter dated July 19, 2019 (*see* Appendix F). This cover soil was sampled, analyzed, and qualified for use as cover soil per the Technical Specifications for cover soil provided in Appendix H. These criteria included average concentrations below the acceptance criteria for arsenic, cadmium, copper, lead, and zinc. More information on this cover soil, including lab results, is provided in the OU1 Type A Cover Soil Sampling Results Memorandum in Appendix F (Woodard & Curran, 2019). This cover soil is stockpiled within OU2. If additional soil is required, additional commercial sources of clean soil will be procured.

5.3.7 Removed Soil Consolidation Areas

Removed soil from residential and non-residential properties will be consolidated within OU2 at the proposed location shown in Figure 1. Excess soil samples may also be consolidated or disposed with the removed soils within OU2 as needed. Appropriate Best Management Practices (BMPs) will be implemented to maintain the integrity of the soil stockpile/consolidation area. Silt fencing will be installed around the soil consolidation area to control sediment transport and additional run-on and run-off controls will be implemented if needed. Temporary seeding of the stockpile/consolidation area will be implemented as needed to prevent erosion and fugitive dust emissions.

5.3.8 Construction QA/QC

Construction QA/QC activities will be performed by the IQAT. The construction QA/QC components (removal depth, removal boundaries, replacement material compaction, sod installation, etc.) will be confirmed and verified on a property-specific basis by the IQAT. The EPA Field Oversight representative may periodically inspect any of the QA/QC components checked by the IQAT throughout the duration of the project to ensure the RA is completed according to the Performance Standards, Technical Specifications, and the CQAP and CQCP (Appendix D). The CQAP and CQCP and Technical Specifications (Appendix H) provide further information on QA/QC components and procedures.

5.3.9 Other Design Considerations

Other design considerations may include dealing with obstacles located in and around residential yards, such as those listed in Table 4. This table provides general recommendations for actions to be taken when obstacles are encountered.

No treatability studies are currently proposed for the removal/replacement RA. If alternate RA techniques are implemented or proposed, treatability studies will be completed as needed prior to any work occurring within CSOU1 as appropriate.

5.3.10 Construction Transportation and Disposal Plan

Residential and non-residential RA activities will require transport of excavated materials, borrow soil, sod, and construction equipment and materials through residential streets, county roads, and public highways in the Black Eagle and Great Falls communities. Transportation methods and routes will be determined by the Construction Subcontractor to maximize safety and efficiency. Proposed haul routes are subject to approval from ARC and EPA. All material transportation will require street legal haul trucks with United States Department of Transportation compliant commercial registrations.

Work zone access will be restricted to authorized personnel only. The Supervising Contractor will coordinate any necessary local road closures with Cascade County and the City of Great Falls. Appropriate traffic control signage will be posted on all transportation routes to inform and re-route traffic, as necessary. If necessary, flaggers will be used to control traffic in confined work areas. A Construction Transportation Plan, including anticipated transportation routes and associated traffic control, will be required from the Construction Subcontractor prior to implementing RA. The Construction Transportation Plan will be submitted to ARC and EPA for review and approval.

All removed materials generated during the CSOU1 RA will be consolidated within OU2.

5.3.11 Historic Preservation

A cultural resource inventory of OU1 was completed in September 2022. This survey included a review of the area in and around CSOU1. A total of 56 sites were identified during the cultural resource inventory (Metcalf, 2022). A cultural resource survey was performed for the OU1 area in 2015 and informed the 2022 inventory (Metcalf, 2015).

Below is a summary of findings from the report:

> "A files search was conducted on September 14, 2022, through the Montana State Historic Preservation Office (SHPO) to identify previous projects and known cultural resources in and near the OU1 study area (SHPO Project # 2022091402). The search encompassed the eight legal sections crossed by, or immediately adjacent to the study area boundary."
>
> "The following historic sites were identified in OU1 during the cultural resource inventory:
>
> - Rainbow-Ryan Road (historic road/trail);
> - One historic vehicular/foot bridge; and
> - One historic energy development site."

All identified historic preservation sites within CSOU1 will be avoided during RA. It is anticipated that no additional historical, cultural, or archeological objects or features will be identified within CSOU1 during RA. However, if RA activities result in the inadvertent discovery of potential historical, cultural, or archeological objects or features, the Supervising Contractor and the Construction Subcontractor are responsible for

complying with the following procedures as described in the Technical Specifications (Subsection 201.01 Clearing and Grubbing, Subsection 202.01 Residential Yard Excavation, and Subsection 222.01 Non-Residential Excavation of Appendix H), and in accordance with applicable ARARs:

1. Work will be stopped, and ARC construction oversight personnel and the EPA Field Oversight representative will be immediately contacted by Construction Subcontractor and/or Supervising Contractor field personnel.
2. ARC's Project Coordinator and EPA's Project Coordinator will be immediately contacted by the Supervising Contractor. ARC's Project Coordinator shall contact the proper authorities for an assessment of the significance of the objects or features.
3. RA activities in the immediate vicinity of the identified historical, cultural, or archeological objects or features will be halted. Construction elsewhere on the project may continue.
4. The historical, cultural, or archeological objects or features will be further evaluated by a qualified historian or archaeologist associated with the SHPO to determine if they meet historic preservation requirements.
5. Following the evaluation, the EPA Project Coordinator will be involved in the process of determining the path forward. RA will not resume until the historical, cultural, or archeological objects or features are fully evaluated, and the archaeologist/historian gives clearance to resume RA in the area. If clearance is not granted due to the finding of historical, cultural, or archeological resources, items, or objects, the area will be preserved, and RA will not resume until the discovery is adequately addressed.

5.4 Greener Cleanup Measures

During RA construction, measures will be taken to minimize environmental impacts in accordance with the EPA's *Principles for Greener Cleanups* (EPA, 2009). ARC will minimize environmental impacts resulting from implementation of the RA when feasible throughout the duration of the project. Examples of measures ARC may take to minimize environmental impacts and achieve a greener cleanup include:

- Minimizing the total project energy use by using construction equipment efficiently and only when needed. Equipment idling and unnecessary fuel use will be avoided when feasible;
- Minimizing greenhouse gas emissions and air pollution by utilizing the most efficient transportation routes, avoiding idling and unnecessary fuel usage, and using newer equipment with diesel exhaust fluid systems when possible (produces lower emissions than older equipment with no diesel exhaust fluid systems);
- Minimizing water use and impact to water resources by using paved surfaces for transportation routes when feasible, immediately reporting and cleaning up any equipment oil or fuel leaks before water sources become tainted, and retaining any pre-construction natural drainage channels;
- Minimizing material waste by using electronic documentation and recycling paper, plastic, metal, batteries, and aluminum products when feasible; and
- Protecting and restoring ecosystems by minimizing or eliminating any off-road travel and avoiding unnecessary new road construction and/or construction activities in general.

5.5 Maintenance and Monitoring Procedures

This Section identifies routine property maintenance activities for areas subject to RA. EPA acknowledges that certain property maintenance activities, which partially overlap with CERCLA-required maintenance activities, will be the responsibility of each landowner for properties owned or controlled within the CSOU1, either under independent state or local laws or by agreement between ARC and the landowner.

Upon request from ARC, the Agencies may assist ARC in obtaining landowner cooperation and agreement to carry out required monitoring and maintenance.

Monitoring activities will be conducted by ARC and may include the following:

- Qualitative inspections;
- ICs; and/or
- Record keeping.

Landowners are expected to perform noxious weed control, routine vegetation watering and maintenance, watering and maintenance of trees and shrubs, site security, and storm water control maintenance. ARC will perform weed management, as necessary, along haul routes disturbed by ARC to access remote properties for RA activities. In areas where seeding is performed, ARC will perform supplemental seeding within failed revegetation areas, for up to two growing seasons. As outlined in Table 4, cover soil will be applied over the exposed roots of trees, shrubs, and hedges and re-wetted as soon as possible and sod will be applied as shown in the Standard Drawings (Appendix G).

In residential areas where sod is installed, ARC will provide a water variance to the affected landowners for one month after the sod is installed. This water variance is through the Cascade County Public Works Department and will account for the extra cost to water the ground until the vegetative cover is fully established. Landowners whose property receives new sod application as part of the RA will be provided a pamphlet that describes appropriate sod maintenance procedures.

5.6 Institutional Controls

All ICs required pursuant to the OU1 ROD are addressed under a separate document, an ICIAP, which is included as Appendix J.

5.7 Monitoring and Control Measures

Monitoring and control measures will be implemented to protect human health and the environment, and to minimize community impacts during RA in accordance with EPA's *Community Involvement Handbook* (EPA, 2020). A Community Impacts Mitigation Plan (CIMP) is included as Appendix K. Throughout RA, construction traffic and noise will be kept to a minimum when feasible, especially in the early morning hours. The Construction Subcontractor will practice good housekeeping in order to keep the construction site clean and tidy. This includes not working during muddy conditions and using track-out control mats to prevent tracking sediment off site. During grading activities, standard engineering practices will be followed to divert potential stormwater run-on flows around the work area and minimize stormwater runoff from transporting sediment off-site to the extent practicable, as described in the CQAP/CQCP (section 7.4; Appendix D). BMPs for stormwater and sediment control (e.g., upgradient berms, straw bale check dams, and temporary silt fencing) will be implemented as needed during RA activities based on site-specific condi

tions. BMPs will be inspected and maintained as appropriate. Specific monitoring and control measures including air monitoring and dust control measures are described below.

5.7.1 Air Monitoring

Historical data collected at CSOU1 during 1983 show that total suspended particles (TSP) and lead concentrations in the air complied with the Primary National Ambient Air Quality Standards (NAAQS) and do not impact public health, welfare, or the environment (Anaconda Minerals Company, 1983). Therefore, no ambient or worker air monitoring is anticipated to be required by the Agencies during the OU1 RA. This is further supported by historical data gathered from the Community Soils Operable Unit at the Anaconda Superfund Site where data show that contaminant concentrations in the air are well below Permissible Exposure Limits (PELs) (Pioneer, 2020). Arsenic and lead concentrations are generally higher at the Anaconda Superfund Site, which supports the conclusion that no ambient or worker monitoring will be required during the CSOU1 RA.

5.7.2 Dust Control

BMPs to minimize fugitive dust emissions will be implemented during all RA activities. Dust control measures may include: the application of water to removal areas and transportation roads, construction of windbreaks around the excavation areas, using paved surfaces when feasible, and covering loads during transport to and from the excavation/consolidation areas.

6. REPORTING AND RECORD KEEPING

ARC will submit a monthly progress report in accordance with Section 6.1 of the SOW, summarizing the RA activities that took place during the prior monthly reporting period. This monthly progress report will be submitted by the 10th day of each month. The monthly report will generally include the following:

- List of residents contacted (via letters, phone calls, email communication, and interviews);
- List of residents who have denied access to their property for RA work;
- Summary of sampling results, tests, and other data received or generated;
- A description of deliverables submitted to the Agencies;
- Summary of delays encountered, and a description of actions taken to mitigate any delays;
- An updated RA construction schedule for work activities during the upcoming projected six-week work period, along with information regarding percentage of completion;
- A description of any modifications to the RAWP/FDR or anticipated schedule changes;
- A description of any present and future work items pertaining to the CIP; and
- Requests for information and other submittals.

ARC will notify EPA and MDEQ at least seven days prior to performing an activity that deviates from the RA construction schedule. All deviations and changes to the RA schedule will be regularly communicated to the Agencies throughout RA.

6.1 Construction Reporting

The following information shall be recorded on a daily basis by the IQAT Representative:

- Weather conditions,
- Safety incidents,
- Material delivery and/or usage,
- QA/QC on required products,
- Field observations, and
- Photographic documentation.

Upon EPA approval of the work, a Statement of Completion form (*see* example in Appendix E) will be sent to the landowner by EPA and ARC. Each landowner whose property was remediated will be provided with instructional materials that describe appropriate maintenance of the seeded areas, sod, or aggregate. Photographic documentation will be performed on a property-specific basis and photographic documentation will be completed for construction at each property requiring RA.

6.1.1 Remedial Action Construction Completion Report

The RA Construction Completion process (including inspections, reports, and approvals) is described in section 5.7 of the SOW.

Upon completion of all RA construction activities, a CCR, which describes the RA work in detail, will be submitted to EPA. The CCR will include statements by the ARC Project Coordinator that the RA construction was successful and the remedy is functioning as designed. All as-built drawings also will be included in the CCR. The CCR will be prepared in accordance with chapter 3 (Construction Completion) of EPA's *Close Out Procedures for NPL Sites* guidance, OLEM Directive 9320.2-23 (EPA, 2022), as supplemented by EPA's *Guidance for Management of Superfund Remedies in Post Construction* (EPA, 2017).

6.1.2 Remedial Action Report

The RA Completion process (including inspections, reports, and approvals) is described in section 5.8 of the SOW.

Upon completion of all RA activities, an RA Report will be submitted to EPA. The RA Report will contain complete RA records, as-built drawings, and any applicable monitoring data to demonstrate the RA is complete and Performance Standards have been achieved. This report will be submitted after the RA has been completed and the corresponding post-RA inspection with the Agencies, ARC, and/or the Supervising Contractor has been completed. The RA Report will request a Certification of Remedial Action Completion from EPA.

6.1.3 Periodic Review Support Plan Report

ARC will complete a Periodic Review Support Plan (PRSP) after completion of RA, if applicable. The PRSP will address any relevant studies and investigations that will be performed to support EPA review of the soil removal/replacement remedy in accordance with CERCLA § 121(c) (Five-Year Reviews) and EPA's *Comprehensive Five-year Review Guidance* (EPA, 2001). As stated in the decision summary in the OU1 ROD, a Five-Year Review would be required for any anticipated residential properties that were not remediated to the residential cleanup level and for any consolidation areas at OU2.

6.2 RA Record Keeping

A database to track the RA is a critical component of the project due to the number of individual properties where RA is required. Because it is established and has been successfully utilized in the past on other CERCLA Sites, ARC's GIS will serve as the primary database to track RA progress. Upon conclusion of the CSOU1 RA, it is anticipated that ARC's database will be transmitted to the appropriate local, state, and federal agencies. ARC will retain records, reports, and other information until 10 years after the Certification of Completion of the work and will provide records to EPA and MDEQ upon request, in accordance with the Consent Decree.

7. REMEDIAL ACTION SCHEDULE

The preliminary RA schedule is provided in Figure 9 and section 8.3 of the SOW. Monthly reports are currently provided to the Agencies and these reports will include CSOU1 RA activities described in this RAWP/FDR.

8. REFERENCES

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Woodard & Curran

TABLES

Table 1: Step 1 and Step 2 Yard Component Removal Summary

Table 2: Non-Residential Property Summary

Table 3: Properties to be Sampled

Table 4: Residential Yard Considerations for Community Soils Areas in OU1

Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-001	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	22	No	No	NA	NA	96	No	No
BE-001	BE-001-BA	Bare Area (BA)	1,586	26.5	25.7	67.7	82.6	174	128	30.1	89.6	No	NA	26.5	25.7	NA	NA	NA	174	128	NA	NA	NA
BE-001	BE-001-BY	Back Yard (BY)	1,626	21.1	42.4	13	13.5	409	16	167	140	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-001	BE-001-DZ	Drip Zone (DZ)	220	14.4	9.1	17.5	39.2	63	204	49	187	No	NA	14.4	9.1	NA	NA	NA	63	204	NA	NA	NA
BE-001	BE-001-ED	Earthen Drive (ED)	952	26.1	16.5	58.1	65.8	130	143	147	9.9	No	NA	26.1	16.5	NA	NA	NA	130	143	NA	NA	NA
BE-001	BE-001-FG	Flower Garden (FG)	21	16.1	15.7	17.6	13.9	193	246	1,500	248	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-001	BE-001-FY	Front Yard (FY)	115	41.4	7.8	11.1	10.8	47.5	58.5	74.6	16.1	No	NA	41.4	7.8	NA	NA	NA	47.5	58.5	NA	NA	NA
BE-002	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	11	No	No	NA	NA	84	No	No
BE-002	BE-002-BY	Back Yard (BY)	1,367	8.4	8.8	26.4	26.6	73.8	72.6	82.6	207	No	NA	8.4	8.8	NA	NA	NA	73.8	72.6	NA	NA	NA
BE-002	BE-002-DZ	Drip Zone (DZ)	220	12.2	13.2	14.9	11.7	89	64.5	72.7	98.5	No	NA	12.2	13.2	NA	NA	NA	89	64.5	NA	NA	NA
BE-002	BE-002-ED	Earthen Drive (ED)	929	14	13.4	27.8	13.6	150	18.1	106	21.9	No	NA	14	13.4	NA	NA	NA	150	18.1	NA	NA	NA
BE-002	BE-002-FG	Flower Garden (FG)	32	8.5	8.7	9.6	10.2	67.3	55.9	89.7	96.6	No	NA	8.5	8.7	NA	NA	NA	67.3	55.9	NA	NA	NA
BE-002	BE-002-FY	Front Yard (FY)	985	10.3	11.9	38.9	17.9	111	176	291	101	No	NA	10.3	11.9	NA	NA	NA	111	176	NA	NA	NA
BE-003	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	14	No	No	NA	NA	100	No	No
BE-003	BE-003-BY	Back Yard (BY)	1,869	6.8	15.9	32.6	26.3	48.9	36.9	26	18.8	No	NA	6.8	15.9	NA	NA	NA	48.9	36.9	NA	NA	NA
BE-003	BE-003-DZ	Drip Zone (DZ)	220	13.1	15.1	27.1	20.5	166	117	79.9	80.5	No	NA	13.1	15.1	NA	NA	NA	166	117	NA	NA	NA
BE-003	BE-003-ED	Earthen Drive (ED)	532	13.3	22.1	27.6	4.2	171	196	168	14.9	No	NA	13.3	22.1	NA	NA	NA	171	196	NA	NA	NA
BE-003	BE-003-FG	Flower Garden (FG)	57	10.5	8.9	17.5	10.1	96.2	80.3	63.2	14.4	No	NA	10.5	8.9	NA	NA	NA	96.2	80.3	NA	NA	NA
BE-003	BE-003-FY	Front Yard (FY)	594	4.2	16.2	6.1	6.1	74	42.9	52.3	12	No	NA	4.2	16.2	NA	NA	NA	74	42.9	NA	NA	NA
BE-004	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	20	No	No	NA	NA	139	No	No
BE-004	BE-004-BY	Back Yard (BY)	313	22.2	25.2	44.7	51.8	171	318	90.5	20.8	No	NA	22.2	25.2	NA	NA	NA	171	318	NA	NA	NA
BE-004	BE-004-DZ	Drip Zone (DZ)	220	13.6	20.1	56.5	35.9	107	86.2	111	12.5	No	NA	13.6	20.1	NA	NA	NA	107	86.2	NA	NA	NA
BE-004	BE-004-ED	Earthen Drive (ED)	303	13.7	20.5	36.4	31.5	107	73.9	60.6	8.9	No	NA	13.7	20.5	NA	NA	NA	107	73.9	NA	NA	NA
BE-004	BE-004-FG	Flower Garden (FG)	475	17.2	19.4	21.6	23.8	113	113	141	60.5	No	NA	17.2	19.4	NA	NA	NA	113	113	NA	NA	NA
BE-004	BE-004-FY	Front Yard (FY)	913	16.5	23.6	29.9	30	121	122	49.7	15.9	No	NA	16.5	23.6	NA	NA	NA	121	122	NA	NA	NA
BE-004	BE-004-RG	Rock Garden (RG)	56	14.7	24.9	41.7	34.4	96.1	181	120	24.7	No	NA	14.7	24.9	NA	NA	NA	96.1	181	NA	NA	NA
BE-005	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	15	No	No	NA	NA	80	No	No
BE-005	BE-005-FY	Front Yard (FY)	1,680	12.4	23.6	25.3	63.8	81	122	68.5	44.8	No	NA	12.4	23.6	NA	NA	NA	81	122	NA	NA	NA
BE-005	BE-005-ED	Earthen Drive (ED)	753	11.5	22.3	38.9	12.6	75.3	71.1	89.8	20.2	No	NA	11.5	22.3	NA	NA	NA	75.3	71.1	NA	NA	NA
BE-005	BE-005-DZ	Drip Zone (DZ)	220	12	11.8	18.7	30.2	63.1	62.7	77.2	37	No	NA	12	11.8	NA	NA	NA	63.1	62.7	NA	NA	NA
BE-005	BE-005-BY	Back Yard (BY)	1,774	10.9	11.8	15.2	23.9	81.6	103	75.5	82.4	No	NA	10.9	11.8	NA	NA	NA	81.6	103	NA	NA	NA
BE-005	BE-005-BA	Bare Area (BA)	267	11.3	12.4	14.6	16	73.7	58.4	40.6	67.1	No	NA	11.3	12.4	NA	NA	NA	73.7	58.4	NA	NA	NA
BE-006	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	21	No	No	NA	NA	86	No	No
BE-006	BE-006-VG	Vegetable Garden (VG)	103	23.4	18.8	25.2	44.7	149	87.1	101	140	No	NA	23.4	18.8	NA	NA	NA	149	87.1	NA	NA	NA
BE-006	BE-006-FY	Front Yard (FY)	366	18.4	52.9	58.2	7.9	82	76.1	9.3	4.4	No	NA	18.4	52.9	NA	NA	NA	82	76.1	NA	NA	NA
BE-006	BE-006-ED	Earthen Drive (ED)	942	14.2	11.1	14.7	15.1	137	25.6	46.2	66	No	NA	14.2	11.1	NA	NA	NA	137	25.6	NA	NA	NA
BE-006	BE-006-DZ	Drip Zone (DZ)	220	14.5	14.8	13.1	23.6	65.7	54	31.6	62.8	No	NA	14.5	14.8	NA	NA	NA	65.7	54	NA	NA	NA
BE-006	BE-006-BY	Back Yard (BY)	5,103	15.4	17.4	21.1	18.1	212	79.4	55.5	42.6	No	NA	15.4	17.4	NA	NA	NA	212	79.4	NA	NA	NA
BE-007A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	32	No	No	NA	NA	89	No	No
BE-007A	BE-007A-FY	Front Yard (FY)	1,783	21.2	52.3	33.1	32	128	83.8	10.9	12.5	No	NA	21.2	52.3	NA	NA	NA	128	83.8	NA	NA	NA
BE-007A	BE-007A-ED	Earthen Drive (ED)	1,516	31.2	33.2	26.4	18.6	107	57.4	11.4	18	No	NA	31.2	33.2	NA	NA	NA	107	57.4	NA	NA	NA
BE-007A	BE-007A-DZ	Drip Zone (DZ)	220	20.7	23	59.5	35.7	76.4	86.9	12.1	9.4	No	NA	20.7	23	NA	NA	NA	76.4	86.9	NA	NA	NA
BE-007A	BE-007A-BY	Back Yard (BY)	5,204	32.6	41.6	47.5	31.5	138	60.9	18.4	10.8	No	NA	32.6	41.6	NA	NA	NA	138	60.9	NA	NA	NA
BE-007A	BE-007A-BA	Bare Area (BA)	102	30.1	20.6	28.3	61.7	90.3	109	138	110	No	NA	30.1	20.6	NA	NA	NA	90.3	109	NA	NA	NA
BE-007B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	29	No	No	NA	NA	57	No	No
BE-007B	BE-007B-DZ	Drip Zone (DZ)	220	29.7	28	46.6	21.7	116	28.2	57.5	71.1	No	NA	29.7	28	NA	NA	NA	116	28.2	NA	NA	NA
BE-008A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	22	No	No	NA	NA	132	No	No
BE-008A	BE-008A-FY	Front Yard (FY)	236	17.4	20.6	20.7	25.1	183	115	74.9	355	No	NA	17.4	20.6	NA	NA	NA	183	115	NA	NA	NA
BE-008A	BE-008A-ED	Earthen Drive (ED)	1,531	19.2	17.3	42.8	49.1	80.6	135	233	234	No	NA	19.2	17.3	NA	NA	NA	80.6	135	NA	NA	NA
BE-008A	BE-008A-DZ	Drip Zone (DZ)	220	17.2	24.3	23.9	27.1	167	146	75.7	164	No	NA	17.2	24.3	NA	NA	NA	167	146	NA	NA	NA
BE-008A	BE-008A-BY	Back Yard (BY)	1,778	31.4	24.5	42	19.9	152	107	16.1	11.6	No	NA	31.4	24.5	NA	NA	NA	152	107	NA	NA	NA
BE-008B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	31	No	No	NA	NA	135	No	No
BE-008B	BE-008B-FY	Front Yard (FY)	2,053	42.4	43.8	29.3	42.8	465	333	367	220	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-008B	BE-008B-ED	Earthen Drive (ED)	177	15.9	34.5	58.5	29.7	106	130	158	8.2	No	NA	15.9	34.5	NA	NA	NA	106	130	NA	NA	NA
BE-008B	BE-008B-DZ	Drip Zone (DZ)	220	39.1	44.1	38.7	26	317	237	153	104	No	NA	39.1	44.1	NA	NA	NA	317	237	NA	NA	NA
BE-008B	BE-008B-BY	Back Yard (BY)	3,623	21.4	24.9	69	42.6	129	110	207	78.7	No	NA	21.4	24.9	NA	NA	NA	129	110	NA	NA	NA
BE-009	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	19	No	No	NA	NA	134	No	No
BE-009	BE-009-FY	Front Yard (FY)	497	10.9	31	10.4	47.5	98.4	101	23.7	23.9	No	NA	10.9	31	NA	NA	NA	98.4	101	NA	NA	NA
BE-009	BE-009-FG	Flower Garden (FG)	228	20	25.6	27.9	27.5	149	315	78.7	29.6	No	NA	20	25.6	NA	NA	NA	149	315	NA	NA	NA
BE-009	BE-009-ED	Earthen Drive (ED)	156	11.9	21.2	26.4	12.3	80.7	106	69.6	26	No	NA	11.9	21.2	NA	NA	NA	80.7	106	NA	NA	NA
BE-009	BE-009-DL	Drip Line (DL)	220	16	10.6	14.2	6.6	194	56.8	17	5.6	No	NA	16	10.6	NA	NA	NA	194	56.8	NA	NA	NA
BE-009	BE-009-BY	Back Yard (BY)	871	11.4	11.8	6.7	6.3	82.8	38.4	7.5	4.9	No	NA	11.4	11.8	NA	NA	NA	82.8	38.4	NA	NA	NA
BE-009	BE-009-BA	Bare Area (BA)	322	16.3	29.1	69.8	54.4	166	208	50.7	8	No	NA	16.3	29.1	NA	NA	NA	166	208	NA	NA	NA
BE-010	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	18	No	No	NA	NA	36	No	No
BE-010	BE-010-PA	Play Area (PA)	82	24.6	55.8	15.1	6.6	71.1	21	3.7	4.2	No	NA	24.6	55.8	NA	NA	NA	71.1	21	NA	NA	NA
BE-010	BE-010-FY	Front Yard (FY)	330	8.6	18.5	35.1	8.4	24.6	39.4	32.8	5.7	No	NA	8.6	18.5	NA	NA	NA	24.6	39.4	NA	NA	NA
BE-010	BE-010-ED	Earthen Drive (ED)	952	16.4	7.6	14.4	6	57	36.3	9.6	13	No	NA	16.4	7.6	NA	NA	NA	57	36.3	NA	NA	NA
BE-010	BE-010-DZ	Drip Zone (DZ)	220	7.7	7.8	6.7	8.9	14.6	11.8	8.7	80.1	No	NA	7.7	7.8	NA	NA	NA	14.6	11.8	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-010	BE-010-BY	Back Yard (BY)	2,392	9.2	15.7	30.6	13.8	19.2	65.9	34.3	5.5	No	NA	9.2	15.7	NA	NA	NA	19.2	65.9	NA	NA	NA
BE-011	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	35	No	No	NA	NA	173	No	No
BE-011	BE-011-VG	Vegetable Garden (VG)	45	21.7	31.7	40.6	31.5	190	82.2	173	226	No	NA	21.7	31.7	NA	NA	NA	190	82.2	NA	NA	NA
BE-011	BE-011-RG	Rock Garden (RG)	38	20.9	31.3	25	17	100	79.8	82.3	20.5	No	NA	20.9	31.3	NA	NA	NA	100	79.8	NA	NA	NA
BE-011	BE-011-FY	Front Yard (FY)	1,135	33	24.1	34.8	110	559	82.6	51.7	310	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-011	BE-011-FG	Flower Garden (FG)	11	24.6	18.2	16.6	38.3	224	187	102	121	No	NA	24.6	18.2	NA	NA	NA	224	187	NA	NA	NA
BE-011	BE-011-ED	Earthen Drive (ED)	1,038	36.8	63.5	71	43.1	220	305	120	11	No	NA	36.8	63.5	NA	NA	NA	220	305	NA	NA	NA
BE-011	BE-011-DZ	Drip Zone (DZ)	220	32.3	74.2	40.3	73.1	274	348	52	137	No	NA	32.3	74.2	NA	NA	NA	274	348	NA	NA	NA
BE-011	BE-011-BY	Back Yard (BY)	1,677	21.6	32	55.3	40.7	225	138	113	13.6	No	NA	21.6	32	NA	NA	NA	225	138	NA	NA	NA
BE-012	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	27	No	No	NA	NA	168	No	No
BE-012	BE-012-ED	Earthen Drive (ED)	850	21.3	25.8	16	11.1	162	84.9	22.4	19.6	No	NA	21.3	25.8	NA	NA	NA	162	84.9	NA	NA	NA
BE-012	BE-012-DZ	Drip Zone (DZ)	220	28.4	27.5	32.2	35.8	276	159	123	101	No	NA	28.4	27.5	NA	NA	NA	276	159	NA	NA	NA
BE-012	BE-012-BA	Bare Area (BA)	1,010	36.9	26.2	34.8	42.1	321	133	196	169	No	NA	36.9	26.2	NA	NA	NA	321	133	NA	NA	NA
BE-013	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	16	No	No	NA	NA	52	No	No
BE-013	BE-013-RG	Rock Garden (RG)	374	12.2	13.9	13.8	15.2	33.6	35.3	34.6	50.7	No	NA	12.2	13.9	NA	NA	NA	33.6	35.3	NA	NA	NA
BE-013	BE-013-FY	Front Yard (FY)	1,876	16.2	20.2	16.2	12.2	56.5	53.1	47	29	No	NA	16.2	20.2	NA	NA	NA	56.5	53.1	NA	NA	NA
BE-013	BE-013-FG	Flower Garden (FG)	759	9.2	15	14.1	14.3	31.6	45.6	37.3	43.5	No	NA	9.2	15	NA	NA	NA	31.6	45.6	NA	NA	NA
BE-013	BE-013-ED	Earthen Drive (ED)	2,020	11.8	6.4	17.7	10.2	31.7	15.1	46.4	16.2	No	NA	11.8	6.4	NA	NA	NA	31.7	15.1	NA	NA	NA
BE-013	BE-013-DZ	Drip Zone (DZ)	220	10	17.3	20.9	17.1	32.1	43.2	68.5	46.4	No	NA	10	17.3	NA	NA	NA	32.1	43.2	NA	NA	NA
BE-013	BE-013-BY	Back Yard (BY)	2,725	18.5	42.5	35	20.1	59.1	206	99.5	28.2	No	NA	18.5	42.5	NA	NA	NA	59.1	206	NA	NA	NA
BE-013	BE-013-BA	Bare Area (BA)	850	10.8	6.6	4.4	4.7	23.2	9.4	5.6	5.3	No	NA	10.8	6.6	NA	NA	NA	23.2	9.4	NA	NA	NA
BE-014	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	26	No	No	NA	NA	147	No	No
BE-014	BE-014-PA	Play Area (PA)	56	15.2	25.8	31.5	47.3	135	177	157	53.2	No	NA	15.2	25.8	NA	NA	NA	135	177	NA	NA	NA
BE-014	BE-014-FY	Front Yard (FY)	4,298	16.4	26.7	131	28.9	171	181	82.8	42.8	No	NA	16.4	26.7	NA	NA	NA	171	181	NA	NA	NA
BE-014	BE-014-DZ	Drip Zone (DZ)	232	20.5	25.4	37.1	20.5	447	224	69.8	26.9	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-014	BE-014-BY	Back Yard (BY)	827	21.6	36.8	50.9	43.4	219	202	104	43.3	No	NA	21.6	36.8	NA	NA	NA	219	202	NA	NA	NA
BE-014A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	11	No	No	NA	NA	35	No	No
BE-014A	BE-014A-FY	Front Yard (FY)	473	13.3	13.4	11.4	38.6	32.8	24.2	27.2	94.1	No	NA	13.3	13.4	NA	NA	NA	32.8	24.2	NA	NA	NA
BE-014A	BE-014A-FG	Flower Garden (FG) [A]	22	10.3	11.8			50.9	46.6			No	NA	10.3	11.8	NA	NA	NA	50.9	46.6	NA	NA	NA
BE-014A	BE-014A-ED	Earthen Drive (ED)	263	9.5	7.9	4.6	9.6	17.9	23.2	7.4	13.8	No	NA	9.5	7.9	NA	NA	NA	17.9	23.2	NA	NA	NA
BE-014A	BE-014A-DZ	Drip Zone (DZ)	166	11.4	12	22.2	40.1	61.7	36.1	25.4	183	No	NA	11.4	12	NA	NA	NA	61.7	36.1	NA	NA	NA
BE-015	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	20	No	No	NA	NA	78	No	No
BE-015	BE-015-PA	Play Area (PA)	558	25.4	30	15.6	12.2	79.8	62.6	44.6	36.2	No	NA	25.4	30	NA	NA	NA	79.8	62.6	NA	NA	NA
BE-015	BE-015-FY	Front Yard (FY)	1,558	22	25.6	26.2	24.2	121	110	132	147	No	NA	22	25.6	NA	NA	NA	121	110	NA	NA	NA
BE-015	BE-015-DZ	Drip Zone (DZ)	220	22.1	7.3	25.5	28.9	97.2	26.8	78.7	94	No	NA	22.1	7.3	NA	NA	NA	97.2	26.8	NA	NA	NA
BE-015	BE-015-BY	Back Yard (BY)	3,157	13.5	16.2	27.5	28.6	75.8	32.8	59.2	34.2	No	NA	13.5	16.2	NA	NA	NA	75.8	32.8	NA	NA	NA
BE-015	BE-015-BA	Bare Area (BA)	293	17.7	22.2	15.3	16.7	123	107	39.5	57.4	No	NA	17.7	22.2	NA	NA	NA	123	107	NA	NA	NA
BE-016	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	42	No	No	NA	NA	125	No	No
BE-016	BE-016-VG	Vegetable Garden (VG)	104	31.7	33.9	69.9	88.1	96	110	119	24.4	No	NA	31.7	33.9	NA	NA	NA	96	110	NA	NA	NA
BE-016	BE-016-RG	Rock Garden (RG)	24	16.6	25.7	79.5	41.3	50.1	69.6	63.6	35.5	No	NA	16.6	25.7	NA	NA	NA	50.1	69.6	NA	NA	NA
BE-016	BE-016-FY	Front Yard (FY)	802	34.7	61.8	107	53.3	197	199	99.9	45.7	No	NA	34.7	61.8	NA	NA	NA	197	199	NA	NA	NA
BE-016	BE-016-FG	Flower Garden (FG)	44	12	11.7	47.2	93.8	40.5	31.7	116	179	No	NA	12	11.7	NA	NA	NA	40.5	31.7	NA	NA	NA
BE-016	BE-016-DL	Drip Line (DL)	220	55.4	97.2	134	126	208	248	339	307	No	NA	55.4	97.2	NA	NA	NA	208	248	NA	NA	NA
BE-016	BE-016-BY	Back Yard (BY)	1,088	15.9	68.8	10.6	76.2	39.9	156	78.8	72.5	No	NA	15.9	68.8	NA	NA	NA	39.9	156	NA	NA	NA
BE-017	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	18	No	No	NA	NA	94	No	No
BE-017	BE-017-FY	Front Yard (FY)	2,291	25	36.4	69.1	24.7	147	148	139	31.9	No	NA	25	36.4	NA	NA	NA	147	148	NA	NA	NA
BE-017	BE-017-ED	Earthen Drive (ED)	352	10.8	13	16.4	15.2	24.5	136	80.2	42.1	No	NA	10.8	13	NA	NA	NA	24.5	136	NA	NA	NA
BE-017	BE-017-DZ	Drip Zone (DZ)	220	13.4	12.9	24.9	34.1	65.4	44.4	45.1	24.3	No	NA	13.4	12.9	NA	NA	NA	65.4	44.4	NA	NA	NA
BE-017	BE-017-BY	Back Yard (BY)	5,818	19.5	35	43.3	51.3	106	170	86	127	No	NA	19.5	35	NA	NA	NA	106	170	NA	NA	NA
BE-017	BE-017-0PP	Opportunity Sample (OPP)	NA	12.7				69.6				No	NA	12.7	0	NA	NA	NA	69.6	0	NA	NA	NA
BE-018	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	27	No	No	NA	NA	73	No	No
BE-018	BE-018-FY	Front Yard (FY)	626	21.3	55	5.5	3.5	119	11.2	6.7	5	No	NA	21.3	55	NA	NA	NA	119	11.2	NA	NA	NA
BE-018	BE-018-ED	Earthen Drive (ED)	408	8.6	13.7	5.2	4.3	68.2	29.9	5.7	5	No	NA	8.6	13.7	NA	NA	NA	68.2	29.9	NA	NA	NA
BE-018	BE-018-DZ	Drip Zone (DZ)	220	14.3	31.1	16.8	8	70.6	71.1	20.3	10.1	No	NA	14.3	31.1	NA	NA	NA	70.6	71.1	NA	NA	NA
BE-018	BE-018-BY	Back Yard (BY)	1,190	6.8	36.4	40.4	9.5	70	164	321	31.7	No	NA	6.8	36.4	NA	NA	NA	70	164	NA	NA	NA
BE-019	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	30	No	No	NA	NA	179	No	No
BE-019	BE-019-FY	Front Yard (FY)	1,388	15.5	27	32.8	30.4	138	144	292	372	No	NA	15.5	27	NA	NA	NA	138	144	NA	NA	NA
BE-019	BE-019-ED	Earthen Drive (ED)	903	12	28	9.2	8.2	159	82.7	17	12.8	No	NA	12	28	NA	NA	NA	159	82.7	NA	NA	NA
BE-019	BE-019-DZ	Drip Zone (DZ)	220	24.7	52	39.9	24.8	150	278	245	57.1	No	NA	24.7	52	NA	NA	NA	150	278	NA	NA	NA
BE-019	BE-019-BY	Back Yard (BY)	2,384	24	37.8	47	29.1	219	239	214	103	No	NA	24	37.8	NA	NA	NA	219	239	NA	NA	NA
BE-020A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	21	No	No	NA	NA	85	No	No
BE-020A	BE-020A-VG	Vegetable Garden (VG)	339	19.8	17.7	14.2	13.3	101	56.7	51.7	68.9	No	NA	19.8	17.7	NA	NA	NA	101	56.7	NA	NA	NA
BE-020A	BE-020A-FY	Front Yard (FY)	2,651	20.7	19.4	23.9	50.9	122	92.7	156	204	No	NA	20.7	19.4	NA	NA	NA	122	92.7	NA	NA	NA
BE-020A	BE-020A-FG	Flower Garden (FG)	845	20.7	25.1	38.2	58.9	107	130	177	313	No	NA	20.7	25.1	NA	NA	NA	107	130	NA	NA	NA
BE-020A	BE-020A-DZ	Drip Zone (DZ)	377	15.4	16.6	20.1	20.8	84.1	93.1	114	52.5	No	NA	15.4	16.6	NA	NA	NA	84.1	93.1	NA	NA	NA
BE-020A	BE-020A-BA	Bare Area (BA)	134	27.2	31.8	32.8	50.2	130	169	488	114	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-020B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	30	No	No	NA	NA	71	No	No
BE-020B	BE-020A-BA	Bare Area (BA)	32	27.2	31.8	32.8	50.2	130	169	488	114	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-020B	BE-020B-FG	Flower Garden (FG)	229	30.7	56.6	39.1	26.8	88.7	713	207	99.4	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-020B	BE-020B-ED	Earthen Drive (ED)	731	32.9	41.3	31.8	31	156	167	95.8	108	No	NA	32.9	41.3	NA	NA	NA	156	167	NA	NA	NA
BE-020B	BE-020B-DZ	Drip Zone (DZ)	291	18.5	41.3	44.8	48	76.2	223	451	1310	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-020B	BE-020B-BY	Back Yard (BY)	225	27.7	39	50.1	21.9	92.2	478	356	33	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-021A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	176	No	No
BE-021A	BE-021A-DZ	Drip Zone (DZ)	69	25.4	26.3	54.4	60.7	556	517	258	167	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-021A	BE-021A-BY	Back Yard (BY)	376	19.6	33.3	41.9	42.4	297	320	390	148	No	NA	19.6	33.3	NA	NA	NA	297	320	NA	NA	NA
BE-021B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	24	No	No	NA	NA	127	No	No
BE-021B	BE-021B-DZ	Drip Zone (DZ)	139	30.2	30.5	27.4	17.4	1270	394	219	36.9	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-021B	BE-021B-BY	Back Yard (BY)	687	15.3	23.7	25.6	28	179	231	272	264	No	NA	15.3	23.7	NA	NA	NA	179	231	NA	NA	NA
BE-023	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	22	No	No	NA	NA	189	No	No
BE-023	BE-023-FY	Front Yard (FY)	1,431	16	20.1	32.4	21.4	177	163	61.6	22.3	No	NA	16	20.1	NA	NA	NA	177	163	NA	NA	NA
BE-023	BE-023-FG	Flower Garden (FG)	47	17.9	20.2	36.3	16.8	116	120	103	22	No	NA	17.9	20.2	NA	NA	NA	116	120	NA	NA	NA
BE-023	BE-023-ED	Earthen Drive (ED)	213	34.6	31.1	35.9	39.6	275	212	80.6	47.4	No	NA	34.6	31.1	NA	NA	NA	275	212	NA	NA	NA
BE-023	BE-023-DZ	Drip Zone (DZ)	220	17	15	15.1	20.3	224	170	71.4	26.2	No	NA	17	15	NA	NA	NA	224	170	NA	NA	NA
BE-023	BE-023-BY	Back Yard (BY)	1,481	16.9	28.2	23.2	30.7	272	224	56.6	65.6	No	NA	16.9	28.2	NA	NA	NA	272	224	NA	NA	NA
BE-024	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	32	No	No	NA	NA	128	No	No
BE-024	BE-024-RG	Rock Garden (RG)	70	16.8	25.8	26.8	17.5	420	540	629	76.9	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-024	BE-024-FY	Front Yard (FY)	683	18.2	22.4	24.8	17.3	313	335	228	49.5	No	NA	18.2	22.4	NA	NA	NA	313	335	NA	NA	NA
BE-024	BE-024-FG	Flower Garden (FG)	58	54.7	77.2	22.2	27.4	117	128	74	237	No	NA	54.7	77.2	NA	NA	NA	117	128	NA	NA	NA
BE-024	BE-024-ED	Earthen Drive (ED)	667	16.5	28.8	58.8	147	230	327	183	707	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-024	BE-024-DZ	Drip Zone (DZ)	525	21	37.3	38.9	20.5	436	491	318	97.4	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-024	BE-024-BY	Back Yard (BY)	835	13.8	16.8	23.9	25.6	139	224	186	125	No	NA	13.8	16.8	NA	NA	NA	139	224	NA	NA	NA
BE-025	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	26	No	No	NA	NA	74	No	No
BE-025	BE-025-VG	Vegetable Garden (VG)	346	19.3	19.4	14.6	9.2	222	206	129	14.3	No	NA	19.3	19.4	NA	NA	NA	222	206	NA	NA	NA
BE-025	BE-025-FY	Front Yard (FY)	692	43.1	24.1	36.5	61	74.5	568	111	152	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-025	BE-025-FG	Flower Garden (FG)	140	20.1	22.3	41.5	39.2	891	602	80	39.2	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-025	BE-025-DZ	Drip Zone (DZ)	420	25.4	22.8	37.4	16.2	1180	438	135	426	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-025	BE-025-BY	Back Yard (BY)	1,388	22.7	20.1	25.9	17.2	481	131	55.1	15.5	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-026	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	24	No	No	NA	NA	90	No	No
BE-026	BE-026-VG	Vegetable Garden (VG)	40	6.6	7.7	9.8	11.6	43.5	55.7	45.8	72.5	No	NA	6.6	7.7	NA	NA	NA	43.5	55.7	NA	NA	NA
BE-026	BE-026-FY	Front Yard (FY)	810	32.5	34.3	36.1	61.2	810	160	118	79.1	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-026	BE-026-FG	Flower Garden (FG)	89	33.4	38.6	52	41.1	527	184	121	50.1	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-026	BE-026-DZ	Drip Zone (DZ)	555	43.7	59.1	56.4	53.1	877	465	191	114	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-026	BE-026-BY	Back Yard (BY)	1,251	31	30.3	36.3	25.1	399	220	88.8	19.1	No	NA	31	30.3	NA	NA	NA	399	220	NA	NA	NA
BE-027	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	27	No	No	NA	NA	157	No	No
BE-027	BE-027-PA	Play Area (PA)	113	44.4	68.2	112	104	279	264	307	173	No	NA	44.4	68.2	NA	NA	NA	279	264	NA	NA	NA
BE-027	BE-027-FY	Front Yard (FY)	1,441	17.6	20.6	31.4	46.7	219	173	133	124	No	NA	17.6	20.6	NA	NA	NA	219	173	NA	NA	NA
BE-027	BE-027-FG	Flower Garden (FG)	64	20.9	16.4	60.6	74.7	230	136	341	213	No	NA	20.9	16.4	NA	NA	NA	230	136	NA	NA	NA
BE-027	BE-027-ED	Earthen Drive (ED)	720	35.9	39.2	37.2	51.3	219	444	383	292	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-027	BE-027-DZ	Drip Zone (DZ)	220	19.2	18.1	32.8	21.3	311	90.7	43.3	68.7	No	NA	19.2	18.1	NA	NA	NA	311	90.7	NA	NA	NA
BE-027	BE-027-BY	Back Yard (BY)	8,547	21.3	19	46.5	49.3	160	93.4	32.9	19.6	No	NA	21.3	19	NA	NA	NA	160	93.4	NA	NA	NA
BE-028	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-028	BE-028-FY	Front Yard (FY)	2,619	28.6	37.7	56.8	19	348	788	877	125	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-028	BE-028-ED	Earthen Drive (ED)	2,421	7.6	15.3	31.5	51.6	24.8	327	362	804	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-029	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-029	BE-029-RG	Rock Garden (RG)	34	21.4	34.4	45.2	30.4	1030	792	127	58.2	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-029	BE-029-FY	Front Yard (FY)	1,061	23.2	27	43.3	97.7	483	634	307	466	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-029	BE-029-ED	Earthen Drive (ED)	371	13.3	19.2	24.3	36.2	359	1900	250	225	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-029	BE-029-DZ	Drip Zone (DZ)	447	29.4	28.3	29.5	28.7	896	586	263	453	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-029	BE-029-BY	Back Yard (BY)	1,033	25.4	22.9	55.4	45.4	522	405	507	215	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-030	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-030	BE-030-FY	Front Yard (FY)	430	19.7	40.9	49.4	77.1	456	417	175	259	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-030	BE-030-FG	Flower Garden (FG)	108	17.7	18.1	65.6	42	657	391	434	135	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-030	BE-030-BY	Back Yard (BY)	2,733	30.6	50.3	59	87.5	530	587	335	254	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-031	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	29	No	No	NA	NA	140	No	No
BE-031	BE-031-FY	Front Yard (FY)	429	29.1	26.1	75.3	86.5	221	185	231	87.5	No	NA	29.1	26.1	NA	NA	NA	221	185	NA	NA	NA
BE-031	BE-031-FG	Flower Garden (FG)	143	15.3	27.1	30.6	35.8	22.6	785	582	292	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-031	BE-031-ED	Earthen Drive (ED)	590	41.1	79.6	103	96.9	432	569	509	384	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-031	BE-031-DZ	Drip Zone (DZ)	178	29.5	34.2	23.8	15.3	970	1210	460	151	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-031	BE-031-BY	Back Yard (BY)	1,984	27.9	38.9	47.6	29.2	367	389	201	13.3	No	NA	27.9	38.9	NA	NA	NA	367	389	NA	NA	NA
BE-032	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-032	BE-032-FY	Front Yard (FY)	324	52.7	85	44.7	17.3	734	577	429	67.8	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-032	BE-032-FG	Flower Garden (FG)	83	40.4	1.9	9.4	10.4	513	4	38.9	240	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-032	BE-032-ED	Earthen Drive (ED)	553	22.9	71.2	30.8	58.8	681	653	438	638	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-032	BE-032-DZ	Drip Zone (DZ)	184	32.3	51.4	55.8	30	595	1120	710	297	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-032	BE-032-BY	Back Yard (BY)	430	25.3	30.8	23.4	39.6	185	229	292	621	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-033	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-033	BE-033-FY	Front Yard (FY)	580	21.8	14.7	14.9	25.3	425	76.4	73.9	591	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-033	BE-033-DZ	Drip Zone (DZ)	226	40.6	26.7	27.1	37	217	187	861	163	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-033	BE-033-BY	Back Yard (BY) [a]	1,019																				
BE-034	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-034	BE-034-RG	Rock Garden (RG)	119	48.7	58.7	81.8	86.7	466	481	316	601	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-034	BE-034-FY	Front Yard (FY)	434	59.5	37.4	41.4	64.8	405	418	302	293	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-034	BE-034-FG	Flower Garden (FG)	86	45.6	39.1	41.5	30	437	387	268	79.3	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-034	BE-034-ED	Earthen Drive (ED)	159	28.3	54.2	46.4	52.3	306	743	375	345	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-034	BE-034-DZ	Drip Zone (DZ)	188	15.3	59.7	49.7	85.9	16.5	633	675	237	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-034	BE-034-BY	Back Yard (BY)	1,414	42	35.5	52.6	42.4	289	333	426	199	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-035	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-035	BE-035-FY	Front Yard (FY)	982	32	29.9	38.1	39.7	553	594	448	334	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-035	BE-035-DZ	Drip Zone (DZ)	95	31.7	87.8	48.5	50.1	837	687	595	434	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-035	BE-035-BY	Back Yard (BY)	2,267	46.4	59.2	43.2	23.8	581	653	356	77.7	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-036	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	32	No	No	NA	NA	113	No	No
BE-036	BE-036-VG	Vegetable Garden (VG)	215	29.2	36.9	41.8	39.6	424	372	467	343	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-036	BE-036-PA	Play Area (PA)	62	58.2	91.2	48.5	58.1	538	401	67.1	8.8	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-036	BE-036-FY	Front Yard (FY)	246	38.8	39.8	39.3	50.5	472	634	168	159	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-036	BE-036-FG	Flower Garden (FG)	254	23	25.9	31.5	49.6	315	297	267	214	No	NA	23	25.9	NA	NA	NA	315	297	NA	NA	NA
BE-036	BE-036-ED	Earthen Drive (ED)	1,351	31.1	76.8	46.3	24	365	363	85.3	9.8	No	NA	31.1	76.8	NA	NA	NA	365	363	NA	NA	NA
BE-036	BE-036-DZ	Drip Zone (DZ)	593	31.3	48.7	34.5	44.6	255	409	152	89.5	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-036	BE-036-BY	Back Yard (BY)	1,525	42.5	47.8	43	40.5	546	433	192	180	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-036	BE-036-BA	Bare Area (BA)	90	54	38.4	68.2	35.6	308	405	164	74.9	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-037	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	22	No	No	NA	NA	46	No	No
BE-037	BE-037-RG	Rock Garden (RG)	617	26.6	30.9	51.9	55.7	290	303	465	265	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-037	BE-037-FY	Front Yard (FY)	1,414	7.4	6.7	8.7	7.3	14.8	10.7	309	149	No	NA	7.4	6.7	NA	NA	NA	14.8	10.7	NA	NA	NA
BE-037	BE-037-FG	Flower Garden (FG)	480	27.5	8	7	7.7	226	41	54.7	44.2	No	NA	27.5	8	NA	NA	NA	226	41	NA	NA	NA
BE-037	BE-037-ED	Earthen Drive (ED)	1,129	49.4	11.3	24.7	67.7	441	38.7	252	826	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-037	BE-037-DZ	Drip Zone (DZ)	630	26	37.3	22.9	21.3	270	573	194	82.5	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-037	BE-037-BY	Back Yard (BY)	830	36.9	13.8	19.6	34.3	408	112	168	162	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-039	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	91	No	No
BE-039	BE-039-RG	Rock Garden (RG)	22	19.9	31	13	5.9	249	317	16.5	7.3	No	NA	19.9	31	NA	NA	NA	249	317	NA	NA	NA
BE-039	BE-039-FY	Front Yard (FY)	261	13.7	13.4	35.5	15	223	130	428	312	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-039	BE-039-FG	Flower Garden (FG)	504	31	70.2	44.5	163	377	410	233	632	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-039	BE-039-ED	Earthen Drive (ED)	258	46.1	66.4	141	81.9	457	579	580	225	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-039	BE-039-BY	Back Yard (BY)	1,487	26.6	36.3	60.6	88.1	297	361	552	414	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-040	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	24	No	No	NA	NA	106	No	No
BE-040	BE-040-FY	Front Yard (FY)	966	11.8	9	17.5	30.7	160	25.9	145	78.7	No	NA	11.8	9	NA	NA	NA	160	25.9	NA	NA	NA
BE-040	BE-040-FG	Flower Garden (FG)	72	15.5	15.9	26.4	41.3	234	262	357	509	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-040	BE-040-DZ	Drip Zone (DZ)	248	18.3	21.3	27.7	38.7	206	191	313	496	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-040	BE-040-BY	Back Yard (BY)	290	21.1	36.2	61.7	126	116	354	368	350	No	NA	21.1	36.2	NA	NA	NA	116	354	NA	NA	NA
BE-041	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	27	No	No	NA	NA	128	No	No
BE-041	BE-041-FY	Front Yard (FY)	1,389	35	50.5	37.8	30.3	534	679	193	34	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-041	BE-041-FG	Flower Garden (FG)	55	23.2	41.1	40	32.2	439	444	188	96	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-041	BE-041-BY	Back Yard (BY)	729	20.6	29.4	36.5	41.4	281	315	323	92.2	No	NA	20.6	29.4	NA	NA	NA	281	315	NA	NA	NA
BE-042	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	36	No	No	NA	NA	127	No	No
BE-042	BE-042-RG	Rock Garden (RG)	848	46.6	69	70.6	50.8	365	400	320	172	No	NA	46.6	69	NA	NA	NA	365	400	NA	NA	NA
BE-042	BE-042-FY	Front Yard (FY)	1,011	28	35.3	43.2	26.4	313	604	285	36.4	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-042	BE-042-FG	Flower Garden (FG)	181	32.8	38.5	46.9	23.8	695	729	415	97.3	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-042	BE-042-DZ	Drip Zone (DZ)	137	24	35.7	53.4	36	787	771	1030	90.8	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-043	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-043	BE-043-RG	Rock Garden (RG)	192	51.6	53.3	42.7	25.6	1010	547	47.4	13.6	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-043	BE-043-FY	Front Yard (FY)	136	57.2	61.2	79.6	46.9	2090	453	116	35.1	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-043	BE-043-FG	Flower Garden (FG)	433	46.4	41.6	55.9	45.7	1130	459	362	768	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-043	BE-043-DZ	Drip Zone (DZ)	35	52.1	60.9	85.5	57	6270	1110	400	586	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-043	BE-043-BY	Back Yard (BY)	380	47.1	39.8	53.2	71.4	819	630	436	456	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-044	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	24	No	No	NA	NA	77	No	No
BE-044	BE-044-VG	Vegetable Garden (VG)	137	108	80.7	49.6	45	715	641	579	467	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-044	BE-044-FY	Front Yard (FY)	1,204	17.8	17.5	53.8	22.7	187	129	111	128	No	NA	17.8	17.5	NA	NA	NA	187	129	NA	NA	NA
BE-044	BE-044-FG	Flower Garden (FG)	602	51.2	39.6	68.5	68.3	492	343	409	416	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-044	BE-044-DZ	Drip Zone (DZ)	220	17.7	18	28.2	26.7	129	110	179	199	No	NA	17.7	18	NA	NA	NA	129	110	NA	NA	NA
BE-044	BE-044-BY	Back Yard (BY)	1,136	37.3	51.7	63.6	84.3	432	478	460	722	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-045	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-045	BE-045-FY	Front Yard (FY)	1,226	36.7	46.5	88	91.8	489	509	351	167	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-045	BE-045-DZ	Drip Zone (DZ)	360	28.2	45.9	32.3	24.5	699	764	501	235	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-045	BE-045-BY	Back Yard (BY)	1,333	39.2	44.3	50.6	50	1070	865	339	252	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-046	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	26	No	No	NA	NA	99	No	No
BE-046	BE-046-FY	Front Yard (FY)	531	95.8	145	140	255	1360	1160	118	1480	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-046	BE-046-DZ	Drip Zone (DZ)	220	10.6	27.4	40.2	50	135	346	218	123	No	NA	10.6	27.4	NA	NA	NA	135	346	NA	NA	NA
BE-046	BE-046-BY	Back Yard (BY)	3,593	121	91.1	76.8	71.1	845	691	290	196	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-046	BE-046-BA	Bare Area (BA)	175	76.6	63.5	66.7	62.9	799	805	504	244	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-047	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	22	No	No	NA	NA	191	No	No
BE-047	BE-047-VG	Vegetable Garden (VG)	108	24.7	24.5	34.2	56.5	207	194	157	190	No	NA	24.7	24.5	NA	NA	NA	207	194	NA	NA	NA
BE-047	BE-047-FY	Front Yard (FY)	906	11.5	20.9	32.7	47	140	325	369	186	No	NA	11.5	20.9	NA	NA	NA	140	325	NA	NA	NA
BE-047	BE-047-FG	Flower Garden (FG)	354	18.1	19.7	21.3	29.3	208	222	176	164	No	NA	18.1	19.7	NA	NA	NA	208	222	NA	NA	NA
BE-047	BE-047-DZ	Drip Zone (DZ)	290	75.5	100	99.1	29.2	1680	1260	1220	124	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-047	BE-047-BY	Back Yard (BY)	1,827	17.6	19.5	23.3	58.5	242	234	165	260	No	NA	17.6	19.5	NA	NA	NA	242	234	NA	NA	NA
BE-048	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	49	No	No	NA	NA	120	No	No
BE-048	BE-048-VG	Vegetable Garden (VG)	172	30.1	33	49.6	86	438	431	309	237	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-048	BE-048-RG	Rock Garden (RG)	262	18.1	35.5	64.7	104	244	626	587	461	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-048	BE-048-FY	Front Yard (FY)	2,602	29.9	40.1	38	19.1	334	330	143	52.9	No	NA	29.9	40.1	NA	NA	NA	334	330	NA	NA	NA
BE-048	BE-048-FG	Flower Garden (FG)	452	25	34	80.1	76.9	39	3.6	78.8	50.9	No	NA	25	34	NA	NA	NA	39	3.6	NA	NA	NA
BE-048	BE-048-ED	Earthen Drive (ED)	2,473	29.8	214	73.2	64	259	165	164	104	No	NA	29.8	214	NA	NA	NA	259	165	NA	NA	NA
BE-048	BE-048-DZ	Drip Zone (DZ)	220	38.6	40.2	35.2	31.9	90.1	80.7	75	35.3	No	NA	38.6	40.2	NA	NA	NA	90.1	80.7	NA	NA	NA
BE-048	BE-048-BY	Back Yard (BY)	1,602	23.2	26.5	49.6	128	193	104	18	21.5	No	NA	23.2	26.5	NA	NA	NA	193	104	NA	NA	NA
BE-049	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	25	No	No	NA	NA	117	No	No
BE-049	BE-049-RG	Rock Garden (RG)	232	15.1	25.9	43.1	84.8	11.8	291	375	382	No	NA	15.1	25.9	NA	NA	NA	11.8	291	NA	NA	NA
BE-049	BE-049-FY	Front Yard (FY)	767	21.7	38.6	19.5	21.6	770	338	25.8	300	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-049	BE-049-FG	Flower Garden (FG)	174	10.7	28.3	40.2	55.7	67.2	254	223	235	No	NA	10.7	28.3	NA	NA	NA	67.2	254	NA	NA	NA
BE-049	BE-049-BY	Back Yard (BY)	1,204	20.5	25.4	35.5	68.9	512	206	175	257	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-050	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-050	BE-050-VG	Vegetable Garden (VG)	63	56.9	60.9	104	48	955	1150	679	427	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-050	BE-050-PA	Play Area (PA)	102	28.5	34.9	51.7	57.4	394	407	332	387	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-050	BE-050-FY	Front Yard (FY)	986	18.7	41.4	35.9	15.2	246	489	267	25.9	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-050	BE-050-FG	Flower Garden (FG)	133	36.7	42.7	37.6	31	495	414	186	64.7	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-050	BE-050-ED	Earthen Drive (ED)	347	29.1	41	53.8	216	150	177	631	3100	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-050	BE-050-DZ	Drip Zone (DZ)	93	32.6	21.3	31.8	84.7	829	161	939	296	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-050	BE-050-BY	Back Yard (BY)	1,101	25.6	53.7	46.8	34	333	576	302	117	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-052	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	29	No	No	NA	NA	61	No	No
BE-052	BE-052-RG	Rock Garden (RG)	74	17.4	16.8	41	64.3	31.7	124	37.2	279	No	NA	17.4	16.8	NA	NA	NA	31.7	124	NA	NA	NA
BE-052	BE-052-FY	Front Yard (FY)	207	60.6	60.8	16.4	45.4	612	591	43.2	387	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-052	BE-052-FG	Flower Garden (FG)	291	47.1	98.8	247	43.2	312	484	154	524	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-052	BE-052-ED	Earthen Drive (ED)	259	30.5	195	170	87.5	306	293	1220	491	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-052	BE-052-DZ	Drip Zone (DZ)	220	110	15.9	17.3	13.7	262	37.6	40.1	39.2	No	NA	110	15.9	NA	NA	NA	262	37.6	NA	NA	NA
BE-052	BE-052-BY	Back Yard (BY)	432	82.9	42	55.2	62.3	392	465	288	239	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-053	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-053	BE-053-RG	Rock Garden (RG)	381	32.2	20.4	27.2	31.9	548	235	299	313	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-053	BE-053-FY	Front Yard (FY)	563	40.2	38.2	49.2	43.1	380	352	434	276	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-053	BE-053-FG	Flower Garden (FG)	231	45.9	61.1	46.1	108	402	437	505	338	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-053	BE-053-DZ	Drip Zone (DZ)	152	40.9	57.1	70.6	79.7	445	710	483	689	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-053	BE-053-BY	Back Yard (BY)	934	20.5	28.3	50.9	42	288	346	441	550	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-055	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	144	No	No
BE-055	BE-055-FY	Front Yard (FY)	571	581	774	382	120	2040	2110	994	393	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-055	BE-055-FG	Flower Garden (FG)	89	21.3	28.8	34	38.4	236	230	193	134	No	NA	21.3	28.8	NA	NA	NA	236	230	NA	NA	NA
BE-055	BE-055-ED	Earthen Drive (ED)	1,216	40.2	18.2	17.9	10.3	184	17.5	17.4	15.8	No	NA	40.2	18.2	NA	NA	NA	184	17.5	NA	NA	NA
BE-055	BE-055-DZ	Drip Zone (DZ)	483	58.1	116	40.3	44.6	401	664	500	534	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-055	BE-055-BY	Back Yard (BY)	1,319	30	32.3	48.6	51.9	338	331	290	228	No	NA	30	32.3	NA	NA	NA	338	331	NA	NA	NA
BE-056	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	31	No	No	NA	NA	125	No	No
BE-056	BE-056-RG	Rock Garden (RG)	33	33.3	29.5	61.3	123	606	524	683	382	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-056	BE-056-FY	Front Yard (FY)	513	24.4	41.6	59.5	42.7	299	249	346	358	No	NA	24.4	41.6	NA	NA	NA	299	249	NA	NA	NA
BE-056	BE-056-ED	Earthen Drive (ED)	695	11.9	7.7	15	21	40.9	9.4	601	367	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-056	BE-056-DZ	Drip Zone (DZ)	124	50.9	54.7	78.4	88.6	886	668	3280	657	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-056	BE-056-BY	Back Yard (BY)	988	28.8	46.2	54.2	74.8	357	307	292	211	No	NA	28.8	46.2	NA	NA	NA	357	307	NA	NA	NA
BE-056	BE-056-BA	Bare Area (BA)	229	34.9	38.4	66	105	408	388	230	439	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-057	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-057	BE-057-VG	Vegetable Garden (VG)	14	21.8	30.5	28.9	27.7	377	416	507	346	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-057	BE-057-FY	Front Yard (FY)	355	35.7	35.1	36.6	106	125	36.8	41	1150	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-057	BE-057-FG	Flower Garden (FG)	19	28.4	37	59.6	29.9	394	674	258	130	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-057	BE-057-DZ	Drip Zone (DZ)	406	32.3	33.7	39.7	58.9	1390	1080	502	384	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-057	BE-057-BY	Back Yard (BY)	1,638	35.7	52.4	46.7	45.1	634	563	508	228	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-058A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-058A	BE-058A-RG	Rock Garden (RG)	308	22.6	28.5	45.9	84.8	253	302	319	510	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-058A	BE-058A-FG	Flower Garden (FG)	104	60.2	54.6	71.5	107	591	473	623	276	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-058A	BE-058A-DZ	Drip Zone (DZ)	220	53.9	66.7	54	48.6	976	1450	312	267	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-058B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-058B	BE-058B-DZ	Drip Zone (DZ)	130	55	109	29.5	135	1020	761	247	281	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-058B	BE-058B-BY	Back Yard (BY)	301	48	54.3	71.4	87	452	482	552	407	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-058B	BE-058B-BA	Bare Area (BA)	594	19.5	25.6	29.4	29.9	199	313	433	350	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-059	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-059	BE-059-RG	Rock Garden (RG)	274	66.4	82.2	96.7	107	745	764	494	427	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-059	BE-059-FG	Flower Garden (FG) [c]	17	42.8	42.8			461	461			Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-059	BE-059-DZ	Drip Zone (DZ)	114	43.7	67.2	106	36.9	606	664	347	59.6	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-059	BE-059-BA	Bare Area (BA)	104	66.2	61.7	88	84.1	575	387	291	246	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-060	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-060	BE-060-FY	Front Yard (FY)	1,404	30.3	41.3	50.9	83.7	380	442	275	376	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-060	BE-060-ED	Earthen Drive (ED)	751	21.8	22.2	65.8	116	268	236	532	312	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-060	BE-060-DZ	Drip Zone (DZ)	485	30.4	44.4	47.3	106	319	518	546	775	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-060	BE-060-BY	Back Yard (BY)	235	17.5	17.9	66	110	162	124	461	3610	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-061	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-061	BE-061-FY	Front Yard (FY)	1,561	21.5	15.4	15.2	37	846	59.9	60.5	56.3	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-061	BE-061-DZ	Drip Zone (DZ)	393	26.4	30.8	23.6	7.3	1230	759	204	42.1	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-061	BE-061-BY	Back Yard (BY)	881	22.5	34.8	44.2	23.4	451	350	255	50.6	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-062	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	25	No	No	NA	NA	81	No	No
BE-062	BE-062-RG	Rock Garden (RG)	140	35.1	34.2	26.9	63.8	763	480	301	455	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-062	BE-062-FG	Flower Garden (FG)	38	23.6	29.9	44.7	105	203	253	212	327	No	NA	23.6	29.9	NA	NA	NA	203	253	NA	NA	NA
BE-062	BE-062-ED	Earthen Drive (ED)	336	11.4	10.9	20	21.4	25.9	61.1	189	218	No	NA	11.4	10.9	NA	NA	NA	25.9	61.1	NA	NA	NA
BE-062	BE-062-DZ	Drip Zone (DZ)	483	20.2	31.5	49.3	22.3	715	460	324	77.7	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-062	BE-062-BY	Back Yard (BY)	1,464	33	60.2	82	102	461	398	430	281	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-064	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	31	No	No	NA	NA	119	No	No
BE-064	BE-064-FY	Front Yard (FY)	550	52.6	130	307	33.4	452	1040	708	60.4	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-064	BE-064-DZ	Drip Zone (DZ)	220	34	40	45.4	19.7	301	267	46	13.7	No	NA	34	40	NA	NA	NA	301	267	NA	NA	NA
BE-064	BE-064-BY	Back Yard (BY)	1,527	53.2	134	323	26	470	598	327	16.5	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-066	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	29	No	No	NA	NA	141	No	No
BE-066	BE-066-PA	Play Area (PA)	123	33.6	52.3	70.7	114	284	349	329	184	No	NA	33.6	52.3	NA	NA	NA	284	349	NA	NA	NA
BE-066	BE-066-FY	Front Yard (FY)	300	9.5	7.5	41.5	113	97.4	54.8	167	1090	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-066	BE-066-FG	Flower Garden (FG)	30	14.5	21.5	30.6	76	437	518	430	835	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-066	BE-066-DZ	Drip Zone (DZ)	220	15.6	16.8	23.3	33.5	266	252	320	309	No	NA	15.6	16.8	NA	NA	NA	266	252	NA	NA	NA
BE-066	BE-066-BY	Back Yard (BY)	1,660	29.7	43	62.4	91	279	304	404	131	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-067	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-067	BE-067-FY	Front Yard (FY)	335	23	47.9	69.9	68.7	224	431	445	185	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-067	BE-067-FG	Flower Garden (FG)	96	39	50.4	86.9	167	350	408	705	458	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-067	BE-067-DZ	Drip Zone (DZ)	39	55.8	68	59	77.4	578	788	379	353	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-067	BE-067-BA	Bare Area (BA)	45	70.3	102	90.7	23.3	818	757	355	27.3	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-068	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-068	BE-068-FY	Front Yard (FY)	1,201	69.2	85.6	110	449	601	948	277	655	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-068	BE-068-DZ	Drip Zone (DZ)	23	17.4	46.9	47.5	44.1	110	481	318	46.6	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-069	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	40	No	No	NA	NA	218	No	No
BE-069	BE-069-VG	Vegetable Garden (VG)	10	68.6	68.9	83.9	76.3	441	399	253	226	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-069	BE-069-RG	Rock Garden (RG)	115	41.7	50.9	75.4	102	330	327	362	163	No	NA	41.7	50.9	NA	NA	NA	330	327	NA	NA	NA
BE-069	BE-069-FY	Front Yard (FY)	2,568	37.1	46.1	50.7	97.6	322	386	319	146	No	NA	37.1	46.1	NA	NA	NA	322	386	NA	NA	NA
BE-069	BE-069-FG	Flower Garden (FG)	134	49.1	71.3	59.8	17.2	406	488	395	75.7	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-069	BE-069-DZ	Drip Zone (DZ)	220	41.3	40.8	47.1	54.1	283	291	260	38.8	No	NA	41.3	40.8	NA	NA	NA	283	291	NA	NA	NA
BE-069	BE-069-BY	Back Yard (BY)	720	35.6	62.1	79.9	72.5	222	264	265	252	No	NA	35.6	62.1	NA	NA	NA	222	264	NA	NA	NA
BE-070	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	100	No	No
BE-070	BE-070-FY	Front Yard (FY)	743	40	39.2	73	85.4	433	163	187	200	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-070	BE-070-FG	Flower Garden (FG)	296	23.8	22.2	18.1	12.1	194	184	154	52.7	No	NA	23.8	22.2	NA	NA	NA	194	184	NA	NA	NA
BE-070	BE-070-ED	Earthen Drive (ED)	697	28	37.1	84.6	66	171	207	248	73.2	No	NA	28	37.1	NA	NA	NA	171	207	NA	NA	NA
BE-070	BE-070-DZ	Drip Zone (DZ)	644	31.3	30.2	81.4	88.3	571	167	565	359	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-070	BE-070-BY	Back Yard (BY)	2,184	50	80.5	140	101	295	412	385	433	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-071	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-071	BE-071-RG	Rock Garden (RG)	532	3.6	46.7	48.8	73.8	36.9	709	179	297	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-071	BE-071-BY	Back Yard (BY)	100	9	12.8	46.4	37.5	61.8	82.7	611	260	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-072A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	33	No	No	NA	NA	285	Yes	Yes
BE-072A	BE-072A-VG	Vegetable Garden (VG)	71	23.9	29.7	29.4	12.9	207	219	107	8.6	No	NA	23.9	29.7	NA	NA	NA	207	219	NA	NA	NA
BE-072A	BE-072A-FY	Front Yard (FY)	2,065	28.6	30	33.4	36	289	265	156	82.2	No	NA	28.6	30	NA	NA	NA	289	265	NA	NA	NA
BE-072A	BE-072A-DZ	Drip Zone (DZ)	220	23.1	28.5	23.3	14.2	301	260	107	34.8	No	NA	23.1	28.5	NA	NA	NA	301	260	NA	NA	NA
BE-072A	BE-072A-BY	Back Yard (BY)	1,125	41.6	51.8	38.9	14.8	396	369	124	29.4	No	NA	41.6	51.8	NA	NA	NA	396	369	NA	NA	NA
BE-072B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	31	No	No	NA	NA	130	No	No
BE-072B	BE-072B-FY	Front Yard (FY)	444	34.2	24.9	13.2	11	542	90.3	19.9	39.4	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-072B	BE-072B-DZ	Drip Zone (DZ)	507	26.5	29.2	24.8	16.4	447	227	116	49.6	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-072B	BE-072B-BY	Back Yard (BY)	915	35	35.9	52.7	82.7	283	322	87.6	72.4	No	NA	35	35.9	NA	NA	NA	283	322	NA	NA	NA
BE-073	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	34.6	No	No	NA	NA	145	No	No
BE-073	BE-073-RG	Rock Garden (RG)	73	26.2	30.9	61.5	117	227	249	501	390	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-073	BE-073-FY	Front Yard (FY)	599	13.7	16	8.3	4.8	79.1	43	19	5.9	No	NA	13.7	16	NA	NA	NA	79.1	43	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-073	BE-073-FG	Flower Garden (FG)	20	14	31.3	20.7	7.4	123	127	28	10	No	NA	14	31.3	NA	NA	NA	123	127	NA	NA	NA
BE-073	BE-073-ED	Earthen Drive (ED)	67	75.5	70.2	15.7	21.1	632	642	67.2	88.8	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-073	BE-073-DZ	Drip Zone (DZ)	220	13.6	21.5	24.7	13.6	88.8	161	124	12.1	No	NA	13.6	21.5	NA	NA	NA	88.8	161	NA	NA	NA
BE-073	BE-073-BY	Back Yard (BY)	1,479	42	105	47.8	64	326	346	203	215	No	NA	42	105	NA	NA	NA	326	346	NA	NA	NA
BE-073	BE-073-BA	Bare Area (BA)	272	36.3	45.9	37.7	58.6	267	282	22.5	154	No	NA	36.3	45.9	NA	NA	NA	267	282	NA	NA	NA
BE-074	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-074	BE-074-VG	Vegetable Garden (VG)	34	48.5	50.2	76.6	120	373	396	479	507	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-074	BE-074-RG	Rock Garden (RG)	540	25.9	29.9	38.7	8.3	394	389	31.6	464	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-074	BE-074-FY	Front Yard (FY)	925	52.3	53.5	24.7	8.8	467	114	13.5	8.8	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-074	BE-074-FG	Flower Garden (FG)	29	46.7	39.3	23.9	54.5	475	227	31.2	361	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-074	BE-074-BY	Back Yard (BY)	691	9.8	46.1	52.6	57.8	43.2	501	455	409	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-075	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	129	No	No
BE-075	BE-075-PA	Play Area (PA)	291	17.1	11.4	19.8	23.7	46	40.5	351	713	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-075	BE-075-FY	Front Yard (FY)	1,020	25.3	31.4	24.2	18.4	148	105	122	77.1	No	NA	25.3	31.4	NA	NA	NA	148	105	NA	NA	NA
BE-075	BE-075-ED	Earthen Drive (ED)	481	32.9	42.9	29.6	32.1	313	302	165	262	No	NA	32.9	42.9	NA	NA	NA	313	302	NA	NA	NA
BE-075	BE-075-DZ	Drip Zone (DZ)	220	22.2	23.6	23.6	25.6	72	81.6	72.2	65.1	No	NA	22.2	23.6	NA	NA	NA	72	81.6	NA	NA	NA
BE-075	BE-075-BY	Back Yard (BY)	790	32	17.2	17.2	16.1	148	82.4	74.1	12.9	No	NA	32	17.2	NA	NA	NA	148	82.4	NA	NA	NA
BE-076	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-076	BE-076-VG	Vegetable Garden (VG)	219	32.5	29.2	25.3	19	360	228	68.5	36.2	No	NA	32.5	29.2	NA	NA	NA	360	228	NA	NA	NA
BE-076	BE-076-RG	Rock Garden (RG)	192	45.3	47.8	47.5	27.6	494	532	456	68.6	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-076	BE-076-PA	Play Area (PA)	96	36	37.5	44.2	48.4	829	736	682	429	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-076	BE-076-FY	Front Yard (FY)	41	28.2	34.6	21.4	324	148	243	13.5	48.8	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-076	BE-076-FG	Flower Garden (FG)	137	37.5	42.8	71.3	58.9	455	848	533	175	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-076	BE-076-DZ	Drip Zone (DZ)	205	31.9	37.5	40.9	43.6	524	661	735	418	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-076	BE-076-BY	Back Yard (BY)	1,224	42.4	42.7	35.1	66.1	729	722	658	614	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-077	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	30	No	No	NA	NA	98	No	No
BE-077	BE-077-VG	Vegetable Garden (VG)	130	58.3	95.8	151	96.5	364	507	372	127	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-077	BE-077-FG	Flower Garden (FG)	39	39.3	32.9	78.1	160	530	333	478	586	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-077	BE-077-ED	Earthen Drive (ED)	640	11.5	14.4	61.2	104	91	130	235	54	No	NA	11.5	14.4	NA	NA	NA	91	130	NA	NA	NA
BE-077	BE-077-DZ	Drip Zone (DZ)	564	75.1	84.8	90.7	131	478	641	351	200	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-077	BE-077-BY	Back Yard (BY)	2,133	40.6	77.2	76.6	69.8	392	435	371	190	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-077	BE-077-BA	Bare Area (BA)	545	60	48.5	9.1	8.7	362	290	14.4	11.7	No	NA	60	48.5	NA	NA	NA	362	290	NA	NA	NA
BE-078	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	34.4	No	No	NA	NA	102	No	No
BE-078	BE-078-VG	Vegetable Garden (VG)	23	8.1	23.4	80.7	184	62.8	177	452	529	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-078	BE-078-FY	Front Yard (FY)	545	41.8	62.1	53.5	74.7	238	343	221	92.6	No	NA	41.8	62.1	NA	NA	NA	238	343	NA	NA	NA
BE-078	BE-078-FG	Flower Garden (FG)	316	26.8	42.6	60.9	90.8	205	468	369	485	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-078	BE-078-DZ	Drip Zone (DZ)	312	51.5	57.9	67.6	90.6	436	450	464	679	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-078	BE-078-BY	Back Yard (BY)	898	19.5	49.1	52.3	59.5	65.6	183	181	155	No	NA	19.5	49.1	NA	NA	NA	65.6	183	NA	NA	NA
BE-078	BE-078-BA	Bare Area (BA)	69	67.8	48.2	49.1	116	776	787	447	749	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-079	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-079	BE-079-RG	Rock Garden (RG)	32	17	31.9	47.2	43.1	247	667	1000	793	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-079	BE-079-FY	Front Yard (FY)	390	27.5	39.4	67.9	57.3	352	562	132	279	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-079	BE-079-DZ	Drip Zone (DZ)	271	21.2	28.4	27.1	60.9	332	438	413	697	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-079	BE-079-BY	Back Yard (BY)	438	10.9	32.8	39.7	38.9	121	398	405	264	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-080	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	34	No	No	NA	NA	247	No	No
BE-080	BE-080-VG	Vegetable Garden (VG)	50	31.3	36.7	34.5	57.3	209	213	107	319	No	NA	31.3	36.7	NA	NA	NA	209	213	NA	NA	NA
BE-080	BE-080-FY	Front Yard (FY)	638	22.8	27.8	19.8	23.9	302	152	23.7	49.6	No	NA	22.8	27.8	NA	NA	NA	302	152	NA	NA	NA
BE-080	BE-080-FG	Flower Garden (FG)	63	28.1	32.5	46.1	36.2	237	317	125	15.8	No	NA	28.1	32.5	NA	NA	NA	237	317	NA	NA	NA
BE-080	BE-080-DZ	Drip Zone (DZ)	220	36.1	49.1	40	39	291	345	33.9	65.3	No	NA	36.1	49.1	NA	NA	NA	291	345	NA	NA	NA
BE-080	BE-080-BY	Back Yard (BY)	282	17.4	39.6	60.4	41.8	50.6	279	179	18.9	No	NA	17.4	39.6	NA	NA	NA	50.6	279	NA	NA	NA
BE-081	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	35.5	No	No	NA	NA	160	No	No
BE-081	BE-081-VG	Vegetable Garden (VG)	27	5.5	21.2	49.2	74.3	32.7	289	395	148	No	NA	5.5	21.2	NA	NA	NA	32.7	289	NA	NA	NA
BE-081	BE-081-RG	Rock Garden (RG)	128	36.4	398	755	107	388	570	921	63.2	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-081	BE-081-FY	Front Yard (FY)	229	20.2	35.6	34.6	30.1	192	356	197	38	No	NA	20.2	35.6	NA	NA	NA	192	356	NA	NA	NA
BE-081	BE-081-FG	Flower Garden (FG)	121	65.5	42.1	94.7	49.2	489	270	336	348	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-081	BE-081-ED	Earthen Drive (ED)	431	48.1	84.6	56.4	48.2	455	377	102	206	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-081	BE-081-DZ	Drip Zone (DZ)	291	47.8	159	430	57.3	443	562	521	36.2	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-081	BE-081-BY	Back Yard (BY)	783	29.9	103	163	60.2	323	337	249	49.9	No	NA	29.9	103	NA	NA	NA	323	337	NA	NA	NA
BE-081	BE-081-BA	Bare Area (BA)	103	32.6	54.6	70.3	48.1	203	325	302	87.9	No	NA	32.6	54.6	NA	NA	NA	203	325	NA	NA	NA
BE-082A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	29	No	No	NA	NA	94	No	No
BE-082A	BE-082A-RG	Rock Garden (RG)	647	26.1	35	28.3	68	244	180	93.6	65.5	No	NA	26.1	35	NA	NA	NA	244	180	NA	NA	NA
BE-082A	BE-082A-FG	Flower Garden (FG)	76	39.8	54	80.4	18.4	465	535	493	205	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-082A	BE-082A-DZ	Drip Zone (DZ)	220	27.2	40.5	65.1	60.4	429	324	275	49.7	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-082B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	44	No	No	NA	NA	214	No	No
BE-082B	BE-082B-VG	Vegetable Garden (VG)	33	12	17.1	30.3	40	112	172	402	484	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-082B	BE-082B-FY	Front Yard (FY)	671	48.1	56.8	79.1	42.1	379	371	316	91.1	No	NA	48.1	56.8	NA	NA	NA	379	371	NA	NA	NA
BE-082B	BE-082B-FG	Flower Garden (FG)	63	32.1	46.6	59.2	36.5	233	335	352	90.2	No	NA	32.1	46.6	NA	NA	NA	233	335	NA	NA	NA
BE-082B	BE-082B-DZ	Drip Zone (DZ)	87	41.4	51.3	38.1	17.7	513	497	453	73.1	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-082B	BE-082B-BA	Bare Area (BA)	73	69.5	66.1	15.2	10	378	288	50.9	23.9	No	NA	69.5	66.1	NA	NA	NA	378	288	NA	NA	NA
BE-083A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	38	No	No	NA	NA	225	No	No
BE-083A	BE-083A-VG	Vegetable Garden (VG)	148	63.9	51.2	92	85.2	475	361	365	437	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-083A	BE-083A-FY	Front Yard (FY)	220	23.3	47.1	111	96.3	230	333	201	109	No	NA	23.3	47.1	NA	NA	NA	230	333	NA	NA	NA
BE-083A	BE-083A-FG	Flower Garden (FG)	694	43.1	63	74.3	55.4	374	453	354	260	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-083A	BE-083A-DZ	Drip Zone (DZ)	220	33.7	40.2	58.1	22.9	352	396	281	31.2	No	NA	33.7	40.2	NA	NA	NA	352	396	NA	NA	NA
BE-083A	BE-083A-BY	Back Yard (BY)	284	50.2	60.6	85.5	40.7	358	367	256	71.8	No	NA	50.2	60.6	NA	NA	NA	358	367	NA	NA	NA
BE-083B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	38	No	No	NA	NA	280	No	No
BE-083B	BE-083B-FY	Front Yard (FY)	616	47.2	30.7	56.3	20.7	281	242	85.1	10.4	No	NA	47.2	30.7	NA	NA	NA	281	242	NA	NA	NA
BE-083B	BE-083B-DZ	Drip Zone (DZ)	220	31.6	43.3	39.9	30.7	327	294	101	11.9	No	NA	31.6	43.3	NA	NA	NA	327	294	NA	NA	NA
BE-084A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	26	No	No	NA	NA	82	No	No
BE-084A	BE-084A-FY	Front Yard (FY)	340	48.8	78.8	126	468	408	475	204	95.1	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-084A	BE-084A-FG	Flower Garden (FG)	35	4.4	32.8	49	52.9	22.8	239	335	293	No	NA	4.4	32.8	NA	NA	NA	22.8	239	NA	NA	NA
BE-084A	BE-084A-DZ	Drip Zone (DZ)	112	5.8	34.9	44.3	40	30.6	316	418	301	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-084B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	61	Yes	No	NA	NA	158	No	No
BE-084B	BE-084B-FY	Front Yard (FY)	1,055	47.2	55.9	86.5	110	305	311	314	151	No	NA	47.2	55.9	NA	NA	NA	305	311	NA	NA	NA
BE-084B	BE-084B-ED	Earthen Drive (ED)	661	49.7	57.8	66.9	47.9	549	404	304	95.4	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-084B	BE-084B-DZ	Drip Zone (DZ)	220	45.1	183	111	71.7	256	235	53.6	33.5	No	NA	45.1	183	NA	NA	NA	256	235	NA	NA	NA
BE-084B	BE-084B-BY	Back Yard (BY)	888	76.6	104	156	132	410	364	629	778	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-085	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	45	No	No	NA	NA	275	No	No
BE-085	BE-085-FY	Front Yard (FY)	776	32.7	53.5	115	100	238	317	232	82.7	No	NA	32.7	53.5	NA	NA	NA	238	317	NA	NA	NA
BE-085	BE-085-FG	Flower Garden (FG)	523	49.6	62	79	87.6	310	343	229	100	No	NA	49.6	62	NA	NA	NA	310	343	NA	NA	NA
BE-085	BE-085-DZ	Drip Zone (DZ)	220	31.5	31.4	54.9	32.1	232	185	32	12.6	No	NA	31.5	31.4	NA	NA	NA	232	185	NA	NA	NA
BE-085	BE-085-BY	Back Yard (BY)	782	35.4	48	65.7	65.8	300	267	250	34.9	No	NA	35.4	48	NA	NA	NA	300	267	NA	NA	NA
BE-086	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	21	No	No	NA	NA	180	No	No
BE-086	BE-086-VG	Vegetable Garden (VG)	1,578	19.2	21.8	39.5	21.5	136	110	88.5	51.9	No	NA	19.2	21.8	NA	NA	NA	136	110	NA	NA	NA
BE-086	BE-086-FG	Flower Garden (FG)	189	19.8	19.2	77.6	71.8	240	152	331	127	No	NA	19.8	19.2	NA	NA	NA	240	152	NA	NA	NA
BE-086	BE-086-ED	Earthen Drive (ED)	726	15.4	23.2	90.1	101	201	209	180	70.9	No	NA	15.4	23.2	NA	NA	NA	201	209	NA	NA	NA
BE-086	BE-086-DZ	Drip Zone (DZ)	220	21	32.9	38.4	53.8	398	261	248	201	No	NA	21	32.9	NA	NA	NA	398	261	NA	NA	NA
BE-086	BE-086-BY	Back Yard (BY)	1,465	13.5	14.9	15.8	14.1	87.3	91.7	363	100	No	NA	13.5	14.9	NA	NA	NA	87.3	91.7	NA	NA	NA
BE-087	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	21	No	No	NA	NA	159	No	No
BE-087	BE-087-RG	Rock Garden (RG)	206	7.5	6.7	15.8	13.8	53.5	39.3	110	49.7	No	NA	7.5	6.7	NA	NA	NA	53.5	39.3	NA	NA	NA
BE-087	BE-087-PA	Play Area (PA)	97	7.1	18.6	21.3	23.5	60.4	227	346	168	No	NA	7.1	18.6	NA	NA	NA	60.4	227	NA	NA	NA
BE-087	BE-087-FY	Front Yard (FY)	132	27.6	80.5	119	45.1	200	739	408	142	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-087	BE-087-ED	Earthen Drive (ED)	614	17.2	36.4	44.3	70.4	163	287	133	70.5	No	NA	17.2	36.4	NA	NA	NA	163	287	NA	NA	NA
BE-087	BE-087-DZ	Drip Zone (DZ)	220	17.5	26.1	35.8	25.9	201	362	194	108	No	NA	17.5	26.1	NA	NA	NA	201	362	NA	NA	NA
BE-087	BE-087-BY	Back Yard (BY)	1,050	11.5	30.5	78.2	66.4	98.1	165	369	165	No	NA	11.5	30.5	NA	NA	NA	98.1	165	NA	NA	NA
BE-088	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	24	No	No	NA	NA	83	No	No
BE-088	BE-088-RG	Rock Garden (RG)	1,588	19.2	20.7	40.5	11.9	160	148	108	49.2	No	NA	19.2	20.7	NA	NA	NA	160	148	NA	NA	NA
BE-088	BE-088-FY	Front Yard (FY)	285	54.4	87.6	136	123	668	595	1240	1590	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-088	BE-088-ED	Earthen Drive (ED)	3,934	12.5	23.2	22.2	26.5	60.4	118	84.5	103	No	NA	12.5	23.2	NA	NA	NA	60.4	118	NA	NA	NA
BE-088	BE-088-DZ	Drip Zone (DZ)	66	60.5	39.8	49.5	37.6	418	250	223	227	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-089	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	17	No	No	NA	NA	76	No	No
BE-089	BE-089-FY	Front Yard (FY)	2,778	11.2	16.6	32.5	58.5	33.7	59.7	162	311	No	NA	11.2	16.6	NA	NA	NA	33.7	59.7	NA	NA	NA
BE-089	BE-089-ED	Earthen Drive (ED)	1,742	10.7	13.6	17.6	19.4	20	27.4	70.6	98.9	No	NA	10.7	13.6	NA	NA	NA	20	27.4	NA	NA	NA
BE-089	BE-089-DZ	Drip Zone (DZ)	220	15.2	17.3	27.6	26	70.2	85.7	171	145	No	NA	15.2	17.3	NA	NA	NA	70.2	85.7	NA	NA	NA
BE-089	BE-089-BY	Back Yard (BY)	7,639	20.9	17.3	16	14	52.8	70.1	72.3	43.5	No	NA	20.9	17.3	NA	NA	NA	52.8	70.1	NA	NA	NA
BE-089	BE-089-BA	Bare Area (BA)	1,795	20.2	27	90.9	45.2	96.6	191	204	54.5	No	NA	20.2	27	NA	NA	NA	96.6	191	NA	NA	NA
BE-090	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	21	No	No	NA	NA	142	No	No
BE-090	BE-090-FY	Front Yard (FY)	1,410	13	19.5	72.2	45.3	112	311	273	224	No	NA	13	19.5	NA	NA	NA	112	311	NA	NA	NA
BE-090	BE-090-DZ	Drip Zone (DZ)	614	19	27.6	64.8	77.4	256	234	452	407	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-090	BE-090-BY	Back Yard (BY)	1,528	12.5	18.4	15.2	40.4	146	141	80.6	288	No	NA	12.5	18.4	NA	NA	NA	146	141	NA	NA	NA
BE-091	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	21	No	No	NA	NA	91	No	No
BE-091	BE-091-RG	Rock Garden (RG)	251	14.5	13	34	16.9	58.5	106	63.5	106	No	NA	14.5	13	NA	NA	NA	58.5	106	NA	NA	NA
BE-091	BE-091-PA	Play Area (PA)	191	18	13.8	26.7	28.7	137	100	97.7	168	No	NA	18	13.8	NA	NA	NA	137	100	NA	NA	NA
BE-091	BE-091-FY	Front Yard (FY)	311	5.6	19.1	20.5	42.3	30.9	165	134	90.4	No	NA	5.6	19.1	NA	NA	NA	30.9	165	NA	NA	NA
BE-091	BE-091-FG	Flower Garden (FG)	290	11.7	6.2	18.2	65.7	23.7	24.2	132	207	No	NA	11.7	6.2	NA	NA	NA	23.7	24.2	NA	NA	NA
BE-091	BE-091-ED	Earthen Drive (ED)	1,061	13.2	30.4	44.9	19.4	113	337	415	38.3	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-091	BE-091-DZ	Drip Zone (DZ)	220	33.8	53.4	115	99.7	134	171	237	239	No	NA	33.8	53.4	NA	NA	NA	134	171	NA	NA	NA
BE-092	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	168	No	No
BE-092	BE-092-RG	Rock Garden (RG)	184	30.2	26.6	17.6	16.4	173	220	68.3	33.4	No	NA	30.2	26.6	NA	NA	NA	173	220	NA	NA	NA
BE-092	BE-092-FY	Front Yard (FY)	332	25.8	26.8	55.5	70.9	659	190	190	110	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-092	BE-092-FG	Flower Garden (FG)	280	31.6	40.8	64	52.6	374	368	247	95.7	No	NA	31.6	40.8	NA	NA	NA	374	368	NA	NA	NA
BE-092	BE-092-ED	Earthen Drive (ED)	1,063	13.9	25.1	42.2	46.9	143	194	590	965	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-092	BE-092-DZ	Drip Zone (DZ)	220	15.9	22.3	31.6	35	211	231	180	114	No	NA	15.9	22.3	NA	NA	NA	211	231	NA	NA	NA
BE-092	BE-092-BY	Back Yard (BY)	3,145	26.9	28.4	40.5	32.8	252	257	104	377	No	NA	26.9	28.4	NA	NA	NA	252	257	NA	NA	NA
BE-092	BE-092-BA	Bare Area (BA)	156	30.9	44.1	51.3	46.7	474	439	174	168	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-093A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	42	No	No	NA	NA	100	No	No

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-093A	BE-093A-FY	Front Yard (FY)	207	160	24.8	25.8	13.4	287	186	112	50.7	No	NA	160	24.8	NA	NA	NA	287	186	NA	NA	NA
BE-093A	BE-093A-FG	Flower Garden (FG)	141	27.6	33.2	40.4	19.5	777	410	206	102	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-093A	BE-093A-DZ	Drip Zone (DZ)	70	32.2	22.7	23.8	19.2	593	447	259	368	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-093B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	42	No	No	NA	NA	161	No	No
BE-093B	BE-093B-FY	Front Yard (FY)	160	40.5	57.6	535	1560	534	680	1060	1590	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-093B	BE-093B-FG	Flower Garden (FG)	39	31.6	75.9	167	162	306	246	318	265	No	NA	31.6	75.9	NA	NA	NA	306	246	NA	NA	NA
BE-093B	BE-093B-DZ	Drip Zone (DZ)	161	48.9	79	155	26.8	693	537	382	727	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-093B	BE-093B-BY	Back Yard (BY)	4,207	31.4	61.5	80.6	180	339	276	230	292	No	NA	31.4	61.5	NA	NA	NA	339	276	NA	NA	NA
BE-094	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	30	No	No	NA	NA	71	No	No
BE-094	BE-094-RG	Rock Garden (RG)	129	44.4	44.7	46.6	25.5	495	409	147	113	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-094	BE-094-PA	Play Area (PA)	167	58	97.6	167	313	684	399	364	316	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-094	BE-094-FY	Front Yard (FY)	4,569	37.4	89.3	133	166	503	773	294	211	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-094	BE-094-ED	Earthen Drive (ED)	282	30.6	42.7	116	30.7	250	211	388	76.2	No	NA	30.6	42.7	NA	NA	NA	250	211	NA	NA	NA
BE-094	BE-094-DZ	Drip Zone (DZ)	146	27.6	39.6	43.5	13.4	440	650	271	44.3	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-094	BE-094-BY	Back Yard (BY)	2,619	49.6	77.6	97.6	127	406	336	349	606	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-200	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	30	No	No	NA	NA	140	No	No
BE-200	BE-200-BA	Bare Area (BA)	2,475	20.8	35	25.9	23.4	188	116	163	226	No	NA	20.8	35	NA	NA	NA	188	116	NA	NA	NA
BE-201	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	21	No	No	NA	NA	107	No	No
BE-201	BE-201-RG	Rock Garden (RG)	1,388	17.1	22.1	28.8	31	96.9	137	30.8	25.6	No	NA	17.1	22.1	NA	NA	NA	96.9	137	NA	NA	NA
BE-201	BE-201-FY	Front Yard (FY)	2,269	16.4	15.8	21.2	20.8	259	123	55.3	38.9	No	NA	16.4	15.8	NA	NA	NA	259	123	NA	NA	NA
BE-201	BE-201-ED	Earthen Drive (ED)	4,538	13.9	48.2	20.8	10.4	98.7	66.2	21.5	16	No	NA	13.9	48.2	NA	NA	NA	98.7	66.2	NA	NA	NA
BE-201	BE-201-DZ	Drip Zone (DZ)	220	14.1	17.5	18.1	27.1	52.7	77.3	70.5	104	No	NA	14.1	17.5	NA	NA	NA	52.7	77.3	NA	NA	NA
BE-201	BE-201-BY	Back Yard (BY)	1,484	12.5	14.7	34.8	18.7	89.7	105	38.2	18.7	No	NA	12.5	14.7	NA	NA	NA	89.7	105	NA	NA	NA
BE-202	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	15	No	No	NA	NA	76	No	No
BE-202	BE-202-RG	Rock Garden (RG)	210	10.2	18.9	13	13.5	72.7	38.8	14.4	15.2	No	NA	10.2	18.9	NA	NA	NA	72.7	38.8	NA	NA	NA
BE-202	BE-202-FY	Front Yard (FY)	16,437	11.2	8.6	15.1	13.5	105	49.9	27.4	19.6	No	NA	11.2	8.6	NA	NA	NA	105	49.9	NA	NA	NA
BE-202	BE-202-FG	Flower Garden (FG)	3,814	15.5	16.4	18	17.4	159	131	37.7	24.5	No	NA	15.5	16.4	NA	NA	NA	159	131	NA	NA	NA
BE-202	BE-202-ED	Earthen Drive (ED)	2,589	20.1	6.7	20.8	3.5	83.5	10.8	26.6	9.9	No	NA	20.1	6.7	NA	NA	NA	83.5	10.8	NA	NA	NA
BE-202	BE-202-DZ	Drip Zone (DZ)	220	12	10.6	8.6	8.5	104	70.3	28.8	44.7	No	NA	12	10.6	NA	NA	NA	104	70.3	NA	NA	NA
BE-202	BE-202-BY	Back Yard (BY)	78,994	19.4	27.1	46.5	40.4	68.9	90	66.6	22.2	No	NA	19.4	27.1	NA	NA	NA	68.9	90	NA	NA	NA
BE-203	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-203	BE-203-RG	Rock Garden (RG)	137	31.2	44	186	147	691	631	138	65.1	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-203	BE-203-FY	Front Yard (FY)	1,550	26.4	38.3	41.3	36.9	578	316	42.8	38.5	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-203	BE-203-ED	Earthen Drive (ED)	310	16.2	29.5	0.38	26.4	432	23.3	2.6	282	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-203	BE-203-DZ	Drip Zone (DZ)	280	30.2	41.7	47.5	61.7	733	755	120	481	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-203	BE-203-BA	Bare Area (BA)	215	27.6	34.5	43.8	103	585	342	147	56	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-204A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	27	No	No	NA	NA	100	No	No
BE-204A	BE-204A-VG	Vegetable Garden (VG)	22	20.5	23.4	23.6	44.5	636	836	269	67.4	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-204A	BE-204A-FY	Front Yard (FY)	1,613	20.5	23	28.5	22.7	365	329	186	23.5	No	NA	20.5	23	NA	NA	NA	365	329	NA	NA	NA
BE-204A	BE-204A-FG	Flower Garden (FG)	21	16.6	21.9	20.8	16.3	401	456	156	28.9	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-204A	BE-204A-DZ	Drip Zone (DZ)	332	17.7	21.4	20.1	19.1	671	621	194	51.5	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-204A	BE-204A-BA	Bare Area (BA)	534	26.5	46.3	44.6	30.1	446	361	131	14.2	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-204B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	32	No	No	NA	NA	118	No	No
BE-204B	BE-204B-ED	Earthen Drive (ED)	152	17.5	59.5	61.9	23.1	523	388	403	135	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-204B	BE-204B-DZ	Drip Zone (DZ)	220	22.2	49.1	28.9	34.7	291	268	302	97.1	No	NA	22.2	49.1	NA	NA	NA	291	268	NA	NA	NA
BE-204B	BE-204B-BY	Back Yard (BY)	1,013	31.6	26.2	43.6	96.2	531	375	373	315	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-205	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	40	No	No
BE-205	BE-205-VG	Vegetable Garden (VG)	26	22.8	29.1	31.7	27	418	304	172	41.6	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-205	BE-205-FY	Front Yard (FY)	985	23	32.3	38	43.6	469	304	61.6	18.3	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-205	BE-205-FG	Flower Garden (FG)	71	28	36.9	50.6	33.8	1120	583	464	476	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-205	BE-205-ED	Earthen Drive (ED) [c]	189	22.8	15.7			853	2770			Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-205	BE-205-DZ	Drip Zone (DZ)	195	23.3	32.6	70.9	41.4	1110	434	208	62.3	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-205	BE-205-BY	Back Yard (BY)	1,827	17.7	27.2	40.9	43.8	716	387	264	89.2	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-206A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	34	No	No	NA	NA	117	No	No
BE-206A	BE-206A-FY	Front Yard (FY)	561	43.9	65.1	34.3	75.7	233	88.4	42.6	341	No	NA	43.9	65.1	NA	NA	NA	233	88.4	NA	NA	NA
BE-206A	BE-206A-FG	Flower Garden (FG)	198	15.7	21.1	29.7	34.2	108	148	139	146	No	NA	15.7	21.1	NA	NA	NA	108	148	NA	NA	NA
BE-206A	BE-206A-ED	Earthen Drive (ED)	818	28.6	40.7	73	104	308	200	184	59.5	No	NA	28.6	40.7	NA	NA	NA	308	200	NA	NA	NA
BE-206A	BE-206A-DZ	Drip Zone (DZ)	68	21.8	29.9	29.1	22.4	356	407	181	92.4	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-206A	BE-206A-BY	Back Yard (BY)	567	20.5	41.4	70.7	44.8	217	337	501	36.5	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-206B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	34	No	No	NA	NA	217	No	No
BE-206B	BE-206B-FY	Front Yard (FY)	543	21.8	23.1	41.3	27.3	251	233	150	263	No	NA	21.8	23.1	NA	NA	NA	251	233	NA	NA	NA
BE-206B	BE-206B-FG	Flower Garden (FG)	55	24.8	25.5	27.3	31.5	332	295	342	418	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-206B	BE-206B-ED	Earthen Drive (ED)	858	52.4	64.5	79.4	56.9	222	110	104	58.1	No	NA	52.4	64.5	NA	NA	NA	222	110	NA	NA	NA
BE-206B	BE-206B-DZ	Drip Zone (DZ)	220	22.8	28.1	23.1	25.4	321	300	225	345	No	NA	22.8	28.1	NA	NA	NA	321	300	NA	NA	NA
BE-206B	BE-206B-BY	Back Yard (BY)	567	29.4	33.2	58.3	76.4	356	352	324	349	No	NA	29.4	33.2	NA	NA	NA	356	352	NA	NA	NA
BE-206C	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	225	No	No
BE-206C	BE-206C-PA	Play Area (PA)	66	23.1	26.4	25.2	34.6	307	365	105	20.5	No	NA	23.1	26.4	NA	NA	NA	307	365	NA	NA	NA
BE-206C	BE-206C-FY	Front Yard (FY)	1,028	22.8	29.4	41.1	48.5	271	266	285	132	No	NA	22.8	29.4	NA	NA	NA	271	266	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-206C	BE-206C-FG	Flower Garden (FG)	48	25.9	13.7	21.7	43.2	303	175	310	405	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-206C	BE-206C-ED	Earthen Drive (ED)	803	22.4	39.5	65.5	60.8	199	301	326	104	No	NA	22.4	39.5	NA	NA	NA	199	301	NA	NA	NA
BE-206C	BE-206C-DZ	Drip Zone (DZ)	220	24	17.4	23.9	27.6	351	183	155	239	No	NA	24	17.4	NA	NA	NA	351	183	NA	NA	NA
BE-206C	BE-206C-BY	Back Yard (BY)	554	20.2	43.3	45.7	34.6	278	150	55.7	51.5	No	NA	20.2	43.3	NA	NA	NA	278	150	NA	NA	NA
BE-206D	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	160	No	No
BE-206D	BE-206D-DZ	Drip Zone (DZ)	220	19	33.3	37.5	87.2	261	289	124	288	No	NA	19	33.3	NA	NA	NA	261	289	NA	NA	NA
BE-206D	BE-206D-BY	Back Yard (BY)	694	21.1	38.9	55.8	50	384	1490	336	118	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-207	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	35.8	No	No	NA	NA	173	No	No
BE-207	BE-207-RG	Rock Garden (RG)	288	12.3	31.8	41.5	27.7	288	362	76.6	5.6	No	NA	12.3	31.8	NA	NA	NA	288	362	NA	NA	NA
BE-207	BE-207-ED	Earthen Drive (ED)	342	14.8	92.9	23.4	4	167	206	12.8	4.3	No	NA	14.8	92.9	NA	NA	NA	167	206	NA	NA	NA
BE-207	BE-207-DZ	Drip Zone (DZ)	231	18	30.6	54.1	33.1	839	427	72.3	17.2	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-207	BE-207-BY	Back Yard (BY)	1,192	26.5	33.6	43.6	37.9	290	236	226	115	No	NA	26.5	33.6	NA	NA	NA	290	236	NA	NA	NA
BE-207	BE-207-BA	Bare Area (BA)	305	22.6	35.3	55.1	24.1	340	675	270	118	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-208	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	19	No	No	NA	NA	157	No	No
BE-208	BE-208-VG	Vegetable Garden (VG)	49	16.7	17.4	19.8	22.6	146	174	157	33	No	NA	16.7	17.4	NA	NA	NA	146	174	NA	NA	NA
BE-208	BE-208-FY	Front Yard (FY)	132	15.8	18.2	17.6	19.3	154	95.4	51.8	8.6	No	NA	15.8	18.2	NA	NA	NA	154	95.4	NA	NA	NA
BE-208	BE-208-DZ	Drip Zone (DZ)	220	21.7	26.6	28	34.6	221	277	200	17.7	No	NA	21.7	26.6	NA	NA	NA	221	277	NA	NA	NA
BE-208	BE-208-BY	Back Yard (BY)	610	13.5	16.3	27.2	30.2	69.5	102	194	141	No	NA	13.5	16.3	NA	NA	NA	69.5	102	NA	NA	NA
BE-209	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	30	No	No	NA	NA	208	No	No
BE-209	BE-209-FY	Front Yard (FY)	273	24	27.2	48.6	15.6	149	148	121	15.3	No	NA	24	27.2	NA	NA	NA	149	148	NA	NA	NA
BE-209	BE-209-DZ	Drip Zone (DZ)	220	28.1	24.6	27.6	14.8	213	305	104	15.9	No	NA	28.1	24.6	NA	NA	NA	213	305	NA	NA	NA
BE-209	BE-209-BY	Back Yard (BY)	988	35.8	40.4	49.8	52	195	204	208	145	No	NA	35.8	40.4	NA	NA	NA	195	204	NA	NA	NA
BE-210	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	26	No	No	NA	NA	202	No	No
BE-210	BE-210-FY	Front Yard (FY)	146	22.5	29.2	33	26.7	230	187	29.7	39.1	No	NA	22.5	29.2	NA	NA	NA	230	187	NA	NA	NA
BE-210	BE-210-FG	Flower Garden (FG)	52	20.8	27.5	22.1	31.9	360	210	18.2	13.8	No	NA	20.8	27.5	NA	NA	NA	360	210	NA	NA	NA
BE-210	BE-210-DZ	Drip Zone (DZ)	285	21.8	26.4	27.2	30	429	406	214	248	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-210	BE-210-BY	Back Yard (BY)	533	20.4	23.6	29.4	32.8	323	300	330	336	No	NA	20.4	23.6	NA	NA	NA	323	300	NA	NA	NA
BE-211	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	23	No	No	NA	NA	279	No	No
BE-211	BE-211-BY	Back Yard (BY)	1,695	20.4	24.1	32.9	32.6	190	324	285	91.6	No	NA	20.4	24.1	NA	NA	NA	190	324	NA	NA	NA
BE-212	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	11	No	No	NA	NA	91	No	No
BE-212	BE-212-FY	Front Yard (FY)	354	7.6	6.3	11.4	15.8	23.3	19.8	55.1	82.8	No	NA	7.6	6.3	NA	NA	NA	23.3	19.8	NA	NA	NA
BE-212	BE-212-FG	Flower Garden (FG)	86	7.6	6.7	11.4	21.4	50.5	33.3	369	229	No	NA	7.6	6.7	NA	NA	NA	50.5	33.3	NA	NA	NA
BE-212	BE-212-DZ	Drip Zone (DZ)	220	8.3	13.8	13.9	11.6	37.3	109	36.8	28	No	NA	8.3	13.8	NA	NA	NA	37.3	109	NA	NA	NA
BE-212	BE-212-BY	Back Yard (BY)	1,274	7.9	22	26.9	21.1	71	293	146	34.7	No	NA	7.9	22	NA	NA	NA	71	293	NA	NA	NA
BE-213	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	23	No	No	NA	NA	162	No	No
BE-213	BE-213-VG	Vegetable Garden (VG)	84	17.9	19.6	14.9	54.8	252	342	91.2	92.3	No	NA	17.9	19.6	NA	NA	NA	252	342	NA	NA	NA
BE-213	BE-213-FG	Flower Garden (FG)	145	18.5	14.3	46.6	45.8	149	83.8	149	140	No	NA	18.5	14.3	NA	NA	NA	149	83.8	NA	NA	NA
BE-213	BE-213-ED	Earthen Drive (ED)	1,236	31.1	35.8	38.3	34.1	114	149	187	166	No	NA	31.1	35.8	NA	NA	NA	114	149	NA	NA	NA
BE-213	BE-213-DZ	Drip Zone (DZ)	82	11.8	8.1	22.9	29	71.3	36.1	595	441	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-213	BE-213-BY	Back Yard (BY)	720	15.1	19.3	26.3	31.9	79.9	282	300	167	No	NA	15.1	19.3	NA	NA	NA	79.9	282	NA	NA	NA
BE-216	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	26	No	No	NA	NA	92	No	No
BE-216	BE-216-FY	Front Yard (FY)	1,655	17.1	26.4	48.6	66.5	150	220	191	88.2	No	NA	17.1	26.4	NA	NA	NA	150	220	NA	NA	NA
BE-216	BE-216-DZ	Drip Zone (DZ)	489	22.9	38.7	61.2	77.9	15.5	527	907	1470	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-216	BE-216-BY	Back Yard (BY)	2,688	17.3	23.5	34.1	24.3	168	143	114	466	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-217	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	42	No	No	NA	NA	173	No	No
BE-217	BE-217-PA	Play Area (PA)	154	46.8	86.4	51.8	67.5	234	161	13.3	39.2	No	NA	46.8	86.4	NA	NA	NA	234	161	NA	NA	NA
BE-217	BE-217-FY	Front Yard (FY)	1,988	33.9	50.9	51.4	66.8	335	211	69.6	106	No	NA	33.9	50.9	NA	NA	NA	335	211	NA	NA	NA
BE-217	BE-217-ED	Earthen Drive (ED)	447	17.6	38.8	88.9	78.8	402	290	211	48.9	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-217	BE-217-DZ	Drip Zone (DZ)	492	42.1	56.2	54	35.5	992	807	163	93.9	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-217	BE-217-BY	Back Yard (BY)	2,357	31.1	37.6	42.4	63.4	388	332	306	251	No	NA	31.1	37.6	NA	NA	NA	388	332	NA	NA	NA
BE-218A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	38	No	No	NA	NA	217	No	No
BE-218A	BE-218A-FY	Front Yard (FY)	2,570	33.6	42.9	47.8	56.3	204	237	173	113	No	NA	33.6	42.9	NA	NA	NA	204	237	NA	NA	NA
BE-218A	BE-218A-DZ	Drip Zone (DZ)	220	33.3	38.4	39.2	53	254	207	191	154	No	NA	33.3	38.4	NA	NA	NA	254	207	NA	NA	NA
BE-218A	BE-218A-BY	Back Yard (BY)	1,186	39.1	35.1	43.1	41.1	206	200	196	113	No	NA	39.1	35.1	NA	NA	NA	206	200	NA	NA	NA
BE-218B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	43	No	No	NA	NA	205	No	No
BE-218B	BE-218B-VG	Vegetable Garden (VG)	20	33.7	33.7	70.9	111	269	285	588	858	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-218B	BE-218B-FY	Front Yard (FY)	819	33.1	63.5	30.6	50.3	177	264	242	200	No	NA	33.1	63.5	NA	NA	NA	177	264	NA	NA	NA
BE-218B	BE-218B-DZ	Drip Zone (DZ)	249	49	60.9	67.3	61.3	317	251	198	116	No	NA	49	60.9	NA	NA	NA	317	251	NA	NA	NA
BE-218B	BE-218B-BY	Back Yard (BY)	230	33.9	31.9	62.6	32.4	319	247	52.5	12.9	No	NA	33.9	31.9	NA	NA	NA	319	247	NA	NA	NA
BE-219	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	32	No	No	NA	NA	234	No	No
BE-219	BE-219-FY	Front Yard (FY)	626	30.7	34.4	40.9	44.3	228	366	343	82.9	No	NA	30.7	34.4	NA	NA	NA	228	366	NA	NA	NA
BE-219	BE-219-FG	Flower Garden (FG)	53	30.3	34.6	50	44.6	326	343	317	117	No	NA	30.3	34.6	NA	NA	NA	326	343	NA	NA	NA
BE-219	BE-219-DZ	Drip Zone (DZ)	34	24.5	31.8	28.5	33	525	1100	243	27.4	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-219	BE-219-BY	Back Yard (BY)	701	32.6	33.6	35.6	44.5	267	228	257	228	No	NA	32.6	33.6	NA	NA	NA	267	228	NA	NA	NA
BE-220	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	38	No	No	NA	NA	146	No	No
BE-220	BE-220-RG	Rock Garden (RG)	79	34.6	83.4	126	108	409	527	630	381	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-220	BE-220-FY	Front Yard (FY)	554	33.1	41.8	43.8	41	229	246	142	108	No	NA	33.1	41.8	NA	NA	NA	229	246	NA	NA	NA
BE-220	BE-220-DZ	Drip Zone (DZ)	368	29	37.9	54.3	204	397	556	430	141	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-220	BE-220-BY	Back Yard (BY)	385	113	31	90.4	65.4	189	299	233	181	No	NA	113	31	NA	NA	NA	189	299	NA	NA	NA
BE-221	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	27	No	No	NA	NA	175	No	No
BE-221	BE-221-VG	Vegetable Garden (VG)	233	13.8	37.2	40.4	53.4	87.3	268	380	362	No	NA	13.8	37.2	NA	NA	NA	87.3	268	NA	NA	NA
BE-221	BE-221-FY	Front Yard (FY)	2,235	23	35.7	39.3	43.3	355	227	124	326	No	NA	23	35.7	NA	NA	NA	355	227	NA	NA	NA
BE-221	BE-221-FG	Flower Garden (FG)	1,035	17.6	16.9	43.9	44.3	155	100	233	236	No	NA	17.6	16.9	NA	NA	NA	155	100	NA	NA	NA
BE-221	BE-221-DZ	Drip Zone (DZ)	220	23.6	25.9	24.7	29.8	278	144	61.8	85.4	No	NA	23.6	25.9	NA	NA	NA	278	144	NA	NA	NA
BE-221	BE-221-BY	Back Yard (BY)	952	12.1	27.7	39	31.2	79	81.5	199	110	No	NA	12.1	27.7	NA	NA	NA	79	81.5	NA	NA	NA
BE-221	BE-221-BA	Bare Area (BA)	450	33.3	36.4	24.8	43.7	196	182	68.1	82.8	No	NA	33.3	36.4	NA	NA	NA	196	182	NA	NA	NA
BE-222	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	12	No	No	NA	NA	33	No	No
BE-222	BE-222-VG	Vegetable Garden (VG)	340	10.7	8.2	9.4	12.7	34	15.3	20	52.5	No	NA	10.7	8.2	NA	NA	NA	34	15.3	NA	NA	NA
BE-222	BE-222-RG	Rock Garden (RG)	241	11.3	8.4	8.4	9.5	42.4	17.3	13.2	22.2	No	NA	11.3	8.4	NA	NA	NA	42.4	17.3	NA	NA	NA
BE-222	BE-222-FY	Front Yard (FY)	1,146	9.4	12.9	40.4	42	16.7	28.7	86.1	108	No	NA	9.4	12.9	NA	NA	NA	16.7	28.7	NA	NA	NA
BE-222	BE-222-FG	Flower Garden (FG)	120	10.6	9.1	14.2	21.8	16.2	15.9	17.7	16	No	NA	10.6	9.1	NA	NA	NA	16.2	15.9	NA	NA	NA
BE-222	BE-222-DZ	Drip Zone (DZ)	220	16	25.4	24.9	34.1	84.9	94.9	40.6	53.3	No	NA	16	25.4	NA	NA	NA	84.9	94.9	NA	NA	NA
BE-222	BE-222-BY	Back Yard (BY)	549	7.9	8.4	25	26.3	19.8	17.7	162	186	No	NA	7.9	8.4	NA	NA	NA	19.8	17.7	NA	NA	NA
BE-223	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	24	No	No	NA	NA	159	No	No
BE-223	BE-223-FY	Front Yard (FY)	232	10.5	18.9	29	25.8	199	174	130	52.2	No	NA	10.5	18.9	NA	NA	NA	199	174	NA	NA	NA
BE-223	BE-223-FG	Flower Garden (FG)	97	20.9	22.1	20.3	21.6	328	174	69.9	78.8	No	NA	20.9	22.1	NA	NA	NA	328	174	NA	NA	NA
BE-223	BE-223-DZ	Drip Zone (DZ)	98	18.4	23.4	22.4	22.4	424	480	79.9	212	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-223	BE-223-BY	Back Yard (BY)	1,076	47.8	23.4	21.1	19.4	210	176	83.6	72.6	No	NA	47.8	23.4	NA	NA	NA	210	176	NA	NA	NA
BE-224	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	22	No	No	NA	NA	126	No	No
BE-224	BE-224-FY	Front Yard (FY)	322	14	16.6	29.7	14.1	81.7	74.5	70.3	32	No	NA	14	16.6	NA	NA	NA	81.7	74.5	NA	NA	NA
BE-224	BE-224-ED	Earthen Drive (ED)	912	39	40.2	20.4	40.6	130	52.6	19.1	265	No	NA	39	40.2	NA	NA	NA	130	52.6	NA	NA	NA
BE-224	BE-224-DZ	Drip Zone (DZ)	220	15.3	8.5	6	6.2	109	12.7	8.1	15.7	No	NA	15.3	8.5	NA	NA	NA	109	12.7	NA	NA	NA
BE-224	BE-224-BY	Back Yard (BY)	1,050	27.7	18.4	28.9	31.7	202	170	189	164	No	NA	27.7	18.4	NA	NA	NA	202	170	NA	NA	NA
BE-224	BE-224-BA	Bare Area (BA) [A]	99	21.5	24.4			248	248			No	NA	21.5	24.4	NA	NA	NA	248	248	NA	NA	NA
BE-225A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	22	No	No	NA	NA	120	No	No
BE-225A	BE-225A-FY	Front Yard (FY)	137	26.6	31.8	62.2	72.7	597	226	106	86.5	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-225A	BE-225A-FG	Flower Garden (FG)	326	18.1	22.6	24.6	32.6	185	182	135	265	No	NA	18.1	22.6	NA	NA	NA	185	182	NA	NA	NA
BE-225A	BE-225A-DZ	Drip Zone (DZ)	220	9.4	15.6	17.5	29.2	29.4	43.6	35.8	131	No	NA	9.4	15.6	NA	NA	NA	29.4	43.6	NA	NA	NA
BE-225A	BE-225A-BY	Back Yard (BY)	1,194	23.4	25.8	30.6	33	210	224	235	189	No	NA	23.4	25.8	NA	NA	NA	210	224	NA	NA	NA
BE-225B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	24	No	No	NA	NA	188	No	No
BE-225B	BE-225B-VG	Vegetable Garden (VG)	180	28.1	17.1	24.3	15.1	30.4	167	18.5	6.7	No	NA	28.1	17.1	NA	NA	NA	30.4	167	NA	NA	NA
BE-225B	BE-225B-FY	Front Yard (FY)	295	23.2	34.3	29.2	13.6	336	282	112	24.5	No	NA	23.2	34.3	NA	NA	NA	336	282	NA	NA	NA
BE-225B	BE-225B-FG	Flower Garden (FG)	94	17.6	18.4	14.5	6.1	199	210	36.4	16.3	No	NA	17.6	18.4	NA	NA	NA	199	210	NA	NA	NA
BE-225B	BE-225B-ED	Earthen Drive (ED)	334	34.7	40.7	47.4	62.4	464	361	210	60.7	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-225B	BE-225B-BY	Back Yard (BY)	1,683	25.2	28.1	34.6	36.2	245	238	237	139	No	NA	25.2	28.1	NA	NA	NA	245	238	NA	NA	NA
BE-225B	BE-225B-BA	Bare Area (BA)	242	24	20.8	67	21.9	217	227	135	63.2	No	NA	24	20.8	NA	NA	NA	217	227	NA	NA	NA
BE-226	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	32	No	No	NA	NA	257	No	No
BE-226	BE-226-FY	Front Yard (FY)	847	24.7	34.2	98.9	99.2	228	147	31.8	99.3	No	NA	24.7	34.2	NA	NA	NA	228	147	NA	NA	NA
BE-226	BE-226-FG	Flower Garden (FG)	27	24.5	40.2	49.7	47.4	224	396	104	73.5	No	NA	24.5	40.2	NA	NA	NA	224	396	NA	NA	NA
BE-226	BE-226-DZ	Drip Zone (DZ)	220	19.6	36.3	32.4	32.8	226	289	187	166	No	NA	19.6	36.3	NA	NA	NA	226	289	NA	NA	NA
BE-226	BE-226-BY	Back Yard (BY)	2,651	25.9	33.6	41.1	35.4	219	261	200	162	No	NA	25.9	33.6	NA	NA	NA	219	261	NA	NA	NA
BE-230	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	29	No	No	NA	NA	107	No	No
BE-230	BE-230-FY	Front Yard (FY)	265	20.7	34.1	30	26.8	1040	468	144	119	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-230	BE-230-FG	Flower Garden (FG)	99	27.5	35.5	52.1	36	635	366	149	48.3	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-230	BE-230-DZ	Drip Zone (DZ)	158	45	102	58.2	53.5	2150	537	26.4	37.5	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-230	BE-230-BY	Back Yard (BY)	1,652	23.7	37	52.7	61.3	284	322	165	89.1	No	NA	23.7	37	NA	NA	NA	284	322	NA	NA	NA
BE-231	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	25	No	No	NA	NA	105	No	No
BE-231	BE-231-VG	Vegetable Garden (VG)	438	20.6	20.3	35.5	74.9	143	142	279	351	No	NA	20.6	20.3	NA	NA	NA	143	142	NA	NA	NA
BE-231	BE-231-FY	Front Yard (FY)	475	24.1	51	58.7	60.6	313	429	133	43.7	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-231	BE-231-FG	Flower Garden (FG)	191	19.6	23.2	26.9	20.7	61.4	174	99.9	68.2	No	NA	19.6	23.2	NA	NA	NA	61.4	174	NA	NA	NA
BE-231	BE-231-BY	Back Yard (BY)	1,187	19.6	33.4	39.5	22.9	122	89.3	50.7	36.4	No	NA	19.6	33.4	NA	NA	NA	122	89.3	NA	NA	NA
BE-232	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	21	No	No	NA	NA	117	No	No
BE-232	BE-232-VG	Vegetable Garden (VG)	820	23.3	16.6	16.8	24.4	199	51.5	101	36.3	No	NA	23.3	16.6	NA	NA	NA	199	51.5	NA	NA	NA
BE-232	BE-232-FY	Front Yard (FY)	701	21.1	26.8	34.5	29.2	229	334	129	27.5	No	NA	21.1	26.8	NA	NA	NA	229	334	NA	NA	NA
BE-232	BE-232-FG	Flower Garden (FG)	10	19.3	34	26.3	36	27.1	32.5	281	351	No	NA	19.3	34	NA	NA	NA	27.1	32.5	NA	NA	NA
BE-232	BE-232-ED	Earthen Drive (ED)	290	11.3	8.7	4.6	7.7	92.2	9	6.8	10.1	No	NA	11.3	8.7	NA	NA	NA	92.2	9	NA	NA	NA
BE-233	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	21	No	No	NA	NA	242	No	No
BE-233	BE-233-RG	Rock Garden (RG)	468	21	27	28	32.4	311	324	160	93.7	No	NA	21	27	NA	NA	NA	311	324	NA	NA	NA
BE-233	BE-233-FY	Front Yard (FY)	985	17.8	24.1	20.4	29.3	296	234	115	80.1	No	NA	17.8	24.1	NA	NA	NA	296	234	NA	NA	NA
BE-233	BE-233-FG	Flower Garden (FG)	136	16.3	17.9	15.1	22.1	387	352	85.7	84.3	No	NA	16.3	17.9	NA	NA	NA	387	352	NA	NA	NA
BE-233	BE-233-DZ	Drip Zone (DZ)	220	14.1	14.9	24.2	18.7	265	218	249	159	No	NA	14.1	14.9	NA	NA	NA	265	218	NA	NA	NA
BE-233	BE-233-BY	Back Yard (BY)	353	19.8	27.3	25.9	28.3	433	361	287	146	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-234	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	27	No	No	NA	NA	149	No	No
BE-234	BE-234-RG	Rock Garden (RG)	1,072	25.2	39	42.6	51.5	354	277	143	64.6	No	NA	25.2	39	NA	NA	NA	354	277	NA	NA	NA
BE-234	BE-234-FG	Flower Garden (FG)	754	16.4	21.6	28.1	36.5	681	364	333	370	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-234	BE-234-ED	Earthen Drive (ED)	483	49.8	201	154	175	528	689	490	528	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-234	BE-234-DZ	Drip Zone (DZ)	111	26.1	29.9	41.1	42.3	1250	463	571	238	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-234	BE-234-BY	Back Yard (BY)	2,545	18.7	23.6	70.5	26.8	220	201	144	19.8	No	NA	18.7	23.6	NA	NA	NA	220	201	NA	NA	NA
BE-234	BE-234-BA	Bare Area (BA)	169	14.5	24.1	26.2	20.5	242	280	145	54.2	No	NA	14.5	24.1	NA	NA	NA	242	280	NA	NA	NA
BE-235	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	27	No	No	NA	NA	212	No	No
BE-235	BE-235-RG	Rock Garden (RG)	96	25.6	29.7	18.1	12.1	327	383	50.2	32.2	No	NA	25.6	29.7	NA	NA	NA	327	383	NA	NA	NA
BE-235	BE-235-PA	Play Area (PA)	35	19.8	29.3	34.9	25.6	161	185	180	43	No	NA	19.8	29.3	NA	NA	NA	161	185	NA	NA	NA
BE-235	BE-235-FG	Flower Garden (FG)	568	18	17.9	26.4	35.8	183	138	390	560	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-235	BE-235-DZ	Drip Zone (DZ)	220	21	31.4	52.5	59.6	217	319	251	195	No	NA	21	31.4	NA	NA	NA	217	319	NA	NA	NA
BE-235	BE-235-BY	Back Yard (BY)	1,110	36.3	19.1	58.2	46.2	296	142	210	108	No	NA	36.3	19.1	NA	NA	NA	296	142	NA	NA	NA
BE-236A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	35.6	No	No	NA	NA	208	No	No
BE-236A	BE-236A-RG	Rock Garden (RG)	338	23.2	20.5	34.9	17	318	338	314	163	No	NA	23.2	20.5	NA	NA	NA	318	338	NA	NA	NA
BE-236A	BE-236A-FY	Front Yard (FY)	1,253	33.9	36.1	41.6	38.3	298	243	167	68.4	No	NA	33.9	36.1	NA	NA	NA	298	243	NA	NA	NA
BE-236A	BE-236A-FG	Flower Garden (FG)	293	31.8	35.4	43.4	35.9	243	191	163	85.8	No	NA	31.8	35.4	NA	NA	NA	243	191	NA	NA	NA
BE-236A	BE-236A-DZ	Drip Zone (DZ)	91	26	27.3	29	17.5	316	425	478	221	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-236A	BE-236A-BY	Back Yard (BY)	299	60.6	58.7	78.7	119	179	209	163	74.5	No	NA	60.6	58.7	NA	NA	NA	179	209	NA	NA	NA
BE-236B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	31	No	No	NA	NA	128	No	No
BE-236B	BE-236B-FY	Front Yard (FY)	1,044	35.1	48.6	66.2	79.5	190	219	204	91.9	No	NA	35.1	48.6	NA	NA	NA	190	219	NA	NA	NA
BE-236B	BE-236B-FG	Flower Garden (FG)	99	21.4	23.4	53.6	75.5	134	135	166	123	No	NA	21.4	23.4	NA	NA	NA	134	135	NA	NA	NA
BE-236B	BE-236B-DZ	Drip Zone (DZ)	220	29.3	31.7	37.7	37.3	181	99.7	106	76.7	No	NA	29.3	31.7	NA	NA	NA	181	99.7	NA	NA	NA
BE-236B	BE-236B-BA	Bare Area (BA)	262	36.9	136	46.4	80	327	473	69.4	88.5	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-237A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	40	No	No	NA	NA	161	No	No
BE-237A	BE-237A-RG	Rock Garden (RG)	199	38	69.9	96.1	88.4	257	290	210	101	No	NA	38	69.9	NA	NA	NA	257	290	NA	NA	NA
BE-237A	BE-237A-FY	Front Yard (FY)	2,407	29.5	52.1	72.2	60	324	266	181	120	No	NA	29.5	52.1	NA	NA	NA	324	266	NA	NA	NA
BE-237A	BE-237A-DZ	Drip Zone (DZ)	102	26.2	27	93.3	98.2	568	643	983	203	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-237A	BE-237A-BA	Bare Area (BA)	85	22	44.8	84.4	117	455	753	600	154	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-237B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	37	No	No	NA	NA	186	No	No
BE-237B	BE-237B-FY	Front Yard (FY)	1,088	35.9	51.6	72.4	52.2	304	204	150	62.8	No	NA	35.9	51.6	NA	NA	NA	304	204	NA	NA	NA
BE-237B	BE-237B-FG	Flower Garden (FG)	88	28.5	41.6	47.9	38.4	269	287	157	178	No	NA	28.5	41.6	NA	NA	NA	269	287	NA	NA	NA
BE-237B	BE-237B-DZ	Drip Zone (DZ)	322	31.6	41.1	54.6	80.4	305	501	156	168	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-238	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	29	No	No	NA	NA	111	No	No
BE-238	BE-238-VG	Vegetable Garden (VG)	223	34.7	42.1	58.2	61.5	312	336	445	301	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-238	BE-238-FG	Flower Garden (FG)	231	12.7	14.4	24	20.5	219	37.5	280	157	No	NA	12.7	14.4	NA	NA	NA	219	37.5	NA	NA	NA
BE-238	BE-238-DZ	Drip Zone (DZ)	220	140	15.7	15.6	9.5	111	242	216	78.2	No	NA	140	15.7	NA	NA	NA	111	242	NA	NA	NA
BE-238	BE-238-BY	Back Yard (BY)	317	46.8	43.1	114	14	294	271	618	210	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-238	BE-238-BA	Bare Area (BA)	1,334	14.4	18.2	17.6	15.7	141	195	78.2	160	No	NA	14.4	18.2	NA	NA	NA	141	195	NA	NA	NA
BE-239	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	22	No	No	NA	NA	54	No	No
BE-239	BE-239-RG	Rock Garden (RG)	148	9.3	15.4	45.7	27.1	31.3	25.9	226	85.7	No	NA	9.3	15.4	NA	NA	NA	31.3	25.9	NA	NA	NA
BE-239	BE-239-FG	Flower Garden (FG)	767	5.1	8	8.6	16.4	19.9	38.7	41.6	104	No	NA	5.1	8	NA	NA	NA	19.9	38.7	NA	NA	NA
BE-239	BE-239-DZ	Drip Zone (DZ)	467	26.8	51.3	56.2	34.3	776	344	240	26.5	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-239	BE-239-BY	Back Yard (BY)	743	33.7	39.8	48	66.9	120	117	269	309	No	NA	33.7	39.8	NA	NA	NA	120	117	NA	NA	NA
BE-240	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	31	No	No	NA	NA	137	No	No
BE-240	BE-240-VG	Vegetable Garden (VG)	891	33.6	33.9	33	155	189	149	81.6	39.1	No	NA	33.6	33.9	NA	NA	NA	189	149	NA	NA	NA
BE-240	BE-240-FY	Front Yard (FY)	1,846	14.4	22.3	26.8	20.9	76.1	113	123	74.9	No	NA	14.4	22.3	NA	NA	NA	76.1	113	NA	NA	NA
BE-240	BE-240-FG	Flower Garden (FG)	551	25.5	43.5	41.8	39.5	146	201	125	46.2	No	NA	25.5	43.5	NA	NA	NA	146	201	NA	NA	NA
BE-240	BE-240-DZ	Drip Zone (DZ)	220	23.7	40.6	64.2	33.8	170	212	126	34.7	No	NA	23.7	40.6	NA	NA	NA	170	212	NA	NA	NA
BE-240	BE-240-BY	Back Yard (BY)	1,793	28.3	37	36.2	44.3	267	359	927	1080	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-241	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	21	No	No	NA	NA	156	No	No
BE-241	BE-241-FY	Front Yard (FY)	191	13.6	22	17.5	12.4	91.3	179	50.3	21.7	No	NA	13.6	22	NA	NA	NA	91.3	179	NA	NA	NA
BE-241	BE-241-DZ	Drip Zone (DZ)	220	19.1	17.5	22.7	22.4	164	92.7	56.2	24.1	No	NA	19.1	17.5	NA	NA	NA	164	92.7	NA	NA	NA
BE-241	BE-241-BY	Back Yard (BY)	1,457	17.9	25.6	50.1	51.3	144	296	397	384	No	NA	17.9	25.6	NA	NA	NA	144	296	NA	NA	NA
BE-241	BE-241-BA	Bare Area (BA)	689	19.8	28.3	39.8	29.6	102	121	93	15.5	No	NA	19.8	28.3	NA	NA	NA	102	121	NA	NA	NA
BE-242	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	27	No	No	NA	NA	210	No	No
BE-242	BE-242-FY	Front Yard (FY)	195	24.1	39.2	66.6	27.9	222	193	130	15.5	No	NA	24.1	39.2	NA	NA	NA	222	193	NA	NA	NA
BE-242	BE-242-ED	Earthen Drive (ED)	189	16.8	28.4	46.1	18.7	166	199	344	282	No	NA	16.8	28.4	NA	NA	NA	166	199	NA	NA	NA
BE-242	BE-242-DZ	Drip Zone (DZ)	220	35.1	26.9	35.2	29.8	212	227	217	34.2	No	NA	35.1	26.9	NA	NA	NA	212	227	NA	NA	NA
BE-242	BE-242-BY	Back Yard (BY)	1,098	20.6	18.5	24.2	34.2	265	212	194	239	No	NA	20.6	18.5	NA	NA	NA	265	212	NA	NA	NA
BE-243A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	20	No	No	NA	NA	247	No	No
BE-243A	BE-243A-RG	Rock Garden (RG)	628	19.3	26	30	27	297	348	108	85.1	No	NA	19.3	26	NA	NA	NA	297	348	NA	NA	NA
BE-243A	BE-243A-FY	Front Yard (FY)	2,820	17.2	19	19.3	20.6	102	68.6	54.4	71.2	No	NA	17.2	19	NA	NA	NA	102	68.6	NA	NA	NA
BE-243A	BE-243A-DZ	Drip Zone (DZ)	220	16.1	19	22.6	25	223	383	230	141	No	NA	16.1	19	NA	NA	NA	223	383	NA	NA	NA
BE-243B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	24	No	No	NA	NA	121	No	No
BE-243B	BE-243B-FY	Front Yard (FY)	826	15.6	14.6	22.6	14.1	144	117	123	42.6	No	NA	15.6	14.6	NA	NA	NA	144	117	NA	NA	NA
BE-243B	BE-243B-FG	Flower Garden (FG)	239	24.2	29.6	23.6	39.9	161	183	106	107	No	NA	24.2	29.6	NA	NA	NA	161	183	NA	NA	NA
BE-243B	BE-243B-ED	Earthen Drive (ED)	185	36.6	20	20.4	12.5	284	105	104	174	No	NA	36.6	20	NA	NA	NA	284	105	NA	NA	NA
BE-243B	BE-243B-DZ	Drip Zone (DZ)	220	14.6	19.6	17.9	27.8	140	148	48.4	74.5	No	NA	14.6	19.6	NA	NA	NA	140	148	NA	NA	NA
BE-243B	BE-243B-BY	Back Yard (BY)	463	23.5	36.7	20.3	17.7	68.8	79.4	51.7	55.4	No	NA	23.5	36.7	NA	NA	NA	68.8	79.4	NA	NA	NA
BE-243B	BE-243B-BA	Bare Area (BA)	478	17.1	20.5	52.3	56.5	133	191	598	507	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-244	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	25	No	No	NA	NA	159	No	No

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-244	BE-244-FY	Front Yard (FY)	968	30.6	26.3	84	106	371	222	237	351	No	NA	30.6	26.3	NA	NA	NA	371	222	NA	NA	NA
BE-244	BE-244-FG	Flower Garden (FG)	210	38.3	45.8	35.2	29.7	197	224	124	32.3	No	NA	38.3	45.8	NA	NA	NA	197	224	NA	NA	NA
BE-244	BE-244-ED	Earthen Drive (ED)	1,165	9.9	12.9	22.9	36.4	50.1	54.8	165	174	No	NA	9.9	12.9	NA	NA	NA	50.1	54.8	NA	NA	NA
BE-244	BE-244-DZ	Drip Zone (DZ)	220	22.5	17.3	19.9	42	224	100	90.2	166	No	NA	22.5	17.3	NA	NA	NA	224	100	NA	NA	NA
BE-244	BE-244-BY	Back Yard (BY)	1,057	24.5	25.3	26.3	21	128	109	119	110	No	NA	24.5	25.3	NA	NA	NA	128	109	NA	NA	NA
BE-245	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	42	No	No	NA	NA	162	No	No
BE-245	BE-245-FY	Front Yard (FY)	742	37.8	62.2	81	131	420	437	509	503	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-245	BE-245-FG	Flower Garden (FG)	208	46.4	48.2	73.4	71.6	234	236	256	194	No	NA	46.4	48.2	NA	NA	NA	234	236	NA	NA	NA
BE-245	BE-245-BY	Back Yard (BY)	1,211	31.8	60.8	71.3	67.7	165	234	178	137	No	NA	31.8	60.8	NA	NA	NA	165	234	NA	NA	NA
BE-246A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	24	No	No	NA	NA	88	No	No
BE-246A	BE-246A-FY	Front Yard (FY)	1,516	25.2	33.7	46	27.5	110	121	123	30.7	No	NA	25.2	33.7	NA	NA	NA	110	121	NA	NA	NA
BE-246A	BE-246A-FG	Flower Garden (FG)	54	25.7	27.8	43.8	57.7	129	133	155	184	No	NA	25.7	27.8	NA	NA	NA	129	133	NA	NA	NA
BE-246A	BE-246A-DZ	Drip Zone (DZ)	220	47.1	10.7	12.7	30.4	120	33.8	42.3	106	No	NA	47.1	10.7	NA	NA	NA	120	33.8	NA	NA	NA
BE-246A	BE-246A-BY	Back Yard (BY)	889	13.2	13.8	29.3	11.6	41.5	39.1	124	44.9	No	NA	13.2	13.8	NA	NA	NA	41.5	39.1	NA	NA	NA
BE-246B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	18	No	No	NA	NA	103	No	No
BE-246B	BE-246B-FY	Front Yard (FY)	956	19.9	25	30	44.9	73.9	91.4	150	201	No	NA	19.9	25	NA	NA	NA	73.9	91.4	NA	NA	NA
BE-246B	BE-246B-ED	Earthen Drive (ED)	173	8.3	16.5	82.2	101	35.7	193	315	297	No	NA	8.3	16.5	NA	NA	NA	35.7	193	NA	NA	NA
BE-246B	BE-246B-DZ	Drip Zone (DZ) [A]	220	10.7	10.6			56.1	57.2			No	NA	10.7	10.6	NA	NA	NA	56.1	57.2	NA	NA	NA
BE-246B	BE-246B-BY	Back Yard (BY)	747	13.7	28.5	55	49.7	80.7	155	292	214	No	NA	13.7	28.5	NA	NA	NA	80.7	155	NA	NA	NA
BE-247A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	38	No	No	NA	NA	56	No	No
BE-247A	BE-247A-RG	Rock Garden (RG)	125	24.4	27.6	36.3	30	361	767	234	443	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-247A	BE-247A-FY	Front Yard (FY)	400	21.3	28.6	30.7	13.3	431	645	222	38.7	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-247A	BE-247A-ED	Earthen Drive (ED)	345	69.9	66.2	90.1	93.9	199	58.4	74.8	70.4	No	NA	69.9	66.2	NA	NA	NA	199	58.4	NA	NA	NA
BE-247A	BE-247A-DZ	Drip Zone (DZ)	50	33.6	91.6	55.6	32.4	315	83.8	156	410	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-247B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	46	No	No	NA	NA	73	No	No
BE-247B	BE-247B-PA	Play Area (PA)	238	44.1	31.4	13.3	14.9	183	60.1	25.9	32.9	No	NA	44.1	31.4	NA	NA	NA	183	60.1	NA	NA	NA
BE-247B	BE-247B-DZ	Drip Zone (DZ)	60	48.2	61.9	37.2	22	96.2	20.3	15.1	32.1	No	NA	48.2	61.9	NA	NA	NA	96.2	20.3	NA	NA	NA
BE-248	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	48	No	No	NA	NA	174	No	No
BE-248	BE-248-RG	Rock Garden (RG)	41	34.1	87	89.5	65.4	253	420	135	32.9	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-248	BE-248-FY	Front Yard (FY)	216	28.7	37.9	13.2	11.5	509	242	27.4	25.1	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-248	BE-248-ED	Earthen Drive (ED)	1,004	44.8	139	96.9	69.3	259	274	318	246	No	NA	44.8	139	NA	NA	NA	259	274	NA	NA	NA
BE-248	BE-248-DZ	Drip Zone (DZ)	220	33.1	42.1	103	40.2	362	336	190	153	No	NA	33.1	42.1	NA	NA	NA	362	336	NA	NA	NA
BE-248	BE-248-BY	Back Yard (BY)	7,419	19.8	46.6	77.7	86.4	123	202	194	59.6	No	NA	19.8	46.6	NA	NA	NA	123	202	NA	NA	NA
BE-249	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	23	No	No	NA	NA	139	No	No
BE-249	BE-249-RG	Rock Garden (RG)	35	13.4	16.2	18.1	24	79.6	69.3	114	183	No	NA	13.4	16.2	NA	NA	NA	79.6	69.3	NA	NA	NA
BE-249	BE-249-FY	Front Yard (FY)	2,130	15.2	21.7	23.7	25.2	67.5	84.5	64.7	45.1	No	NA	15.2	21.7	NA	NA	NA	67.5	84.5	NA	NA	NA
BE-249	BE-249-FG	Flower Garden (FG)	173	19.1	23.4	32.1	44.7	165	184	237	233	No	NA	19.1	23.4	NA	NA	NA	165	184	NA	NA	NA
BE-249	BE-249-DZ	Drip Zone (DZ)	220	24.6	42.7	31.9	37.8	163	267	159	55.6	No	NA	24.6	42.7	NA	NA	NA	163	267	NA	NA	NA
BE-249	BE-249-BY	Back Yard (BY)	1,433	20.8	26.6	54.9	46.8	156	129	171	64.2	No	NA	20.8	26.6	NA	NA	NA	156	129	NA	NA	NA
BE-249	BE-249-BA	Bare Area (BA)	706	22.1	19.5	31.3	29.9	179	109	89.1	81.6	No	NA	22.1	19.5	NA	NA	NA	179	109	NA	NA	NA
BE-250A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	25	No	No	NA	NA	155	No	No
BE-250A	BE-250A-RG	Rock Garden (RG)	604	28	34.3	31.8	16.2	251	267	239	306	No	NA	28	34.3	NA	NA	NA	251	267	NA	NA	NA
BE-250A	BE-250A-FY	Front Yard (FY)	887	16.5	19.2	24.6	29.4	199	200	166	138	No	NA	16.5	19.2	NA	NA	NA	199	200	NA	NA	NA
BE-250A	BE-250A-FG	Flower Garden (FG)	50	32	15.3	17.7	23.9	204	243	305	497	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-250A	BE-250A-DZ	Drip Zone (DZ)	189	15.8	19.5	22.6	23.3	521	482	416	768	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-250A	BE-250A-BY	Back Yard (BY)	418	18.5	19.2	24.4	26.8	226	237	63.6	213	No	NA	18.5	19.2	NA	NA	NA	226	237	NA	NA	NA
BE-250B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	25	No	No	NA	NA	174	No	No
BE-250B	BE-250B-PA	Play Area (PA)	80	35.2	36	37	32	425	447	418	185	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-250B	BE-250B-FY	Front Yard (FY)	162	22.4	27.8	28.4	65.6	232	175	141	93.1	No	NA	22.4	27.8	NA	NA	NA	232	175	NA	NA	NA
BE-250B	BE-250B-FG	Flower Garden (FG)	19	15.5	21.4	33.1	46.4	195	255	247	184	No	NA	15.5	21.4	NA	NA	NA	195	255	NA	NA	NA
BE-250B	BE-250B-DZ	Drip Zone (DZ)	220	21.5	27.4	29.7	46.8	196	201	195	144	No	NA	21.5	27.4	NA	NA	NA	196	201	NA	NA	NA
BE-250B	BE-250B-BY	Back Yard (BY)	634	22.7	30.8	31.7	34.5	188	212	195	194	No	NA	22.7	30.8	NA	NA	NA	188	212	NA	NA	NA
BE-250C	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	121	No	No
BE-250C	BE-250C-RG	Rock Garden (RG)	56	24.2	28.6	33.6	36.2	388	443	325	158	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-250C	BE-250C-FY	Front Yard (FY)	1,168	27.6	26.8	28.2	32.5	417	334	204	120	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-250C	BE-250C-FG	Flower Garden (FG)	107	21.3	26.1	32.5	32.2	408	335	306	134	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-250C	BE-250C-DZ	Drip Zone (DZ)	220	26	26.9	32.1	32.7	352	369	360	228	No	NA	26	26.9	NA	NA	NA	352	369	NA	NA	NA
BE-251	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	26	No	No	NA	NA	124	No	No
BE-251	BE-251-FY	Front Yard (FY)	959	33.8	29.1	30.9	40.6	591	251	83.4	53.8	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-251	BE-251-FG	Flower Garden (FG)	46	32.8	29.2	51.3	79.2	318	225	88.9	34.5	No	NA	32.8	29.2	NA	NA	NA	318	225	NA	NA	NA
BE-251	BE-251-ED	Earthen Drive (ED) [A]	73	15.1	15.1			112	112			No	NA	15.1	15.1	NA	NA	NA	112	112	NA	NA	NA
BE-251	BE-251-DZ	Drip Zone (DZ)	120	34.5	39.3	49	52	525	215	51.8	52.7	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-251	BE-251-BY	Back Yard (BY)	1,991	18.6	32.9	34.6	49.7	232	273	291	313	No	NA	18.6	32.9	NA	NA	NA	232	273	NA	NA	NA
BE-251	BE-251-BA	Bare Area (BA)	56	14.5	22.4	39.3	32.7	107	260	328	469	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-252	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	22	No	No	NA	NA	138	No	No
BE-252	BE-252-RG	Rock Garden (RG)	348	17	24.8	26.1	37.9	79.2	158	178	291	No	NA	17	24.8	NA	NA	NA	79.2	158	NA	NA	NA
BE-252	BE-252-FY	Front Yard (FY)	1,052	12.8	21.3	19.4	29.4	69.9	163	113	87.7	No	NA	12.8	21.3	NA	NA	NA	69.9	163	NA	NA	NA
BE-252	BE-252-ED	Earthen Drive (ED)	695	7.4	9.8	18.2	29.2	36.9	27.9	112	685	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-252	BE-252-DZ	Drip Zone (DZ)	220	15.2	13.1	23.7	31.4	66	89.1	121	155	No	NA	15.2	13.1	NA	NA	NA	66	89.1	NA	NA	NA
BE-252	BE-252-BY	Back Yard (BY)	941	20	32.6	30.6	58.1	145	384	221	350	No	NA	20	32.6	NA	NA	NA	145	384	NA	NA	NA
BE-253A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	35	No	No	NA	NA	184	No	No
BE-253A	BE-253A-DZ	Drip Zone (DZ)	220	29.9	47.4	39.1	30.4	229	379	180	23.3	No	NA	29.9	47.4	NA	NA	NA	229	379	NA	NA	NA
BE-253A	BE-253A-BY	Back Yard (BY)	161	113	144	96.1	46.9	528	518	285	19.6	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-253B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	30	No	No	NA	NA	234	No	No
BE-253B	BE-253B-FY	Front Yard (FY)	176	20.1	29.5	33.9	228	203	405	300	214	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-253B	BE-253B-FG	Flower Garden (FG)	37	21.8	30.1	36.9	52.7	200	315	273	208	No	NA	21.8	30.1	NA	NA	NA	200	315	NA	NA	NA
BE-253B	BE-253B-ED	Earthen Drive (ED)	880	11.9	28.6	60.9	67.4	68	371	332	150	No	NA	11.9	28.6	NA	NA	NA	68	371	NA	NA	NA
BE-253B	BE-253B-DZ	Drip Zone (DZ)	220	38.8	44	48.1	44.4	321	364	252	190	No	NA	38.8	44	NA	NA	NA	321	364	NA	NA	NA
BE-253B	BE-253B-BY	Back Yard (BY)	604	12.9	36.4	68.6	72.1	69.9	315	134	151	No	NA	12.9	36.4	NA	NA	NA	69.9	315	NA	NA	NA
BE-254A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	19	No	No	NA	NA	148	No	No
BE-254A	BE-254A-FY	Front Yard (FY)	98	23.1	6.1	36.6	22.4	211	10	106	10.7	No	NA	23.1	6.1	NA	NA	NA	211	10	NA	NA	NA
BE-254A	BE-254A-BY	Back Yard (BY)	343	33.8	22.4	50.8	68.3	195	231	229	120	No	NA	33.8	22.4	NA	NA	NA	195	231	NA	NA	NA
BE-254B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	50	No	No	NA	NA	218	No	No
BE-254B	BE-254B-RG	Rock Garden (RG)	61	115	65.5	79.1	137	211	312	200	333	No	NA	115	65.5	NA	NA	NA	211	312	NA	NA	NA
BE-254B	BE-254B-DZ	Drip Zone (DZ)	98	15.7	30.6	77.3	48.7	129	286	260	503	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-254B	BE-254B-BY	Back Yard (BY)	180	48.7	34.7	52.2	60.9	296	356	282	89	No	NA	48.7	34.7	NA	NA	NA	296	356	NA	NA	NA
BE-255	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	30	No	No	NA	NA	143	No	No
BE-255	BE-255-RG	Rock Garden (RG)	305	48.7	45.6	29.3	47.2	338	361	178	310	No	NA	48.7	45.6	NA	NA	NA	338	361	NA	NA	NA
BE-255	BE-255-FY	Front Yard (FY)	1,808	24.6	39.2	153	86.5	215	296	575	177	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-255	BE-255-FG	Flower Garden (FG)	237	37	35.4	57.7	70.3	351	401	442	313	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-255	BE-255-ED	Earthen Drive (ED)	1,335	13	43.2	83.8	82.8	114	376	434	198	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-255	BE-255-BY	Back Yard (BY)	518	19.6	17.8	44	88.3	282	33.3	542	885	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-255	BE-255-BA	Bare Area (BA)	109	24.7	19	77.9	69.4	263	387	266	66.1	No	NA	24.7	19	NA	NA	NA	263	387	NA	NA	NA
BE-256	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	18	No	No	NA	NA	87	No	No
BE-256	BE-256-VG	Vegetable Garden (VG)	22	8.1	26.4	59.2	63	54.7	212	424	318	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-256	BE-256-RG	Rock Garden (RG)	140	61.1	29.5	59.3	32.3	261	361	110	70.6	No	NA	61.1	29.5	NA	NA	NA	261	361	NA	NA	NA
BE-256	BE-256-FG	Flower Garden (FG)	71	7.9	8.1	46.9	65.1	36.6	25.7	249	284	No	NA	7.9	8.1	NA	NA	NA	36.6	25.7	NA	NA	NA
BE-256	BE-256-ED	Earthen Drive (ED)	724	5.2	5	5	5.6	11.3	5.5	17.7	33.7	No	NA	5.2	5	NA	NA	NA	11.3	5.5	NA	NA	NA
BE-256	BE-256-BY	Back Yard (BY)	878	8.3	8.5	36.6	51.3	28.4	35.7	238	365	No	NA	8.3	8.5	NA	NA	NA	28.4	35.7	NA	NA	NA
BE-257	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	30	No	No	NA	NA	167	No	No
BE-257	BE-257-FY	Front Yard (FY)	100	19.3	35.7	149	84.7	253	492	313	61.4	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-257	BE-257-ED	Earthen Drive (ED)	389	18.6	42.4	78.8	68.7	219	337	331	238	No	NA	18.6	42.4	NA	NA	NA	219	337	NA	NA	NA
BE-257	BE-257-DZ	Drip Zone (DZ)	183	29.8	30.1	43.4	40.2	537	536	629	367	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-257	BE-257-BY	Back Yard (BY)	1,180	20.6	33.9	40.1	46.2	307	286	399	281	No	NA	20.6	33.9	NA	NA	NA	307	286	NA	NA	NA
BE-258	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	24	No	No	NA	NA	34	No	No
BE-258	BE-258-FY	Front Yard (FY)	270	45.6	26.4	65.8	86.5	533	528	377	48.1	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-258	BE-258-FG	Flower Garden (FG)	57	31.2	32.1	38.3	16.7	441	554	339	16.7	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-258	BE-258-ED	Earthen Drive (ED)	372	5.8	5.9	5.2	12.4	9.9	7.1	6.4	89.4	No	NA	5.8	5.9	NA	NA	NA	9.9	7.1	NA	NA	NA
BE-258	BE-258-DZ	Drip Zone (DZ)	25	20.5	32.7	55	48.7	377	544	352	18.5	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-258	BE-258-BY	Back Yard (BY)	1,334	38.4	47.4	86.9	113	373	397	555	363	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-259	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	10	No	No	NA	NA	28	No	No
BE-259	BE-259-FY	Front Yard (FY)	839	6.8	8.4	15	35.5	21.2	17	42.5	254	No	NA	6.8	8.4	NA	NA	NA	21.2	17	NA	NA	NA
BE-259	BE-259-FG	Flower Garden (FG)	29	8.5	10.1	13.4	15.7	26.6	37.2	32.3	26.9	No	NA	8.5	10.1	NA	NA	NA	26.6	37.2	NA	NA	NA
BE-259	BE-259-DZ	Drip Zone (DZ)	220	9.8	12	13	13.6	27.5	35.8	29.6	23	No	NA	9.8	12	NA	NA	NA	27.5	35.8	NA	NA	NA
BE-260	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	23	No	No	NA	NA	58	No	No
BE-260	BE-260-RG	Rock Garden (RG)	112	21.9	26.9	38.1	20.8	56.1	62.3	91	391	No	NA	21.9	26.9	NA	NA	NA	56.1	62.3	NA	NA	NA
BE-260	BE-260-FY	Front Yard (FY)	2,684	25.1	22.7	29.4	15.2	69.7	112	84	27.6	No	NA	25.1	22.7	NA	NA	NA	69.7	112	NA	NA	NA
BE-260	BE-260-DZ	Drip Zone (DZ)	220	19.7	22.1	17.4	23.6	56.3	57.7	41.3	47.8	No	NA	19.7	22.1	NA	NA	NA	56.3	57.7	NA	NA	NA
BE-260	BE-260-BY	Back Yard (BY)	932	35.4	27.3	22.2	44.7	102	88.2	247	417	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-260	BE-260-BA	Bare Area (BA)	692	21.5	13.2	8.8	9.1	50.8	27.8	13.9	12.8	No	NA	21.5	13.2	NA	NA	NA	50.8	27.8	NA	NA	NA
BE-261	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	17	No	No	NA	NA	191	No	No
BE-261	BE-261-FY	Front Yard (FY)	544	17.2	20.3	19.2	15.8	252	285	194	23.5	No	NA	17.2	20.3	NA	NA	NA	252	285	NA	NA	NA
BE-261	BE-261-ED	Earthen Drive (ED)	441	16	27.5	20.6	41.3	117	393	156	280	No	NA	16	27.5	NA	NA	NA	117	393	NA	NA	NA
BE-261	BE-261-DZ	Drip Zone (DZ)	220	10.5	13.2	14.2	15.5	140	128	189	61.8	No	NA	10.5	13.2	NA	NA	NA	140	128	NA	NA	NA
BE-261	BE-261-BY	Back Yard (BY)	2,316	15.1	14.9	11.7	25.1	90.5	55.7	69	164	No	NA	15.1	14.9	NA	NA	NA	90.5	55.7	NA	NA	NA
BE-261	BE-261-BA	Bare Area (BA)	121	11.7	15.2	24	20.6	176	181	343	110	No	NA	11.7	15.2	NA	NA	NA	176	181	NA	NA	NA
BE-262	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	16	No	No	NA	NA	101	No	No
BE-262	BE-262-FY	Front Yard (FY)	232	14.4	18.8	43.3	11.7	31.1	108	83.1	59.7	No	NA	14.4	18.8	NA	NA	NA	31.1	108	NA	NA	NA
BE-262	BE-262-ED	Earthen Drive (ED)	1,000	8.5	7.6	16.7	28.9	44.5	78.4	127	160	No	NA	8.5	7.6	NA	NA	NA	44.5	78.4	NA	NA	NA
BE-262	BE-262-DZ	Drip Zone (DZ)	220	17.5	23.7	31.3	26	210	168	116	146	No	NA	17.5	23.7	NA	NA	NA	210	168	NA	NA	NA
BE-262	BE-262-BY	Back Yard (BY)	1,238	21.3	17.8	10.8	9	74.9	72.6	25.3	17.8	No	NA	21.3	17.8	NA	NA	NA	74.9	72.6	NA	NA	NA
BE-263	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	18	No	No	NA	NA	69	No	No
BE-263	BE-263-FY	Front Yard (FY)	3,911	17.1	28	20.7	29.7	68.9	174	105	176	No	NA	17.1	28	NA	NA	NA	68.9	174	NA	NA	NA
BE-263	BE-263-ED	Earthen Drive (ED)	2,563	5.2	17.7	12.1	15.2	12.3	31.7	29	31.9	No	NA	5.2	17.7	NA	NA	NA	12.3	31.7	NA	NA	NA
BE-263	BE-263-DZ	Drip Zone (DZ)	220	9.9	8.6	11.9	16.1	21.5	19.4	72.7	68.5	No	NA	9.9	8.6	NA	NA	NA	21.5	19.4	NA	NA	NA
BE-263	BE-263-BY	Back Yard (BY)	2,306	35.6	17.7	13	14.9	167	52.4	33.8	56.4	No	NA	35.6	17.7	NA	NA	NA	167	52.4	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-264	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	22	No	No	NA	NA	116	No	No
BE-264	BE-264-RG	Rock Garden (RG)	181	22.3	36.8	68.4	62.2	265	92.9	90.7	35.2	No	NA	22.3	36.8	NA	NA	NA	265	92.9	NA	NA	NA
BE-264	BE-264-FY	Front Yard (FY)	1,699	24.1	25	21.3	19.4	466	155	122	53.2	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-264	BE-264-ED	Earthen Drive (ED)	1,838	11.1	14	19	37.2	126	86.8	41.9	89.5	No	NA	11.1	14	NA	NA	NA	126	86.8	NA	NA	NA
BE-264	BE-264-DZ	Drip Zone (DZ)	220	15.6	14.4	19.1	19.4	279	109	49.9	51.7	No	NA	15.6	14.4	NA	NA	NA	279	109	NA	NA	NA
BE-264	BE-264-BY	Back Yard (BY)	1,421	23.3	23.3	45.1	51.7	220	75.5	41.9	51.9	No	NA	23.3	23.3	NA	NA	NA	220	75.5	NA	NA	NA
BE-265A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	13	No	No	NA	NA	44	No	No
BE-265A	BE-265A-FY	Front Yard (FY)	1,827	11.6	11.9	22.4	25.6	62.6	33.6	51.9	165	No	NA	11.6	11.9	NA	NA	NA	62.6	33.6	NA	NA	NA
BE-265A	BE-265A-FG	Flower Garden (FG)	179	10	13.8	12.7	11	21.7	24.2	19.9	34.9	No	NA	10	13.8	NA	NA	NA	21.7	24.2	NA	NA	NA
BE-265A	BE-265A-DZ	Drip Zone (DZ)	220	14.2	11	30.9	28.3	57.3	43.5	147	55.4	No	NA	14.2	11	NA	NA	NA	57.3	43.5	NA	NA	NA
BE-265A	BE-265A-BY	Back Yard (BY)	1,901	11.2	14.7	15.8	15	46.5	40.7	44.5	37.4	No	NA	11.2	14.7	NA	NA	NA	46.5	40.7	NA	NA	NA
BE-265A	BE-265A-BA	Bare Area (BA)	385	16.1	16	12.7	27.7	81.5	56.7	34.3	219	No	NA	16.1	16	NA	NA	NA	81.5	56.7	NA	NA	NA
BE-265B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	9	No	No	NA	NA	30	No	No
BE-265B	BE-265B-RG	Rock Garden (RG)	112	8.5	8.9	10.1	10.4	19.8	11.8	16.7	64.3	No	NA	8.5	8.9	NA	NA	NA	19.8	11.8	NA	NA	NA
BE-265B	BE-265B-FY	Front Yard (FY)	187	6.8	5.5	9.2	10.4	26.7	15.1	25.7	32.8	No	NA	6.8	5.5	NA	NA	NA	26.7	15.1	NA	NA	NA
BE-265B	BE-265B-FG	Flower Garden (FG)	30	7.3	8.6	10	24.5	11.7	17.4	29.5	123	No	NA	7.3	8.6	NA	NA	NA	11.7	17.4	NA	NA	NA
BE-265B	BE-265B-ED	Earthen Drive (ED)	2,264	8.8	7.7	7.5	7.7	28.9	8.5	7.8	8.6	No	NA	8.8	7.7	NA	NA	NA	28.9	8.5	NA	NA	NA
BE-265B	BE-265B-DZ	Drip Zone (DZ)	220	10.3	10.9	10.7	16.3	25.3	25	19.5	63.6	No	NA	10.3	10.9	NA	NA	NA	25.3	25	NA	NA	NA
BE-265B	BE-265B-BY	Back Yard (BY)	2,253	7.2	7.2	7.5	11.6	18.8	16.3	15.5	29	No	NA	7.2	7.2	NA	NA	NA	18.8	16.3	NA	NA	NA
BE-265B	BE-265B-BA	Bare Area (BA)	146	15.8	16.3	12.5	12.3	136	89.4	30.4	30.1	No	NA	15.8	16.3	NA	NA	NA	136	89.4	NA	NA	NA
BE-266A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	9	No	No	NA	NA	51	No	No
BE-266A	BE-266A-FG	Flower Garden (FG)	35	9.7	9	20	15	83.9	69.8	83.1	35.1	No	NA	9.7	9	NA	NA	NA	83.9	69.8	NA	NA	NA
BE-266A	BE-266A-DZ	Drip Zone (DZ)	220	10.5	10.1	10.5	10.3	71.7	41.8	27.6	41.6	No	NA	10.5	10.1	NA	NA	NA	71.7	41.8	NA	NA	NA
BE-266A	BE-266A-BY	Back Yard (BY)	1,585	8.6	7.8	5.8	7.4	33.8	25.5	10.1	18.2	No	NA	8.6	7.8	NA	NA	NA	33.8	25.5	NA	NA	NA
BE-266B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	13	No	No	NA	NA	53	No	No
BE-266B	BE-266B-FY	Front Yard (FY)	127	8.1	9.8	9.9	11.5	44.9	55.8	53.9	93.6	No	NA	8.1	9.8	NA	NA	NA	44.9	55.8	NA	NA	NA
BE-266B	BE-266B-DZ	Drip Zone (DZ)	220	11.6	11.9	9.9	28.7	85.5	45.5	35.1	232	No	NA	11.6	11.9	NA	NA	NA	85.5	45.5	NA	NA	NA
BE-266B	BE-266B-BY	Back Yard (BY)	1,059	25.1	12.4	12.1	14	116	16.3	35.1	48	No	NA	25.1	12.4	NA	NA	NA	116	16.3	NA	NA	NA
BE-267	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	69	Yes	Yes	NA	NA	222	No	No
BE-267	BE-267-FY	Front Yard (FY)	1,214	30.6	43.4	43.8	30.3	170	308	116	152	No	NA	30.6	43.4	NA	NA	NA	170	308	NA	NA	NA
BE-267	BE-267-DZ	Drip Zone (DZ)	220	50.2	98.2	95.2	60.5	367	213	204	235	No	NA	50.2	98.2	NA	NA	NA	367	213	NA	NA	NA
BE-267	BE-267-BY	Back Yard (BY)	899	74	92	35.6	66	140	140	81.7	206	No	NA	74	92	NA	NA	NA	140	140	NA	NA	NA
BE-268	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	33	No	No	NA	NA	122	No	No
BE-268	BE-268-DZ	Drip Zone (DZ)	56	21.5	26.4	56.5	65.9	140	144	313	1100	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-268	BE-268-BA	Bare Area (BA)	85	16.5	48.9	36.1	31	196	207	322	236	No	NA	16.5	48.9	NA	NA	NA	196	207	NA	NA	NA
BE-269A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	22	No	No	NA	NA	107	No	No
BE-269A	BE-269A-ED	Earthen Drive (ED)	2,071	7.7	16.2	12.9	10.4	68.1	65.7	62.6	195	No	NA	7.7	16.2	NA	NA	NA	68.1	65.7	NA	NA	NA
BE-269A	BE-269A-DZ	Drip Zone (DZ)	220	23.6	25.4	30.9	44.8	184	229	245	165	No	NA	23.6	25.4	NA	NA	NA	184	229	NA	NA	NA
BE-269A	BE-269A-BA	Bare Area (BA)	784	14.4	18.4	41.4	76.6	109	247	780	200	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-269B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	28	No	No	NA	NA	178	No	No
BE-269B	BE-269B-ED	Earthen Drive (ED)	1,300	8.3	6.8	11.1	10.8	54.5	18.8	27.4	48	No	NA	8.3	6.8	NA	NA	NA	54.5	18.8	NA	NA	NA
BE-269B	BE-269B-DZ	Drip Zone (DZ)	220	25	53.9	28.3	36	181	374	254	83.6	No	NA	25	53.9	NA	NA	NA	181	374	NA	NA	NA
BE-269B	BE-269B-BA	Bare Area (BA)	870	27.2	37.3	50.4	78.9	156	213	343	258	No	NA	27.2	37.3	NA	NA	NA	156	213	NA	NA	NA
BE-270A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	17	No	No	NA	NA	79	No	No
BE-270A	BE-270A-RG	Rock Garden (RG)	245	17.3	12.4	10	9.8	60.9	39.4	21.7	15.6	No	NA	17.3	12.4	NA	NA	NA	60.9	39.4	NA	NA	NA
BE-270A	BE-270A-FY	Front Yard (FY)	2,794	15.3	22.9	18.9	20.8	144	82.7	31.5	19.5	No	NA	15.3	22.9	NA	NA	NA	144	82.7	NA	NA	NA
BE-270A	BE-270A-ED	Earthen Drive (ED)	960	9.4	11.4	12.5	9.5	18.3	26.7	41.2	56.6	No	NA	9.4	11.4	NA	NA	NA	18.3	26.7	NA	NA	NA
BE-270A	BE-270A-DZ	Drip Zone (DZ)	220	22.1	11.1	22.2	19.7	140	49.6	33.4	47	No	NA	22.1	11.1	NA	NA	NA	140	49.6	NA	NA	NA
BE-270A	BE-270A-BY	Back Yard (BY)	1,007	39.4	20.2	10.3	18.2	352	39.3	28.9	30.1	No	NA	39.4	20.2	NA	NA	NA	352	39.3	NA	NA	NA
BE-270B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	17	No	No	NA	NA	109	No	No
BE-270B	BE-270B-RG	Rock Garden (RG)	111	19.5	27.3	36.3	12.5	113	94.6	30.5	32.1	No	NA	19.5	27.3	NA	NA	NA	113	94.6	NA	NA	NA
BE-270B	BE-270B-FY	Front Yard (FY)	1,995	14.3	13.8	18.6	10.9	204	65.2	38.2	25.4	No	NA	14.3	13.8	NA	NA	NA	204	65.2	NA	NA	NA
BE-270B	BE-270B-FG	Flower Garden (FG)	134	10	18.2	25.2	40	72.4	148	92.9	73.9	No	NA	10	18.2	NA	NA	NA	72.4	148	NA	NA	NA
BE-270B	BE-270B-ED	Earthen Drive (ED)	1,011	11.8	17.3	23.4	14.5	66.1	99.3	53.4	33.3	No	NA	11.8	17.3	NA	NA	NA	66.1	99.3	NA	NA	NA
BE-270B	BE-270B-BY	Back Yard (BY)	3,820	9.2	11.4	14.5	14.3	52.6	74.1	30.8	26.3	No	NA	9.2	11.4	NA	NA	NA	52.6	74.1	NA	NA	NA
BE-270B	BE-270B-BA	Bare Area (BA)	177	20.7	25.3	24.9	13.9	140	181	149	30.4	No	NA	20.7	25.3	NA	NA	NA	140	181	NA	NA	NA
BE-271	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	14	No	No	NA	NA	35	No	No
BE-271	BE-271-PA	Play Area (PA)	77	10.4	9.1	14.9	19.3	59.7	9.9	15	17	No	NA	10.4	9.1	NA	NA	NA	59.7	9.9	NA	NA	NA
BE-271	BE-271-FY	Front Yard (FY)	9,074	10.3	11.9	11	10.6	104	35.7	24	35.6	No	NA	10.3	11.9	NA	NA	NA	104	35.7	NA	NA	NA
BE-271	BE-271-DZ	Drip Zone (DZ)	220	9.9	26.8	17.7	29.1	58.8	27.7	16	29.2	No	NA	9.9	26.8	NA	NA	NA	58.8	27.7	NA	NA	NA
BE-271	BE-271-BY	Back Yard (BY)	3,438	9.9	14.8	27.4	26.9	27.8	13.1	25.4	25.7	No	NA	9.9	14.8	NA	NA	NA	27.8	13.1	NA	NA	NA
BE-272	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	9	No	No	NA	NA	37	No	No
BE-272	BE-272-FY	Front Yard (FY)	2,988	11.4	7.1	11	14.4	80.9	28.8	14.3	11.1	No	NA	11.4	7.1	NA	NA	NA	80.9	28.8	NA	NA	NA
BE-272	BE-272-FG	Flower Garden (FG)	323	8.5	7.6	15	38.5	42	20.5	19.1	12.4	No	NA	8.5	7.6	NA	NA	NA	42	20.5	NA	NA	NA
BE-272	BE-272-DZ	Drip Zone (DZ)	220	7.4	10.9	13.3	35.2	37.3	33.6	21.2	21.3	No	NA	7.4	10.9	NA	NA	NA	37.3	33.6	NA	NA	NA
BE-272	BE-272-BY	Back Yard (BY)	3,198	8.8	10.4	18.9	23.5	66.9	26.5	28.1	41.6	No	NA	8.8	10.4	NA	NA	NA	66.9	26.5	NA	NA	NA
BE-273	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	9	No	No	NA	NA	35	No	No
BE-273	BE-273-FY	Front Yard (FY)	2,935	6.9	7.1	63.4	11.2	61.7	27.9	19.2	23.7	No	NA	6.9	7.1	NA	NA	NA	61.7	27.9	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-273	BE-273-FG	Flower Garden (FG)	144	6.9	10.2	17.2	22.9	28	23.7	16.4	17.4	No	NA	6.9	10.2	NA	NA	NA	28	23.7	NA	NA	NA
BE-273	BE-273-DZ	Drip Zone (DZ)	220	6.7	10.9	16.9	16.9	42.5	22	14	10.3	No	NA	6.7	10.9	NA	NA	NA	42.5	22	NA	NA	NA
BE-273	BE-273-BY	Back Yard (BY)	3,445	8.8	12.1	24.5	32.3	94.4	25.5	27.1	28	No	NA	8.8	12.1	NA	NA	NA	94.4	25.5	NA	NA	NA
BE-274	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	21	No	No	NA	NA	40	No	No
BE-274	BE-274-RG	Rock Garden (RG)	1,235	11.3	24.2	7.5	4.7	23.8	24.6	16.7	11.2	No	NA	11.3	24.2	NA	NA	NA	23.8	24.6	NA	NA	NA
BE-274	BE-274-FY	Front Yard (FY)	2,266	20.6	25.9	8.6	5.4	98.8	32.5	11.2	8.4	No	NA	20.6	25.9	NA	NA	NA	98.8	32.5	NA	NA	NA
BE-274	BE-274-FG	Flower Garden (FG)	147	13.6	15.8	8.5	4.7	25.8	26.4	11	7.4	No	NA	13.6	15.8	NA	NA	NA	25.8	26.4	NA	NA	NA
BE-274	BE-274-DZ	Drip Zone (DZ)	220	56	19.4	41.1	35.7	91.6	31.6	43.1	31	No	NA	56	19.4	NA	NA	NA	91.6	31.6	NA	NA	NA
BE-274	BE-274-BY	Back Yard (BY)	4,037	17.3	12.4	24.7	35.3	116	10.8	12.8	13.8	No	NA	17.3	12.4	NA	NA	NA	116	10.8	NA	NA	NA
BE-275	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	11	No	No	NA	NA	55	No	No
BE-275	BE-275-FY	Front Yard (FY)	4,754	11.4	11.1	12.4	14.3	99.5	48.6	29	19.6	No	NA	11.4	11.1	NA	NA	NA	99.5	48.6	NA	NA	NA
BE-275	BE-275-FG	Flower Garden (FG)	66	10.6	10.9	11.9	11.8	64.2	51.7	40.8	18.7	No	NA	10.6	10.9	NA	NA	NA	64.2	51.7	NA	NA	NA
BE-275	BE-275-DZ	Drip Zone (DZ)	220	10.1	11.2	11.9	15.4	65.4	75.6	44.4	18.2	No	NA	10.1	11.2	NA	NA	NA	65.4	75.6	NA	NA	NA
BE-275	BE-275-BY	Back Yard (BY)	3,179	8.9	13.8	10.4	14.2	36.3	23.1	17.4	31.2	No	NA	8.9	13.8	NA	NA	NA	36.3	23.1	NA	NA	NA
BE-276	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	21	No	No	NA	NA	148	No	No
BE-276	BE-276-RG	Rock Garden (RG)	78	15.1	16.2	15.5	7.6	127	212	15.2	11	No	NA	15.1	16.2	NA	NA	NA	127	212	NA	NA	NA
BE-276	BE-276-FY	Front Yard (FY)	1,940	15.9	16.6	17.3	17.8	163	43.9	19.3	20.8	No	NA	15.9	16.6	NA	NA	NA	163	43.9	NA	NA	NA
BE-276	BE-276-FG	Flower Garden (FG)	161	12.3	22.7	10.9	8.6	158	249	56.6	31.3	No	NA	12.3	22.7	NA	NA	NA	158	249	NA	NA	NA
BE-276	BE-276-DZ	Drip Zone (DZ)	302	12.5	10.3	10.5	8	134	85	38.6	439	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-276	BE-276-BY	Back Yard (BY)	1,488	19.1	31.2	19.9	8.8	284	177	23.5	11.9	No	NA	19.1	31.2	NA	NA	NA	284	177	NA	NA	NA
BE-277	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	12	No	No	NA	NA	35	No	No
BE-277	BE-277-RG	Rock Garden (RG)	873	10.6	10	17.4	6.2	22.7	16	20.3	7.9	No	NA	10.6	10	NA	NA	NA	22.7	16	NA	NA	NA
BE-277	BE-277-PA	Play Area (PA)	138	13.3	17.9	18.2	11.7	35.2	35	20.5	15.6	No	NA	13.3	17.9	NA	NA	NA	35.2	35	NA	NA	NA
BE-277	BE-277-FY	Front Yard (FY)	1,412	13.8	22.4	27.8	20	38.3	115	102	74.9	No	NA	13.8	22.4	NA	NA	NA	38.3	115	NA	NA	NA
BE-277	BE-277-FG	Flower Garden (FG)	69	6.6	6.5	11.3	9.9	12	10	18.2	12.1	No	NA	6.6	6.5	NA	NA	NA	12	10	NA	NA	NA
BE-277	BE-277-DZ	Drip Zone (DZ)	220	7.6	7.9	11.4	14.7	30.1	31.2	35.4	32	No	NA	7.6	7.9	NA	NA	NA	30.1	31.2	NA	NA	NA
BE-277	BE-277-BY	Back Yard (BY)	2,199	10.9	12.5	17.5	11.9	27.6	22.2	73.3	14.7	No	NA	10.9	12.5	NA	NA	NA	27.6	22.2	NA	NA	NA
BE-278	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	11	No	No	NA	NA	28	No	No
BE-278	BE-278-RG	Rock Garden (RG)	642	5.9	20.3	26.2	23.4	41.2	37.3	23.7	22.9	No	NA	5.9	20.3	NA	NA	NA	41.2	37.3	NA	NA	NA
BE-278	BE-278-FY	Front Yard (FY)	1,203	9.2	5.1	11.5	20.7	37.7	18.2	17	34	No	NA	9.2	5.1	NA	NA	NA	37.7	18.2	NA	NA	NA
BE-278	BE-278-FG	Flower Garden (FG)	424	10.7	8.5	9.8	16	25	20	20.9	25.3	No	NA	10.7	8.5	NA	NA	NA	25	20	NA	NA	NA
BE-278	BE-278-DZ	Drip Zone (DZ)	220	10.8	11	17.7	21.9	31.3	24.7	19.3	19.3	No	NA	10.8	11	NA	NA	NA	31.3	24.7	NA	NA	NA
BE-279	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	12	No	No	NA	NA	31	No	No
BE-279	BE-279-FY	Front Yard (FY)	1,913	13.8	13.6	14.3	13.5	33.3	26.8	21.8	19.7	No	NA	13.8	13.6	NA	NA	NA	33.3	26.8	NA	NA	NA
BE-279	BE-279-FG	Flower Garden (FG)	252	10	9.8	11	11.9	25.6	30.5	24.3	21.1	No	NA	10	9.8	NA	NA	NA	25.6	30.5	NA	NA	NA
BE-279	BE-279-DZ	Drip Zone (DZ)	220	10.6	10.9	14.8	14.4	25.8	28.9	78.8	53.7	No	NA	10.6	10.9	NA	NA	NA	25.8	28.9	NA	NA	NA
BE-279	BE-279-BY	Back Yard (BY)	1,216	13	16.7	12.5	17.7	61.4	25.6	26.2	21.2	No	NA	13	16.7	NA	NA	NA	61.4	25.6	NA	NA	NA
BE-280	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	16	No	No	NA	NA	49	No	No
BE-280	BE-280-RG	Rock Garden (RG)	259	12.3	12.9	12.5	10.1	59.7	28.7	18.5	18.6	No	NA	12.3	12.9	NA	NA	NA	59.7	28.7	NA	NA	NA
BE-280	BE-280-FY	Front Yard (FY)	2,087	11.2	13	2.1	28.9	82.5	22.9	2.8	60.5	No	NA	11.2	13	NA	NA	NA	82.5	22.9	NA	NA	NA
BE-280	BE-280-FG	Flower Garden (FG)	144	14.9	11.6	15	15.7	1,030	160	166	166	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-280	BE-280-DZ	Drip Zone (DZ)	220	14.6	11.6	11.2	11	140	51.1	93.6	26.2	No	NA	14.6	11.6	NA	NA	NA	140	51.1	NA	NA	NA
BE-280	BE-280-BY	Back Yard (BY)	2,351	14.2	16.9	19.1	7.3	79	24.6	19.9	9.3	No	NA	14.2	16.9	NA	NA	NA	79	24.6	NA	NA	NA
BE-281	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	17	No	No	NA	NA	72	No	No
BE-281	BE-281-RG	Rock Garden (RG)	322	20.8	15.1	12.1	14.2	294	175	38.6	36.7	No	NA	20.8	15.1	NA	NA	NA	294	175	NA	NA	NA
BE-281	BE-281-FY	Front Yard (FY)	1,269	12.1	23.9	17.2	13.7	76.2	27.7	20.3	15.9	No	NA	12.1	23.9	NA	NA	NA	76.2	27.7	NA	NA	NA
BE-281	BE-281-FG	Flower Garden (FG)	376	11.3	16.5	14.3	16.1	11.7	42.7	10.9	18.1	No	NA	11.3	16.5	NA	NA	NA	11.7	42.7	NA	NA	NA
BE-281	BE-281-DZ	Drip Zone (DZ)	220	11.3	11.7	13.1	14.3	14.7	57.2	28.3	22.1	No	NA	11.3	11.7	NA	NA	NA	14.7	57.2	NA	NA	NA
BE-281	BE-281-BY	Back Yard (BY)	831	11.7	19.5	13.7	12.5	13.5	39.6	14.2	84.1	No	NA	11.7	19.5	NA	NA	NA	13.5	39.6	NA	NA	NA
BE-281	BE-281-BA	Bare Area (BA)	40	18.1	21.4	18.7	13.6	133	33.2	49.2	17.2	No	NA	18.1	21.4	NA	NA	NA	133	33.2	NA	NA	NA
BE-282	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	12	No	No	NA	NA	129	No	No
BE-282	BE-282-RG	Rock Garden (RG)	508	13.4	15.3	7.7	14.7	97.3	288	13.2	53.9	No	NA	13.4	15.3	NA	NA	NA	97.3	288	NA	NA	NA
BE-282	BE-282-FY	Front Yard (FY)	1,607	15.1	5.6	39.1	71.7	237	19.7	90.1	68.1	No	NA	15.1	5.6	NA	NA	NA	237	19.7	NA	NA	NA
BE-282	BE-282-FG	Flower Garden (FG)	404	10	9.3	10.3	10.1	67	36.3	21.3	14.6	No	NA	10	9.3	NA	NA	NA	67	36.3	NA	NA	NA
BE-282	BE-282-DZ	Drip Zone (DZ)	220	19.1	13.8	12	9.5	86.9	284	81.8	29.9	No	NA	19.1	13.8	NA	NA	NA	86.9	284	NA	NA	NA
BE-282	BE-282-BY	Back Yard (BY)	1,187	17.3	9.6	12.6	13	152	21.8	13.5	12.4	No	NA	17.3	9.6	NA	NA	NA	152	21.8	NA	NA	NA
BE-283	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	13	No	No	NA	NA	68	No	No
BE-283	BE-283-RG	Rock Garden (RG)	44	14.1	4.8	3.1	4	195	14.1	8	10.2	No	NA	14.1	4.8	NA	NA	NA	195	14.1	NA	NA	NA
BE-283	BE-283-FY	Front Yard (FY)	3,234	20.6	17.9	42.6	124	202	51.9	46.5	20.3	No	NA	20.6	17.9	NA	NA	NA	202	51.9	NA	NA	NA
BE-283	BE-283-FG	Flower Garden (FG)	313	11.7	10.8	11.4	11.5	85.8	72.7	67.8	63.9	No	NA	11.7	10.8	NA	NA	NA	85.8	72.7	NA	NA	NA
BE-283	BE-283-BY	Back Yard (BY)	2,607	13.1	10.3	11	13.8	86.4	26.2	14.8	11.4	No	NA	13.1	10.3	NA	NA	NA	86.4	26.2	NA	NA	NA
BE-283	BE-283-BA	Bare Area (BA)	72	11.8	15	15.6	15.3	57.1	31.4	16.6	20.5	No	NA	11.8	15	NA	NA	NA	57.1	31.4	NA	NA	NA
BE-300	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	32	No	No	NA	NA	108	No	No
BE-300	BE-300-FY	Front Yard (FY)	1,040	6.8	52.2	35.1	47.1	33.7	179	68.7	23.5	No	NA	6.8	52.2	NA	NA	NA	33.7	179	NA	NA	NA
BE-300	BE-300-FG	Flower Garden (FG)	258	26	30.7	42.2	40.3	209	272	177	136	No	NA	26	30.7	NA	NA	NA	209	272	NA	NA	NA
BE-300	BE-300-DZ	Drip Zone (DZ)	133	32.5	38.8	41	53.4	442	371	146	129	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-300	BE-300-BY	Back Yard (BY)	1,364	24.1	42.9	15.6	28.6	75.8	77.8	279	147	No	NA	24.1	42.9	NA	NA	NA	75.8	77.8	NA	NA	NA
BE-300	BE-300-BA	Bare Area (BA)	226	31.1	49.1	48.5	69.3	533	251	55.2	59.1	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-301	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	27	No	No	NA	NA	187	No	No
BE-301	BE-301-FY	Front Yard (FY)	767	43.4	31.7	43.7	58.5	283	166	63.1	35.4	No	NA	43.4	31.7	NA	NA	NA	283	166	NA	NA	NA
BE-301	BE-301-FG	Flower Garden (FG)	483	21.2	22.8	29.9	32.7	169	362	239	226	No	NA	21.2	22.8	NA	NA	NA	169	362	NA	NA	NA
BE-301	BE-301-DZ	Drip Zone (DZ)	134	29.3	39.7	29.8	53	473	177	160	104	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-301	BE-301-BY	Back Yard (BY)	1,310	17.3	21.8	25	19.6	258	178	112	57	No	NA	17.3	21.8	NA	NA	NA	258	178	NA	NA	NA
BE-302	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	29	No	No	NA	NA	190	No	No
BE-302	BE-302-FY	Front Yard (FY)	1,132	30.5	29.7	51.2	69.9	372	376	70.1	31.7	No	NA	30.5	29.7	NA	NA	NA	372	376	NA	NA	NA
BE-302	BE-302-ED	Earthen Drive (ED)	642	42.1	23	33.6	15.1	147	182	98.5	94.5	No	NA	42.1	23	NA	NA	NA	147	182	NA	NA	NA
BE-302	BE-302-DZ	Drip Zone (DZ)	453	20.6	34.4	63.1	37.6	436	202	115	22.4	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-302	BE-302-BY	Back Yard (BY)	915	20.1	36.8	46.8	64.5	279	352	60.1	25.1	No	NA	20.1	36.8	NA	NA	NA	279	352	NA	NA	NA
BE-302	BE-302-BA	Bare Area (BA)	83	27.2	54.4	61.5	37.3	611	152	52.9	24.4	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-303	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	22	No	No	NA	NA	157	No	No
BE-303	BE-303-VG	Vegetable Garden (VG)	184	15.8	15.5	20.4	22.2	139	165	241	324	No	NA	15.8	15.5	NA	NA	NA	139	165	NA	NA	NA
BE-303	BE-303-FY	Front Yard (FY)	1,918	18.7	24.7	28.3	30.5	528	257	102	48.3	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-303	BE-303-FG	Flower Garden (FG)	124	19.2	23.5	27.5	36.5	356	398	250	45.4	No	NA	19.2	23.5	NA	NA	NA	356	398	NA	NA	NA
BE-303	BE-303-DZ	Drip Zone (DZ)	539	13	22.9	28.4	20.9	438	423	270	28.7	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-303	BE-303-BY	Back Yard (BY)	1,764	9	17.6	29.4	27.6	109	190	184	60	No	NA	9	17.6	NA	NA	NA	109	190	NA	NA	NA
BE-304A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	30	No	No	NA	NA	192	No	No
BE-304A	BE-304A-VG	Vegetable Garden (VG)	928	19	24.3	46.6	119	141	173	159	146	No	NA	19	24.3	NA	NA	NA	141	173	NA	NA	NA
BE-304A	BE-304A-PA	Play Area (PA)	77	17.6	23.5	35.4	47.8	268	171	65.4	40	No	NA	17.6	23.5	NA	NA	NA	268	171	NA	NA	NA
BE-304A	BE-304A-FY	Front Yard (FY)	2,959	21.1	40.3	41.4	51.6	334	220	146	50.5	No	NA	21.1	40.3	NA	NA	NA	334	220	NA	NA	NA
BE-304A	BE-304A-FG	Flower Garden (FG)	116	28.6	36.2	41.5	39.9	160	165	108	116	No	NA	28.6	36.2	NA	NA	NA	160	165	NA	NA	NA
BE-304A	BE-304A-DZ	Drip Zone (DZ)	220	21.7	27.6	52	69.6	201	45.3	60.2	61.5	No	NA	21.7	27.6	NA	NA	NA	201	45.3	NA	NA	NA
BE-304A	BE-304A-BY	Back Yard (BY)	892	35.2	48.7	64.8	74.3	366	285	303	156	No	NA	35.2	48.7	NA	NA	NA	366	285	NA	NA	NA
BE-304A	BE-304A-BA	Bare Area (BA)	879	26.8	31.2	20	27.4	275	86.7	17.2	15.9	No	NA	26.8	31.2	NA	NA	NA	275	86.7	NA	NA	NA
BE-304B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	30	No	No	NA	NA	208	No	No
BE-304B	BE-304B-FY	Front Yard (FY)	947	36.8	44.7	56	52.3	203	183	136	71.7	No	NA	36.8	44.7	NA	NA	NA	203	183	NA	NA	NA
BE-304B	BE-304B-FG	Flower Garden (FG)	218	27	30.8	64.3	59.9	222	169	86.3	39.4	No	NA	27	30.8	NA	NA	NA	222	169	NA	NA	NA
BE-304B	BE-304B-DZ	Drip Zone (DZ)	220	20.3	20.6	42.8	55.2	276	165	37.3	31.7	No	NA	20.3	20.6	NA	NA	NA	276	165	NA	NA	NA
BE-304B	BE-304B-BY	Back Yard (BY)	905	15	33.8	27.4	15	349	206	47.9	16.7	No	NA	15	33.8	NA	NA	NA	349	206	NA	NA	NA
BE-305	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	31	No	No	NA	NA	140	No	No
BE-305	BE-305-PA	Play Area (PA)	97	29.3	43.2	56.9	50	200	204	165	63.7	No	NA	29.3	43.2	NA	NA	NA	200	204	NA	NA	NA
BE-305	BE-305-FY	Front Yard (FY)	1,369	19.8	17.5	36.3	32.5	76.5	52.3	103	25.8	No	NA	19.8	17.5	NA	NA	NA	76.5	52.3	NA	NA	NA
BE-305	BE-305-FG	Flower Garden (FG)	72	50.3	40.7	68.3	17.8	316	513	433	50.1	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-305	BE-305-ED	Earthen Drive (ED)	110	16.7	57.9	12.1	6.7	284	322	40.4	33.8	No	NA	16.7	57.9	NA	NA	NA	284	322	NA	NA	NA
BE-305	BE-305-DZ	Drip Zone (DZ)	220	17	23	62.4	80	42.2	72.7	131	40.6	No	NA	17	23	NA	NA	NA	42.2	72.7	NA	NA	NA
BE-305	BE-305-BY	Back Yard (BY)	2,917	28.5	40.6	34.1	26.4	192	150	45.5	7.4	No	NA	28.5	40.6	NA	NA	NA	192	150	NA	NA	NA
BE-306	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	26	No	No	NA	NA	245	No	No
BE-306	BE-306-FY	Front Yard (FY)	350	15.8	19.7	37.8	38.6	378	390	205	61.4	No	NA	15.8	19.7	NA	NA	NA	378	390	NA	NA	NA
BE-306	BE-306-FG	Flower Garden (FG)	111	21.5	24.4	31.8	20	294	316	150	67.5	No	NA	21.5	24.4	NA	NA	NA	294	316	NA	NA	NA
BE-306	BE-306-ED	Earthen Drive (ED)	1,472	44	38.9	32	34.6	33.4	60.2	25.5	13.1	No	NA	44	38.9	NA	NA	NA	33.4	60.2	NA	NA	NA
BE-306	BE-306-DZ	Drip Zone (DZ)	220	21.3	18	21.4	19.2	334	125	28.6	44.7	No	NA	21.3	18	NA	NA	NA	334	125	NA	NA	NA
BE-306	BE-306-BY	Back Yard (BY)	3,283	21.5	33.4	17.6	52	334	248	24.3	68.5	No	NA	21.5	33.4	NA	NA	NA	334	248	NA	NA	NA
BE-306	BE-306-BA	Bare Area (BA)	483	15.4	28.7	43.2	59.6	90.8	338	63	42	No	NA	15.4	28.7	NA	NA	NA	90.8	338	NA	NA	NA
BE-307	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	41	No	No	NA	NA	78	No	No
BE-307	BE-307-DZ	Drip Zone (DZ)	220	32.3	47	40.9	18.3	74.6	98	39.3	18.4	No	NA	32.3	47	NA	NA	NA	74.6	98	NA	NA	NA
BE-307	BE-307-BA	Bare Area (BA)	1,479	34.8	42	14.8	18.1	73.5	61.9	7.5	22	No	NA	34.8	42	NA	NA	NA	73.5	61.9	NA	NA	NA
BE-308	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	31	No	No	NA	NA	153	No	No
BE-308	BE-308-RG	Rock Garden (RG)	475	29.5	53.7	41.9	19.3	108	70.7	27.5	13.8	No	NA	29.5	53.7	NA	NA	NA	108	70.7	NA	NA	NA
BE-308	BE-308-FY	Front Yard (FY)	2,005	17.6	22.3	27.5	42.6	191	169	125	31	No	NA	17.6	22.3	NA	NA	NA	191	169	NA	NA	NA
BE-308	BE-308-FG	Flower Garden (FG)	385	24.4	35.8	34.4	50.1	504	719	161	426	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-308	BE-308-DZ	Drip Zone (DZ)	220	25.9	31.3	48.1	22.8	326	229	92.3	113	No	NA	25.9	31.3	NA	NA	NA	326	229	NA	NA	NA
BE-308	BE-308-BY	Back Yard (BY)	9,090	22.2	34.6	44.8	38.3	222	200	194	221	No	NA	22.2	34.6	NA	NA	NA	222	200	NA	NA	NA
BE-309A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	29	No	No	NA	NA	172	No	No
BE-309A	BE-309A-RG	Rock Garden (RG)	439	23.2	25.4	36.6	52	155	263	222	116	No	NA	23.2	25.4	NA	NA	NA	155	263	NA	NA	NA
BE-309A	BE-309A-FY	Front Yard (FY)	1,356	23.6	42.6	20.3	24.5	191	247	45.2	24.8	No	NA	23.6	42.6	NA	NA	NA	191	247	NA	NA	NA
BE-309A	BE-309A-ED	Earthen Drive (ED)	401	16.8	47.9	93.6	38.4	84	39.2	22.4	10.4	No	NA	16.8	47.9	NA	NA	NA	84	39.2	NA	NA	NA
BE-309A	BE-309A-DZ	Drip Zone (DZ)	220	26.8	13.7	16.1	25.5	198	105	142	45.5	No	NA	26.8	13.7	NA	NA	NA	198	105	NA	NA	NA
BE-309A	BE-309A-BY	Back Yard (BY)	456	26.7	28.8	47.2	83.1	218	213	205	271	No	NA	26.7	28.8	NA	NA	NA	218	213	NA	NA	NA
BE-309B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	18	No	No	NA	NA	138	No	No
BE-309B	BE-309B-ED	Earthen Drive (ED)	442	6.3	5.4	28.5	41.1	20.4	22.7	108	61.9	No	NA	6.3	5.4	NA	NA	NA	20.4	22.7	NA	NA	NA
BE-309B	BE-309B-DZ	Drip Zone (DZ)	88	12	8	25.6	36.3	61.7	86.4	51.2	97.2	No	NA	12	8	NA	NA	NA	61.7	86.4	NA	NA	NA
BE-310A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	24	No	No	NA	NA	182	No	No
BE-310A	BE-310A-RG	Rock Garden (RG)	407	17.8	21.3	23.2	18.3	193	145	120	83.1	No	NA	17.8	21.3	NA	NA	NA	193	145	NA	NA	NA
BE-310A	BE-310A-FY	Front Yard (FY) [A]	255	18.6	24	8.5		201	74.7	8.7		No	NA	18.6	24	NA	NA	NA	201	74.7	NA	NA	NA
BE-310A	BE-310A-DZ	Drip Zone (DZ)	220	20.1	24.8	21.8	22.6	262	238	162	144	No	NA	20.1	24.8	NA	NA	NA	262	238	NA	NA	NA
BE-310A	BE-310A-BY	Back Yard (BY)	1,099	21.4	32.9	33.8	29.1	201	204	84.8	26.7	No	NA	21.4	32.9	NA	NA	NA	201	204	NA	NA	NA
BE-310B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	20	No	No	NA	NA	182	No	No

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-310B	BE-310B-ED	Earthen Drive (ED)	500	17.7	15	58.7	38.2	199	174	159	30.8	No	NA	17.7	15	NA	NA	NA	199	174	NA	NA	NA
BE-310B	BE-310B-DZ	Drip Zone (DZ)	220	23.4	28.6	28.6	30.3	99.1	182	82.9	80.4	No	NA	23.4	28.6	NA	NA	NA	99.1	182	NA	NA	NA
BE-310B	BE-310B-BY	Back Yard (BY)	583	17.8	17.2	80.2	91.6	270	178	91.2	153	No	NA	17.8	17.2	NA	NA	NA	270	178	NA	NA	NA
BE-311	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	30	No	No	NA	NA	157	No	No
BE-311	BE-311-FY	Front Yard (FY)	2,219	22.8	29.8	28.9	17.3	167	119	34	7.8	No	NA	22.8	29.8	NA	NA	NA	167	119	NA	NA	NA
BE-311	BE-311-FG	Flower Garden (FG)	9	6.3	6.6	29	32.4	23.1	28	87.5	111	No	NA	6.3	6.6	NA	NA	NA	23.1	28	NA	NA	NA
BE-311	BE-311-DZ	Drip Zone (DZ)	220	28.6	43.2	52.7	33.4	320	200	91	24.1	No	NA	28.6	43.2	NA	NA	NA	320	200	NA	NA	NA
BE-311	BE-311-BY	Back Yard (BY)	136	32.4	53.8	60.7	38.3	323	179	58.4	11.1	No	NA	32.4	53.8	NA	NA	NA	323	179	NA	NA	NA
BE-312	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	17	No	No	NA	NA	219	No	No
BE-312	BE-312-RG	Rock Garden (RG)	89	8.9	13.7	21.5	25.9	49	315	293	115	No	NA	8.9	13.7	NA	NA	NA	49	315	NA	NA	NA
BE-312	BE-312-FY	Front Yard (FY)	514	13	29.3	41.8	31.4	281	252	102	49.2	No	NA	13	29.3	NA	NA	NA	281	252	NA	NA	NA
BE-312	BE-312-FG	Flower Garden (FG)	111	19	21.8	26.9	21.3	388	368	225	25.9	No	NA	19	21.8	NA	NA	NA	388	368	NA	NA	NA
BE-312	BE-312-DZ	Drip Zone (DZ)	220	8.6	10	20.5	25.5	34.4	46.7	327	162	No	NA	8.6	10	NA	NA	NA	34.4	46.7	NA	NA	NA
BE-312	BE-312-BY	Back Yard (BY)	1,600	20.7	20.9	23.4	22.7	209	178	108	82.7	No	NA	20.7	20.9	NA	NA	NA	209	178	NA	NA	NA
BE-313	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	31	No	No	NA	NA	200	No	No
BE-313	BE-313-FY	Front Yard (FY)	826	19.2	21.9	45	27.6	527	364	329	18.6	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-313	BE-313-ED	Earthen Drive (ED)	1,375	24.6	39	59.1	61.9	255	318	231	76.6	No	NA	24.6	39	NA	NA	NA	255	318	NA	NA	NA
BE-313	BE-313-DZ	Drip Zone (DZ)	220	25.7	29.6	27.8	22.4	319	251	90.5	85.1	No	NA	25.7	29.6	NA	NA	NA	319	251	NA	NA	NA
BE-313	BE-313-BY	Back Yard (BY)	2,351	23.4	37.7	33.8	20.8	239	163	94.6	17.4	No	NA	23.4	37.7	NA	NA	NA	239	163	NA	NA	NA
BE-314	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	22	No	No	NA	NA	131	No	No
BE-314	BE-314-PA	Play Area (PA)	153	18.5	20	27.8	25	305	205	153	30.4	No	NA	18.5	20	NA	NA	NA	305	205	NA	NA	NA
BE-314	BE-314-FY	Front Yard (FY)	713	15.8	12.2	21.8	21.2	205	56.2	130	72.9	No	NA	15.8	12.2	NA	NA	NA	205	56.2	NA	NA	NA
BE-314	BE-314-FG	Flower Garden (FG)	51	6.7	13.4	20.2	21.7	15.8	58.5	143	119	No	NA	6.7	13.4	NA	NA	NA	15.8	58.5	NA	NA	NA
BE-314	BE-314-ED	Earthen Drive (ED)	550	18.5	43.4	35.4	24	84.5	106	138	173	No	NA	18.5	43.4	NA	NA	NA	84.5	106	NA	NA	NA
BE-314	BE-314-BY	Back Yard (BY)	2,218	25.2	32.1	27.6	15.8	192	156	80.1	9	No	NA	25.2	32.1	NA	NA	NA	192	156	NA	NA	NA
BE-315	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	25	No	No	NA	NA	140	No	No
BE-315	BE-315-FY	Front Yard (FY)	1,130	20.9	24.8	20.5	22.1	121	116	176	152	No	NA	20.9	24.8	NA	NA	NA	121	116	NA	NA	NA
BE-315	BE-315-ED	Earthen Drive (ED)	246	7	24.5	33	18.1	90.6	49.2	39.2	18.1	No	NA	7	24.5	NA	NA	NA	90.6	49.2	NA	NA	NA
BE-315	BE-315-DZ	Drip Zone (DZ)	220	37	34.9	22.2	15	209	253	234	51.3	No	NA	37	34.9	NA	NA	NA	209	253	NA	NA	NA
BE-315	BE-315-BY	Back Yard (BY)	94	15.4	24.3	28.6	39.4	136	142	123	81.8	No	NA	15.4	24.3	NA	NA	NA	136	142	NA	NA	NA
BE-316	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	25	No	No	NA	NA	130	No	No
BE-316	BE-316-FY	Front Yard (FY)	3,819	16.8	27.4	38.6	36.5	216	252	159	74.7	No	NA	16.8	27.4	NA	NA	NA	216	252	NA	NA	NA
BE-316	BE-316-FG	Flower Garden (FG)	344	26.9	36.1	29.6	21.8	1170	943	227	77.4	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-316	BE-316-ED	Earthen Drive (ED)	96	9.2	10.1	15.8	27.8	336	169	103	109	No	NA	9.2	10.1	NA	NA	NA	336	169	NA	NA	NA
BE-316	BE-316-DZ	Drip Zone (DZ)	139	48.6	60.6	56.7	55	918	963	727	349	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-316	BE-316-BY	Back Yard (BY)	838	29.6	36.4	55.9	59.3	168	209	143	93.7	No	NA	29.6	36.4	NA	NA	NA	168	209	NA	NA	NA
BE-316	BE-316-BA	Bare Area (BA)	214	45.5	47.7	41.5	83.7	375	510	232	314	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-317	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	31	No	No	NA	NA	197	No	No
BE-317	BE-317-VG	Vegetable Garden (VG)	48	24.1	31.1	15.2	14.1	123	165	34.6	15.3	No	NA	24.1	31.1	NA	NA	NA	123	165	NA	NA	NA
BE-317	BE-317-FY	Front Yard (FY)	919	16.1	15.9	17.9	22.8	347	90.8	39.4	8.2	No	NA	16.1	15.9	NA	NA	NA	347	90.8	NA	NA	NA
BE-317	BE-317-FG	Flower Garden (FG)	204	22.6	28.4	31.2	30.1	241	285	225	35.5	No	NA	22.6	28.4	NA	NA	NA	241	285	NA	NA	NA
BE-317	BE-317-DZ	Drip Zone (DZ)	401	44.8	32.2	32.5	38.7	525	343	181	124	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-317	BE-317-BY	Back Yard (BY)	702	32	39.7	37.6	35.5	277	237	211	113	No	NA	32	39.7	NA	NA	NA	277	237	NA	NA	NA
BE-317	BE-317-BA	Bare Area (BA)	143	45.1	51.7	55.8	34.1	400	247	134	54.7	No	NA	45.1	51.7	NA	NA	NA	400	247	NA	NA	NA
BE-318	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	25	No	No	NA	NA	90	No	No
BE-318	BE-318-FY	Front Yard (FY)	1,738	15.7	20.1	42.6	28.7	579	152	85.9	73.3	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-318	BE-318-BY	Back Yard (BY)	2,874	18	23.5	26.8	17.6	152	133	98	34.8	No	NA	18	23.5	NA	NA	NA	152	133	NA	NA	NA
BE-319	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	24	No	No	NA	NA	209	No	No
BE-319	BE-319-FY	Front Yard (FY)	736	17.6	20.9	33	42.8	180	258	165	36.3	No	NA	17.6	20.9	NA	NA	NA	180	258	NA	NA	NA
BE-319	BE-319-FG	Flower Garden (FG)	306	25.9	34.3	38.8	33.5	228	250	185	98.4	No	NA	25.9	34.3	NA	NA	NA	228	250	NA	NA	NA
BE-319	BE-319-DZ	Drip Zone (DZ)	220	19.2	37.3	50.9	55.2	112	308	212	21	No	NA	19.2	37.3	NA	NA	NA	112	308	NA	NA	NA
BE-319	BE-319-BY	Back Yard (BY)	1,269	16	13.7	23.7	24.9	161	97.4	222	186	No	NA	16	13.7	NA	NA	NA	161	97.4	NA	NA	NA
BE-320	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	31	No	No	NA	NA	144	No	No
BE-320	BE-320-FY	Front Yard (FY)	844	30	40.7	51.3	53.2	141	86	68.5	47.8	No	NA	30	40.7	NA	NA	NA	141	86	NA	NA	NA
BE-320	BE-320-FG	Flower Garden (FG)	25	26.7	36.1	45.3	36.7	221	94.9	59.5	76.2	No	NA	26.7	36.1	NA	NA	NA	221	94.9	NA	NA	NA
BE-320	BE-320-ED	Earthen Drive (ED)	140	10.8	25.5	45.4	51.3	89.1	249	159	56.5	No	NA	10.8	25.5	NA	NA	NA	89.1	249	NA	NA	NA
BE-320	BE-320-DZ	Drip Zone (DZ)	220	22.7	35.7	52.7	57.9	223	139	53.2	44.6	No	NA	22.7	35.7	NA	NA	NA	223	139	NA	NA	NA
BE-320	BE-320-BY	Back Yard (BY)	1,486	25.6	38.4	48.7	24.7	223	66.5	51.4	16.9	No	NA	25.6	38.4	NA	NA	NA	223	66.5	NA	NA	NA
BE-321A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	28	No	No	NA	NA	133	No	No
BE-321A	BE-321A-VG	Vegetable Garden (VG)	791	33.3	30.3	63.3	57.4	105	114	105	71.4	No	NA	33.3	30.3	NA	NA	NA	105	114	NA	NA	NA
BE-321A	BE-321A-FY	Front Yard (FY)	664	19.9	36.2	39.6	76.5	89	141	90.8	68.9	No	NA	19.9	36.2	NA	NA	NA	89	141	NA	NA	NA
BE-321A	BE-321A-FG	Flower Garden (FG)	219	19.3	20.9	36	50.1	111	87.5	50.7	39.1	No	NA	19.3	20.9	NA	NA	NA	111	87.5	NA	NA	NA
BE-321A	BE-321A-DZ	Drip Zone (DZ)	220	28	37.9	36	78.3	213	237	115	84.4	No	NA	28	37.9	NA	NA	NA	213	237	NA	NA	NA
BE-321A	BE-321A-BY	Back Yard (BY)	1,361	22.5	26.7	45.5	53	98.6	111	81	54.2	No	NA	22.5	26.7	NA	NA	NA	98.6	111	NA	NA	NA
BE-321B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	44	No	No	NA	NA	168	No	No
BE-321B	BE-321B-FY	Front Yard (FY)	530	31.6	29.4	25.7	41.6	115	119	70.7	40.4	No	NA	31.6	29.4	NA	NA	NA	115	119	NA	NA	NA
BE-321B	BE-321B-FG	Flower Garden (FG)	29	22.6	36.5	45.7	46.4	208	180	77	65.7	No	NA	22.6	36.5	NA	NA	NA	208	180	NA	NA	NA
BE-321B	BE-321B-ED	Earthen Drive (ED)	658	47.6	81.1	16.4	7.4	221	185	43.3	11.5	No	NA	47.6	81.1	NA	NA	NA	221	185	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-322	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	26	No	No	NA	NA	91	No	No
BE-322	BE-322-VG	Vegetable Garden (VG)	184	32.2	31.5	29.7	29.7	68.6	38.2	36.9	46.3	No	NA	32.2	31.5	NA	NA	NA	68.6	38.2	NA	NA	NA
BE-322	BE-322-FY	Front Yard (FY)	358	9.6	19.1	25.8	17	76.8	178	49.5	13	No	NA	9.6	19.1	NA	NA	NA	76.8	178	NA	NA	NA
BE-322	BE-322-DZ	Drip Zone (DZ)	220	27.5	31.9	33.7	33.1	84.7	78.5	90.9	148	No	NA	27.5	31.9	NA	NA	NA	84.7	78.5	NA	NA	NA
BE-322	BE-322-BY	Back Yard (BY) [D]	669																				
BE-322	BD-322-ED	Earthen Drive (ED) [D]	985																				
BE-324	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	49	No	No	NA	NA	170	No	No
BE-324	BE-324-FY	Front Yard (FY)	2,148	29.9	44.1	37.6	20.5	228	106	19.9	12.5	No	NA	29.9	44.1	NA	NA	NA	228	106	NA	NA	NA
BE-324	BE-324-FG	Flower Garden (FG)	53	77.9	35.1	39.7	36.9	20.7	157	56.6	31.4	No	NA	77.9	35.1	NA	NA	NA	20.7	157	NA	NA	NA
BE-324	BE-324-DZ	Drip Zone (DZ)	220	35.4	44.4	48.3	33	157	97.7	39.8	17.7	No	NA	35.4	44.4	NA	NA	NA	157	97.7	NA	NA	NA
BE-324	BE-324-BY	Back Yard (BY)	2,204	44.1	70.6	108	26.8	324	138	95.5	245	No	NA	44.1	70.6	NA	NA	NA	324	138	NA	NA	NA
BE-324	BE-324-BA	Bare Area (BA)	147	30.8	61.7	130	86	304	261	236	172	No	NA	30.8	61.7	NA	NA	NA	304	261	NA	NA	NA
BE-325	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	25	No	No	NA	NA	130	No	No
BE-325	BE-325-FY	Front Yard (FY)	719	15.7	22.4	9.8	6.7	228	270	11.9	12.2	No	NA	15.7	22.4	NA	NA	NA	228	270	NA	NA	NA
BE-325	BE-325-FG	Flower Garden (FG)	81	17.9	23.4	27.5	38.5	353	604	227	903	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-325	BE-325-DZ	Drip Zone (DZ)	298	18.6	23.4	24.6	44.1	664	327	101	111	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-325	BE-325-BY	Back Yard (BY)	2,382	22.6	24.5	29	29.5	189	181	89.9	61.8	No	NA	22.6	24.5	NA	NA	NA	189	181	NA	NA	NA
BE-326	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	26	No	No	NA	NA	213	No	No
BE-326	BE-326-VG	Vegetable Garden (VG)	54	17.9	17.6	30.3	36	297	290	807	420	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-326	BE-326-RG	Rock Garden (RG)	150	14.6	16.8	37.5	37.7	149	221	77.4	35.4	No	NA	14.6	16.8	NA	NA	NA	149	221	NA	NA	NA
BE-326	BE-326-FY	Front Yard (FY)	806	32.6	35.2	83.9	25.6	192	163	72.5	15.2	No	NA	32.6	35.2	NA	NA	NA	192	163	NA	NA	NA
BE-326	BE-326-FG	Flower Garden (FG)	256	17.6	22.5	33.9	32.3	271	343	322	65.1	No	NA	17.6	22.5	NA	NA	NA	271	343	NA	NA	NA
BE-326	BE-326-ED	Earthen Drive (ED)	743	13.8	13.6	42.1	51.1	110	172	367	265	No	NA	13.8	13.6	NA	NA	NA	110	172	NA	NA	NA
BE-326	BE-326-DZ	Drip Zone (DZ)	220	19.2	21.6	29.3	25.6	274	302	170	32.5	No	NA	19.2	21.6	NA	NA	NA	274	302	NA	NA	NA
BE-326	BE-326-BY	Back Yard (BY)	598	39.3	50.8	41.1	42.9	374	295	342	46.8	No	NA	39.3	50.8	NA	NA	NA	374	295	NA	NA	NA
BE-327	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	16	No	No	NA	NA	100	No	No
BE-327	BE-327-RG	Rock Garden (RG)	393	9.1	21.1	33.9	30.7	91.2	111	117	89.8	No	NA	9.1	21.1	NA	NA	NA	91.2	111	NA	NA	NA
BE-327	BE-327-FY	Front Yard (FY)	894	8.2	13.5	19.3	19.5	116	181	153	41.7	No	NA	8.2	13.5	NA	NA	NA	116	181	NA	NA	NA
BE-327	BE-327-FG	Flower Garden (FG)	488	10.7	11.9	16.3	27.6	36.6	42	113	139	No	NA	10.7	11.9	NA	NA	NA	36.6	42	NA	NA	NA
BE-327	BE-327-ED	Earthen Drive (ED)	549	4.6	11.3	42.2	53.8	7.7	53.1	105	32.8	No	NA	4.6	11.3	NA	NA	NA	7.7	53.1	NA	NA	NA
BE-327	BE-327-DZ	Drip Zone (DZ)	220	10.1	17	15.8	25.2	51.2	47	17.6	126	No	NA	10.1	17	NA	NA	NA	51.2	47	NA	NA	NA
BE-327	BE-327-BY	Back Yard (BY)	1,136	18.6	37.5	35.9	46.2	210	214	141	107	No	NA	18.6	37.5	NA	NA	NA	210	214	NA	NA	NA
BE-328A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	16	No	No	NA	NA	122	No	No
BE-328A	BE-328A-FY	Front Yard (FY)	2,756	16.3	20.6	23	29.6	144	122	160	111	No	NA	16.3	20.6	NA	NA	NA	144	122	NA	NA	NA
BE-328A	BE-328A-FG	Flower Garden (FG)	240	16	10.3	9.9	18.3	152	85.1	46.6	91.3	No	NA	16	10.3	NA	NA	NA	152	85.1	NA	NA	NA
BE-328A	BE-328A-ED	Earthen Drive (ED)	637	8.5	16.6	27.9	23.5	71.6	69	71.4	49.1	No	NA	8.5	16.6	NA	NA	NA	71.6	69	NA	NA	NA
BE-328A	BE-328A-DZ	Drip Zone (DZ)	220	17.3	17	21.2	23.9	190	130	77.2	56	No	NA	17.3	17	NA	NA	NA	190	130	NA	NA	NA
BE-328A	BE-328A-BY	Back Yard (BY)	1,095	17.3	19.3	26.8	31.2	149	158	132	98.6	No	NA	17.3	19.3	NA	NA	NA	149	158	NA	NA	NA
BE-328B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	21	No	No	NA	NA	204	No	No
BE-328B	BE-328B-FY	Front Yard (FY)	261	12.6	14.6	19.2	26.5	168	137	103	44.7	No	NA	12.6	14.6	NA	NA	NA	168	137	NA	NA	NA
BE-328B	BE-328B-DZ	Drip Zone (DZ)	220	32.4	32.4	17	21.2	223	338	205	59.9	No	NA	32.4	32.4	NA	NA	NA	223	338	NA	NA	NA
BE-328B	BE-328B-BY	Back Yard (BY)	771	17	15.4	11.1	14.1	195	152	60.6	213	No	NA	17	15.4	NA	NA	NA	195	152	NA	NA	NA
BE-329	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	15	No	No	NA	NA	86	No	No
BE-329	BE-329-VG	Vegetable Garden (VG)	213	12.8	14.6	18.3	22.3	95.8	108	101	92.6	No	NA	12.8	14.6	NA	NA	NA	95.8	108	NA	NA	NA
BE-329	BE-329-FY	Front Yard (FY)	951	13.4	13.3	15.5	18.2	101	58	45	35.7	No	NA	13.4	13.3	NA	NA	NA	101	58	NA	NA	NA
BE-329	BE-329-FG	Flower Garden (FG)	131	12.5	11.9	13.5	17.5	80.1	94.5	80	157	No	NA	12.5	11.9	NA	NA	NA	80.1	94.5	NA	NA	NA
BE-329	BE-329-ED	Earthen Drive (ED)	145	15.1	15.4	9.8	17.6	89.8	108	60.4	84.6	No	NA	15.1	15.4	NA	NA	NA	89.8	108	NA	NA	NA
BE-329	BE-329-DZ	Drip Zone (DZ)	220	16	11.6	10.8	17	73.2	65	63.4	105	No	NA	16	11.6	NA	NA	NA	73.2	65	NA	NA	NA
BE-329	BE-329-BY	Back Yard (BY)	1,105	24.5	18.1	24.2	41.2	126	63.6	47.2	38.8	No	NA	24.5	18.1	NA	NA	NA	126	63.6	NA	NA	NA
BE-329	BE-329-BA	Bare Area (BA)	71	11.8	15.8	14.9	23.1	97.2	79	55.4	35.6	No	NA	11.8	15.8	NA	NA	NA	97.2	79	NA	NA	NA
BE-330	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	21	No	No	NA	NA	148	No	No
BE-330	BE-330-VG	Vegetable Garden (VG)	140	19	22.1	25.5	27.6	119	79.3	84.9	54.1	No	NA	19	22.1	NA	NA	NA	119	79.3	NA	NA	NA
BE-330	BE-330-PA	Play Area (PA)	233	22.8	31.9	35.9	49	254	176	143	75.1	No	NA	22.8	31.9	NA	NA	NA	254	176	NA	NA	NA
BE-330	BE-330-FY	Front Yard (FY)	1,311	15.6	22.7	28.9	12.9	194	89.7	42.8	7.7	No	NA	15.6	22.7	NA	NA	NA	194	89.7	NA	NA	NA
BE-330	BE-330-FG	Flower Garden (FG)	93	10.1	15.5	24.3	39.2	80.2	152	233	121	No	NA	10.1	15.5	NA	NA	NA	80.2	152	NA	NA	NA
BE-330	BE-330-DZ	Drip Zone (DZ)	220	14.5	18.8	23	24.4	89.1	170	173	70.4	No	NA	14.5	18.8	NA	NA	NA	89.1	170	NA	NA	NA
BE-330	BE-330-BY	Back Yard (BY)	2,606	22.4	27.7	25.8	27.7	222	128	124	94.8	No	NA	22.4	27.7	NA	NA	NA	222	128	NA	NA	NA
BE-330	BE-330-BA	Bare Area (BA)	441	19.2	24.8	18.3	27.1	183	186	54.2	17.2	No	NA	19.2	24.8	NA	NA	NA	183	186	NA	NA	NA
BE-331	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	22	No	No	NA	NA	161	No	No
BE-331	BE-331-RG	Rock Garden (RG)	178	21.5	24.1	51.6	57.3	131	97.2	88.7	58.3	No	NA	21.5	24.1	NA	NA	NA	131	97.2	NA	NA	NA
BE-331	BE-331-FY	Front Yard (FY)	1,194	22.5	24	36.6	46.9	245	163	74.7	75.3	No	NA	22.5	24	NA	NA	NA	245	163	NA	NA	NA
BE-331	BE-331-DZ	Drip Zone (DZ)	220	18.9	18.6	20.7	34	247	146	55.3	54.9	No	NA	18.9	18.6	NA	NA	NA	247	146	NA	NA	NA
BE-331	BE-331-BY	Back Yard (BY)	1,631	20.1	20.9	27.2	68.7	129	116	100	75	No	NA	20.1	20.9	NA	NA	NA	129	116	NA	NA	NA
BE-331	BE-331-BA	Bare Area (BA)	108	22.6	25.2	42.2	77.2	300	160	148	207	No	NA	22.6	25.2	NA	NA	NA	300	160	NA	NA	NA
BE-332	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	19	No	No	NA	NA	87	No	No
BE-332	BE-332-VG	Vegetable Garden (VG)	26	6.9	12.2	29	79.4	10.5	111	300	103	No	NA	6.9	12.2	NA	NA	NA	10.5	111	NA	NA	NA
BE-332	BE-332-FY	Front Yard (FY)	590	17.4	27.3	29.5	25.2	290	269	120	59.7	No	NA	17.4	27.3	NA	NA	NA	290	269	NA	NA	NA
BE-332	BE-332-FG	Flower Garden (FG)	368	0.36	15.1	29.7	41.9	0.054	91.7	267	179	No	NA	0.36	15.1	NA	NA	NA	0.054	91.7	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-332	BE-332-DZ	Drip Zone (DZ)	220	8	16.2	42.7	30.4	12.5	33.2	153	94.1	No	NA	8	16.2	NA	NA	NA	12.5	33.2	NA	NA	NA
BE-332	BE-332-BY	Back Yard (BY)	1,577	8.6	24.1	31.2	42	82.3	406	369	86.9	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-332	BE-332-BA	Bare Area (BA)	221	11.3	30.7	40	29.5	36.3	449	257	38.6	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-333A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	22	No	No	NA	NA	82	No	No
BE-333A	BE-333A-FY	Front Yard (FY)	1,593	12.2	18.1	38.2	27.8	223	73.5	61.7	25.9	No	NA	12.2	18.1	NA	NA	NA	223	73.5	NA	NA	NA
BE-333A	BE-333A-DZ	Drip Zone (DZ)	333	43.8	102	120	47.1	416	265	295	195	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-333B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	33	No	No	NA	NA	197	No	No
BE-333B	BE-333B-FY	Front Yard (FY)	1,181	18.6	29.1	34.6	17.7	151	406	221	29.1	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-333B	BE-333B-DZ	Drip Zone (DZ)	220	17.2	54.1	72.2	66.4	376	213	47.6	24.9	No	NA	17.2	54.1	NA	NA	NA	376	213	NA	NA	NA
BE-333B	BE-333B-BA	Bare Area (BA)	18	28.9	31.1	26.7	8.9	276	290	70.3	87.6	No	NA	28.9	31.1	NA	NA	NA	276	290	NA	NA	NA
BE-334A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	16	No	No	NA	NA	201	No	No
BE-334A	BE-334A-RG	Rock Garden (RG)	37	15.7	25.2	22.1	79.1	291	344	114	41.6	No	NA	15.7	25.2	NA	NA	NA	291	344	NA	NA	NA
BE-334A	BE-334A-FY	Front Yard (FY)	338	4.4	16.5	25	35.2	8.8	209	124	139	No	NA	4.4	16.5	NA	NA	NA	8.8	209	NA	NA	NA
BE-334A	BE-334A-BY	Back Yard (BY)	395	16.1	15.3	13.2	27.9	173	233	157	158	No	NA	16.1	15.3	NA	NA	NA	173	233	NA	NA	NA
BE-334A	BE-334A-BA	Bare Area (BA)	102	10.2	13.6	25.7	38.2	103	132	123	76.6	No	NA	10.2	13.6	NA	NA	NA	103	132	NA	NA	NA
BE-334B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	9	No	No	NA	NA	113	No	No
BE-334B	BE-334B-BA	Bare Area (BA)	76	8.6	8.7	21.3	12.2	118	111	208	33.9	No	NA	8.6	8.7	NA	NA	NA	118	111	NA	NA	NA
BE-335	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	26	No	No	NA	NA	161	No	No
BE-335	BE-335-VG	Vegetable Garden (VG)	268	16.9	22.5	24.5	26.6	104	157	170	135	No	NA	16.9	22.5	NA	NA	NA	104	157	NA	NA	NA
BE-335	BE-335-RG	Rock Garden (RG)	131	25.2	33.9	58.3	56.1	1870	358	121	62.5	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-335	BE-335-FY	Front Yard (FY)	1,040	16.5	29.9	65	63.7	199	243	99.4	56.4	No	NA	16.5	29.9	NA	NA	NA	199	243	NA	NA	NA
BE-335	BE-335-FG	Flower Garden (FG)	36	25.3	45.2	24.4	33.1	386	171	361	37.8	No	NA	25.3	45.2	NA	NA	NA	386	171	NA	NA	NA
BE-335	BE-335-ED	Earthen Drive (ED)	685	7.1	25.8	31	28.1	15.7	294	270	273	No	NA	7.1	25.8	NA	NA	NA	15.7	294	NA	NA	NA
BE-335	BE-335-DZ	Drip Zone (DZ)	479	27.7	34.3	39.4	134	527	468	140	58.2	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-335	BE-335-BY	Back Yard (BY)	1,507	19.5	23.4	25.8	31.9	173	272	176	33.3	No	NA	19.5	23.4	NA	NA	NA	173	272	NA	NA	NA
BE-336	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	21	No	No	NA	NA	142	No	No
BE-336	BE-336-RG	Rock Garden (RG)	110	13.3	18.3	20.7	21.7	97.6	202	133	12.1	No	NA	13.3	18.3	NA	NA	NA	97.6	202	NA	NA	NA
BE-336	BE-336-FY	Front Yard (FY)	791	10.8	18.2	37.7	29.2	160	285	238	112	No	NA	10.8	18.2	NA	NA	NA	160	285	NA	NA	NA
BE-336	BE-336-FG	Flower Garden (FG)	234	10	35.7	21	23	244	464	17.4	20.6	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-336	BE-336-DZ	Drip Zone (DZ)	163	20.9	26.1	38.9	39.2	233	557	681	125	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-336	BE-336-BY	Back Yard (BY)	1,033	18.4	16.7	29.5	14.1	249	205	118	10.5	No	NA	18.4	16.7	NA	NA	NA	249	205	NA	NA	NA
BE-340	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	25	No	No	NA	NA	180	No	No
BE-340	BE-340-VG	Vegetable Garden (VG)	127	19.2	19.3	22	38.5	203	237	244	43.2	No	NA	19.2	19.3	NA	NA	NA	203	237	NA	NA	NA
BE-340	BE-340-RG	Rock Garden (RG)	231	22.9	29.9	59.1	63.1	128	111	63.8	58.3	No	NA	22.9	29.9	NA	NA	NA	128	111	NA	NA	NA
BE-340	BE-340-FY	Front Yard (FY)	1,050	31	46.8	64.2	73.1	615	139	123	128	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-340	BE-340-FG	Flower Garden (FG)	84	26	26.9	39.1	66.9	174	168	146	111	No	NA	26	26.9	NA	NA	NA	174	168	NA	NA	NA
BE-340	BE-340-BY	Back Yard (BY)	156	21.7	22.5	29.2	53.9	325	360	351	82.1	No	NA	21.7	22.5	NA	NA	NA	325	360	NA	NA	NA
BE-342	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	16	No	No	NA	NA	69	No	No
BE-342	BE-342-RG	Rock Garden (RG)	162	8.3	10.5	34.5	43.9	22.1	47.9	113	44.8	No	NA	8.3	10.5	NA	NA	NA	22.1	47.9	NA	NA	NA
BE-342	BE-342-FG	Flower Garden (FG)	78	6.6	5.7	9.5	20.5	26.1	15.4	50.6	93.7	No	NA	6.6	5.7	NA	NA	NA	26.1	15.4	NA	NA	NA
BE-342	BE-342-ED	Earthen Drive (ED)	888	17.8	43.5	39.7	28.8	118	62.7	47.6	53.7	No	NA	17.8	43.5	NA	NA	NA	118	62.7	NA	NA	NA
BE-342	BE-342-DZ	Drip Zone (DZ)	220	10.8	19.9	25.8	22.2	59.1	121	117	105	No	NA	10.8	19.9	NA	NA	NA	59.1	121	NA	NA	NA
BE-342	BE-342-BY	Back Yard (BY)	4,241	10.8	18.1	26.6	38.8	177	51.3	55.4	172	No	NA	10.8	18.1	NA	NA	NA	177	51.3	NA	NA	NA
BE-342	BE-342-BA	Bare Area (BA)	579	11.3	15.3	48.1	30.4	70.6	85	74.2	128	No	NA	11.3	15.3	NA	NA	NA	70.6	85	NA	NA	NA
BE-344	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	39	No	No	NA	NA	85	No	No
BE-344	BE-344-FY	Front Yard (FY)	2,416	53.1	32.3	38	14.9	46.3	14.1	14.5	6.2	No	NA	53.1	32.3	NA	NA	NA	46.3	14.1	NA	NA	NA
BE-344	BE-344-FG	Flower Garden (FG)	54	24.1	24	36.2	38.4	69.2	62.8	90.8	99.9	No	NA	24.1	24	NA	NA	NA	69.2	62.8	NA	NA	NA
BE-344	BE-344-ED	Earthen Drive (ED)	458	99.8	55	53.5	32.8	375	137	56.3	24	No	NA	99.8	55	NA	NA	NA	375	137	NA	NA	NA
BE-344	BE-344-DZ	Drip Zone (DZ)	220	29.6	37.1	43.9	23.4	41.2	13.8	12.6	5.7	No	NA	29.6	37.1	NA	NA	NA	41.2	13.8	NA	NA	NA
BE-344	BE-344-BY	Back Yard (BY)	1,896	36.3	24.8	35.4	18.3	109	87.7	98	21.7	No	NA	36.3	24.8	NA	NA	NA	109	87.7	NA	NA	NA
BE-345	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	25	No	No	NA	NA	150	No	No
BE-345	BE-345-RG	Rock Garden (RG)	88	24.9	38.5	52.3	76.3	260	287	218	129	No	NA	24.9	38.5	NA	NA	NA	260	287	NA	NA	NA
BE-345	BE-345-PA	Play Area (PA)	103	7.1	24.3	53.7	36.2	45.6	120	63.3	16.6	No	NA	7.1	24.3	NA	NA	NA	45.6	120	NA	NA	NA
BE-345	BE-345-FY	Front Yard (FY)	535	13.8	14	24.5	17.5	126	99.2	82.8	10.9	No	NA	13.8	14	NA	NA	NA	126	99.2	NA	NA	NA
BE-345	BE-345-FG	Flower Garden (FG)	830	18.5	26.6	43.6	62	197	332	128	116	No	NA	18.5	26.6	NA	NA	NA	197	332	NA	NA	NA
BE-345	BE-345-ED	Earthen Drive (ED)	45	12	50.7	64.6	72.5	248	410	242	176	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-345	BE-345-DZ	Drip Zone (DZ)	354	36.2	38.2	63.1	58.8	801	457	154	157	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-345	BE-345-BY	Back Yard (BY)	904	14	36.2	29	52.1	97.9	250	320	96	No	NA	14	36.2	NA	NA	NA	97.9	250	NA	NA	NA
BE-346	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	37	No	No	NA	NA	186	No	No
BE-346	BE-346-RG	Rock Garden (RG)	226	17	36.5	73.6	98.9	116	190	120	33.3	No	NA	17	36.5	NA	NA	NA	116	190	NA	NA	NA
BE-346	BE-346-FY	Front Yard (FY)	2,145	22.7	32.8	32.8	28.5	189	220	116	41.6	No	NA	22.7	32.8	NA	NA	NA	189	220	NA	NA	NA
BE-346	BE-346-FG	Flower Garden (FG)	118	78.3	50.8	60	53	282	354	321	137	No	NA	78.3	50.8	NA	NA	NA	282	354	NA	NA	NA
BE-346	BE-346-BY	Back Yard (BY)	767	26.7	39.1	68.6	66	248	417	748	413	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-347	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	35	No	No	NA	NA	199	No	No
BE-347	BE-347-VG	Vegetable Garden (VG)	1,615	30.6	38.5	37.4	36.8	150	201	171	79.7	No	NA	30.6	38.5	NA	NA	NA	150	201	NA	NA	NA
BE-347	BE-347-UFG	Flower Garden (FG)	957	57.1	36.8	32.6	38.6	224	368	183	112	No	NA	57.1	36.8	NA	NA	NA	224	368	NA	NA	NA
BE-347	BE-347-RG	Rock Garden (RG)	923	29	52.2	74.5	40.1	138	300	374	135	No	NA	29	52.2	NA	NA	NA	138	300	NA	NA	NA
BE-347	BE-347-LF	Flower Garden (FG)	3,108	41.4	40.5	37	37.5	226	258	175	85.1	No	NA	41.4	40.5	NA	NA	NA	226	258	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-347	BE-347-FY	Front Yard (FY)	732	16	25.3	33.1	46.6	119	197	239	76	No	NA	16	25.3	NA	NA	NA	119	197	NA	NA	NA
BE-347	BE-347-ED	Earthen Drive (ED)	1,263	44.6	72.9	61.9	51.7	543	330	101	17.5	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-347	BE-347-DZ	Drip Zone (DZ)	231	27.2	33.4	36	66.3	571	109	56	46.8	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-347	BE-347-BY	Back Yard (BY)	509	24.1	45.6	48.9	49.9	270	378	352	67	No	NA	24.1	45.6	NA	NA	NA	270	378	NA	NA	NA
BE-348	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	20	No	No	NA	NA	98	No	No
BE-348	BE-348-VG	Vegetable Garden (VG)	8	13.4	12	30.7	35.3	21.7	63.5	51	22.4	No	NA	13.4	12	NA	NA	NA	21.7	63.5	NA	NA	NA
BE-348	BE-348-FY	Front Yard (FY)	1,387	11.7	19.6	24.5	70.9	71.6	155	176	336	No	NA	11.7	19.6	NA	NA	NA	71.6	155	NA	NA	NA
BE-348	BE-348-FG	Flower Garden (FG)	180	19.4	25.5	33.1	42.4	413	337	69.3	92.7	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-348	BE-348-DZ	Drip Zone (DZ)	220	5.9	17.4	22.1	24.6	13.9	141	257	85.3	No	NA	5.9	17.4	NA	NA	NA	13.9	141	NA	NA	NA
BE-348	BE-348-BY	Back Yard (BY)	2,220	21.8	31.3	41.4	32.5	185	172	62.2	35.3	No	NA	21.8	31.3	NA	NA	NA	185	172	NA	NA	NA
BE-349	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	34	No	No	NA	NA	154	No	No
BE-349	BE-349-FY	Front Yard (FY)	1,121	26	56.2	50.8	64.7	223	375	304	53.5	No	NA	26	56.2	NA	NA	NA	223	375	NA	NA	NA
BE-349	BE-349-FG	Flower Garden (FG)	63	71.4	20.6	37.5	61.6	101	241	106	94.3	No	NA	71.4	20.6	NA	NA	NA	101	241	NA	NA	NA
BE-349	BE-349-ED	Earthen Drive (ED)	882	8.4	8.4	102	62.8	406	35.5	252	326	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-349	BE-349-DZ	Drip Zone (DZ)	220	56.9	18.9	23.1	31.2	73.6	222	318	226	No	NA	56.9	18.9	NA	NA	NA	73.6	222	NA	NA	NA
BE-349	BE-349-BY	Back Yard (BY)	3,231	77	22.5	49.8	61.2	169	360	513	101	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-350	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	19	No	No	NA	NA	114	No	No
BE-350	BE-350-VG	Vegetable Garden (VG)	199	21.9	27.6	50.1	57.2	96.7	128	139	146	No	NA	21.9	27.6	NA	NA	NA	96.7	128	NA	NA	NA
BE-350	BE-350-FY	Front Yard (FY)	344	18.4	25.2	28.5	27.9	151	249	82.9	62.1	No	NA	18.4	25.2	NA	NA	NA	151	249	NA	NA	NA
BE-350	BE-350-DZ	Drip Zone (DZ)	220	8.2	19.4	48.5	61.5	22.1	130	146	208	No	NA	8.2	19.4	NA	NA	NA	22.1	130	NA	NA	NA
BE-350	BE-350-BY	Back Yard (BY)	2,234	14.8	7.7	44.9	65.4	51.2	15.5	164	116	No	NA	14.8	7.7	NA	NA	NA	51.2	15.5	NA	NA	NA
BE-351	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	92	No	No
BE-351	BE-351-RG	Rock Garden (RG)	142	22.6	37.7	43.7	117	630	389	214	180	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-351	BE-351-FY	Front Yard (FY)	1,136	23.1	35.2	45.4	15	272	318	131	651	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-351	BE-351-DZ	Drip Zone (DZ)	220	33.7	12.8	24.2	27.7	51.1	162	345	258	No	NA	33.7	12.8	NA	NA	NA	51.1	162	NA	NA	NA
BE-351	BE-351-BY	Back Yard (BY)	2,564	28.8	38.3	55.4	68.4	193	228	277	98.8	No	NA	28.8	38.3	NA	NA	NA	193	228	NA	NA	NA
BE-351	BE-351-BA	Bare Area (BA)	129	26	31.9	47.3	104	780	608	193	63.9	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-352	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	19	No	No	NA	NA	37	No	No
BE-352	BE-352-VG	Vegetable Garden (VG)	275	3.8	6.6	9.3	16	15.1	19	24.5	28.6	No	NA	3.8	6.6	NA	NA	NA	15.1	19	NA	NA	NA
BE-352	BE-352-FY	Front Yard (FY)	1,410	33.6	52	84.1	67.1	54	48.4	58.9	74.1	No	NA	33.6	52	NA	NA	NA	54	48.4	NA	NA	NA
BE-352	BE-352-FG	Flower Garden (FG)	162	6.1	9.3	21.8	30.7	17.8	21.7	29.7	50	No	NA	6.1	9.3	NA	NA	NA	17.8	21.7	NA	NA	NA
BE-352	BE-352-DZ	Drip Zone (DZ)	220	16.7	19.8	32.2	50.6	55.3	25.9	54.5	34.9	No	NA	16.7	19.8	NA	NA	NA	55.3	25.9	NA	NA	NA
BE-352	BE-352-BY	Back Yard (BY)	1,057	19.8	25.6	28.1	31.1	37.3	45.1	37	18.3	No	NA	19.8	25.6	NA	NA	NA	37.3	45.1	NA	NA	NA
BE-352	BE-352-BA	Bare Area (BA)	360	6.5	19.1	35	52.4	8.7	77.6	50.5	18.2	No	NA	6.5	19.1	NA	NA	NA	8.7	77.6	NA	NA	NA
BE-353	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	14	No	No	NA	NA	73	No	No
BE-353	BE-353-PA	Play Area (PA)	125	18.6	16.4	31.9	51.5	134	78.5	39.6	15.2	No	NA	18.6	16.4	NA	NA	NA	134	78.5	NA	NA	NA
BE-353	BE-353-FY	Front Yard (FY)	1,977	12.1	15.5	17.5	24	101	51.4	23.8	27.6	No	NA	12.1	15.5	NA	NA	NA	101	51.4	NA	NA	NA
BE-353	BE-353-FG	Flower Garden (FG)	111	11.2	9.6	16.2	13.2	55.4	40.9	66.1	57.1	No	NA	11.2	9.6	NA	NA	NA	55.4	40.9	NA	NA	NA
BE-353	BE-353-ED	Earthen Drive (ED)	273	9.9	19.5	29.6	23.5	53.9	125	33.7	8.6	No	NA	9.9	19.5	NA	NA	NA	53.9	125	NA	NA	NA
BE-353	BE-353-DZ	Drip Zone (DZ)	220	12.7	13.6	12.6	21.7	49.6	54	77.7	66.9	No	NA	12.7	13.6	NA	NA	NA	49.6	54	NA	NA	NA
BE-353	BE-353-BY	Back Yard (BY)	1,937	13.9	13.7	28.4	26.1	100	59	40.7	24.1	No	NA	13.9	13.7	NA	NA	NA	100	59	NA	NA	NA
BE-353	BE-353-RG	Rock Garden (RG) [E]	28																				
BE-354	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	31	No	No	NA	NA	243	No	No
BE-354	BE-354-FY	Front Yard (FY)	2,277	21.8	32.9	42.8	34.7	244	230	201	78.8	No	NA	21.8	32.9	NA	NA	NA	244	230	NA	NA	NA
BE-354	BE-354-BA	Bare Area (BA)	34	39.8	30.5	61.7	57.7	294	232	333	142	No	NA	39.8	30.5	NA	NA	NA	294	232	NA	NA	NA
BE-355	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	20	No	No	NA	NA	149	No	No
BE-355	BE-355-RG	Rock Garden (RG)	36	20.7	13.7	27.4	33.2	154	74.2	403	402	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-355	BE-355-FY	Front Yard (FY)	1,713	14.9	14.3	20.2	42.6	207	76.2	132	115	No	NA	14.9	14.3	NA	NA	NA	207	76.2	NA	NA	NA
BE-355	BE-355-FG	Flower Garden (FG)	383	14.8	15	13.8	13.2	224	328	102	131	No	NA	14.8	15	NA	NA	NA	224	328	NA	NA	NA
BE-355	BE-355-DZ	Drip Zone (DZ)	220	23.5	12	13.1	26.8	110	112	158	251	No	NA	23.5	12	NA	NA	NA	110	112	NA	NA	NA
BE-355	BE-355-BY	Back Yard (BY)	1,171	16.8	29.8	30.4	19.2	284	127	58.2	11.9	No	NA	16.8	29.8	NA	NA	NA	284	127	NA	NA	NA
BE-356	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	23	No	No	NA	NA	163	No	No
BE-356	BE-356-RG	Rock Garden (RG)	98	22.1	33.6	35.1	30.7	107	140	141	97.8	No	NA	22.1	33.6	NA	NA	NA	107	140	NA	NA	NA
BE-356	BE-356-FY	Front Yard (FY)	1,074	15.6	15.7	17.6	63.6	229	50	62.6	67.7	No	NA	15.6	15.7	NA	NA	NA	229	50	NA	NA	NA
BE-356	BE-356-FG	Flower Garden (FG)	46	18.5	21.1	10.5	41.3	217	253	50	50.5	No	NA	18.5	21.1	NA	NA	NA	217	253	NA	NA	NA
BE-356	BE-356-DZ	Drip Zone (DZ)	220	21.9	27.6	28.1	27	119	120	122	109	No	NA	21.9	27.6	NA	NA	NA	119	120	NA	NA	NA
BE-356	BE-356-BY	Back Yard (BY)	689	23.5	24.5	31.5	29.2	208	221	173	170	No	NA	23.5	24.5	NA	NA	NA	208	221	NA	NA	NA
BE-401	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	14	No	No	NA	NA	44	No	No
BE-401	BE-401-RG	Rock Garden (RG)	309	13.4	14.2	12.4	6.1	17.3	15.7	9.2	9.4	No	NA	13.4	14.2	NA	NA	NA	17.3	15.7	NA	NA	NA
BE-401	BE-401-FY	Front Yard (FY)	3,372	16	17.3	14.7	9.6	16.2	21.9	19	11.1	No	NA	16	17.3	NA	NA	NA	16.2	21.9	NA	NA	NA
BE-401	BE-401-ED	Earthen Drive (ED)	480	8	7.8	8.4	6.2	23.5	11.3	11.8	9.9	No	NA	8	7.8	NA	NA	NA	23.5	11.3	NA	NA	NA
BE-401	BE-401-DZ	Drip Zone (DZ)	220	14.8	11.8	6.1	12.4	17.1	17.8	9.2	21	No	NA	14.8	11.8	NA	NA	NA	17.1	17.8	NA	NA	NA
BE-401	BE-401-BY	Back Yard (BY)	2,342	23.7	22.3	29.9	31.2	142	206	155	52.5	No	NA	23.7	22.3	NA	NA	NA	142	206	NA	NA	NA
BE-401	BE-401-BA	Bare Area (BA)	361	8.7	9.9	32.1	16	14.1	10.8	13.9	9.5	No	NA	8.7	9.9	NA	NA	NA	14.1	10.8	NA	NA	NA
BE-402	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	34	No	No	NA	NA	61	No	No
BE-402	BE-402-FY	Front Yard (FY)	588	23.7	59.7	112	125	52.9	106	67.7	44.8	No	NA	23.7	59.7	NA	NA	NA	52.9	106	NA	NA	NA
BE-402	BE-402-ED	Earthen Drive (ED)	1,554	19.2	9.5	21.3	14.3	27.8	15.4	85.2	19.2	No	NA	19.2	9.5	NA	NA	NA	27.8	15.4	NA	NA	NA
BE-402	BE-402-DZ	Drip Zone (DZ)	220	29.6	43.8	26	27.1	60.6	65	29.7	33.9	No	NA	29.6	43.8	NA	NA	NA	60.6	65	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-402	BE-402-BY	Back Yard (BY)	1,231	32.6	40.8	23.3	6.4	101	59.1	22.2	7.6	No	NA	32.6	40.8	NA	NA	NA	101	59.1	NA	NA	NA
BE-403	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	27	No	No	NA	NA	101	No	No
BE-403	BE-403-PA	Play Area (PA)	224	18.3	25.3	24.7	14.5	140	49.8	32.9	21.1	No	NA	18.3	25.3	NA	NA	NA	140	49.8	NA	NA	NA
BE-403	BE-403-FY	Front Yard (FY)	1,676	18.4	52.2	69	74	160	74.8	58.4	52.2	No	NA	18.4	52.2	NA	NA	NA	160	74.8	NA	NA	NA
BE-403	BE-403-ED	Earthen Drive (ED)	593	12.4	11.2	22.1	66.1	37.5	13.4	92.7	121	No	NA	12.4	11.2	NA	NA	NA	37.5	13.4	NA	NA	NA
BE-403	BE-403-DZ	Drip Zone (DZ)	220	16.9	31.8	72.5	48.4	246	193	82.4	21.6	No	NA	16.9	31.8	NA	NA	NA	246	193	NA	NA	NA
BE-403	BE-403-BY	Back Yard (BY)	4,103	21.8	33.3	40.8	18.1	89.6	62.1	41.3	18.8	No	NA	21.8	33.3	NA	NA	NA	89.6	62.1	NA	NA	NA
BE-403	BE-403-BA	Bare Area (BA)	397	19.1	39	82.8	48.3	88.9	134	74	31.1	No	NA	19.1	39	NA	NA	NA	88.9	134	NA	NA	NA
BE-404A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	45	No	No	NA	NA	81	No	No
BE-404A	BE-404A-RG	Rock Garden (RG)	100	29.6	64.7	50.2	19.2	88.2	90.5	27.3	30.7	No	NA	29.6	64.7	NA	NA	NA	88.2	90.5	NA	NA	NA
BE-404A	BE-404A-FY	Front Yard (FY)	1,048	18.3	22.6	27	34.7	72.3	59	21.6	23.3	No	NA	18.3	22.6	NA	NA	NA	72.3	59	NA	NA	NA
BE-404A	BE-404A-FG	Flower Garden (FG)	179	26.2	49.4	24.4	13.5	79.2	80.5	17.7	14.2	No	NA	26.2	49.4	NA	NA	NA	79.2	80.5	NA	NA	NA
BE-404A	BE-404A-ED	Earthen Drive (ED)	2,749	14.6	20.9	20.4	13.8	130	83.7	37.4	14.1	No	NA	14.6	20.9	NA	NA	NA	130	83.7	NA	NA	NA
BE-404A	BE-404A-DZ	Drip Zone (DZ)	220	27.3	120	77.1	15	106	26.3	24.2	24.8	No	NA	27.3	120	NA	NA	NA	106	26.3	NA	NA	NA
BE-404A	BE-404A-BY	Back Yard (BY)	1,102	38.9	46.9	35.9	50.7	135	87	206	84	No	NA	38.9	46.9	NA	NA	NA	135	87	NA	NA	NA
BE-404B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	34	No	No	NA	NA	191	No	No
BE-404B	BE-404B-PA	Play Area (PA)	66	29.3	30.5	40	25.1	62.6	67	28.9	18.1	No	NA	29.3	30.5	NA	NA	NA	62.6	67	NA	NA	NA
BE-404B	BE-404B-FY	Front Yard (FY)	5,920	27.3	49.8	42.1	34.4	160	183	66.1	14.3	No	NA	27.3	49.8	NA	NA	NA	160	183	NA	NA	NA
BE-404B	BE-404B-FG	Flower Garden (FG)	29	31.1	26.1	46	78.6	177	308	167	211	No	NA	31.1	26.1	NA	NA	NA	177	308	NA	NA	NA
BE-404B	BE-404B-ED	Earthen Drive (ED)	976	12.2	44.1	14.6	8.8	116	109	16.2	8.5	No	NA	12.2	44.1	NA	NA	NA	116	109	NA	NA	NA
BE-404B	BE-404B-DZ	Drip Zone (DZ)	596	29	37.6	56.4	73.8	213	400	146	178	No	NA	29	37.6	NA	NA	NA	213	400	NA	NA	NA
BE-405	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	18	No	No	NA	NA	38	No	No
BE-405	BE-405-VG	Vegetable Garden (VG)	529	14	12.1	10.2	8.1	24.3	66	18.2	22.8	No	NA	14	12.1	NA	NA	NA	24.3	66	NA	NA	NA
BE-405	BE-405-RG	Rock Garden (RG)	237	19	24.9	20.4	17	63.2	66.2	43.6	94.7	No	NA	19	24.9	NA	NA	NA	63.2	66.2	NA	NA	NA
BE-405	BE-405-FY	Front Yard (FY)	1,659	14.2	25.2	33.4	24.8	22.6	38	21.2	28.9	No	NA	14.2	25.2	NA	NA	NA	22.6	38	NA	NA	NA
BE-405	BE-405-FG	Flower Garden (FG)	183	18.5	19.9	42.3	42.6	26.4	31.2	42.1	12.6	No	NA	18.5	19.9	NA	NA	NA	26.4	31.2	NA	NA	NA
BE-405	BE-405-DZ	Drip Zone (DZ)	220	12.4	18.2	15.3	25.5	18.8	27	35.8	60.9	No	NA	12.4	18.2	NA	NA	NA	18.8	27	NA	NA	NA
BE-405	BE-405-BY	Back Yard (BY)	2,431	10.8	13.5	16	20.9	21.5	21.7	53	112	No	NA	10.8	13.5	NA	NA	NA	21.5	21.7	NA	NA	NA
BE-406	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	13	No	No	NA	NA	29	No	No
BE-406	BE-406-RG	Rock Garden (RG)	386	16.7	9.5	9.5	9.2	31.1	25.8	14.1	15.3	No	NA	16.7	9.5	NA	NA	NA	31.1	25.8	NA	NA	NA
BE-406	BE-406-FY	Front Yard (FY)	1,826	7.4	12.2	36.2	26.6	11.2	13.2	18.8	16.1	No	NA	7.4	12.2	NA	NA	NA	11.2	13.2	NA	NA	NA
BE-406	BE-406-ED	Earthen Drive (ED)	194	7.7	31.5	74.2	49.2	11.9	92.1	60.9	24.8	No	NA	7.7	31.5	NA	NA	NA	11.9	92.1	NA	NA	NA
BE-406	BE-406-DZ	Drip Zone (DZ)	220	9	9.2	8.7	8.7	16.1	13.2	12.3	13.1	No	NA	9	9.2	NA	NA	NA	16.1	13.2	NA	NA	NA
BE-406	BE-406-BY	Back Yard (BY)	2,928	11.2	12.3	26	24.5	34.1	22.6	35.7	22.6	No	NA	11.2	12.3	NA	NA	NA	34.1	22.6	NA	NA	NA
BE-407	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	11	No	No	NA	NA	19	No	No
BE-407	BE-407-RG	Rock Garden (RG)	562	16.1	9.2	10.7	10.5	18.4	17.9	25.7	22.4	No	NA	16.1	9.2	NA	NA	NA	18.4	17.9	NA	NA	NA
BE-407	BE-407-FY	Front Yard (FY)	1,532	4.6	13.4	23.7	17.5	7.2	17.5	23.7	16.1	No	NA	4.6	13.4	NA	NA	NA	7.2	17.5	NA	NA	NA
BE-407	BE-407-FG	Flower Garden (FG)	180	8.1	19.8	25.1	36.9	12.9	34.2	39.5	35.2	No	NA	8.1	19.8	NA	NA	NA	12.9	34.2	NA	NA	NA
BE-407	BE-407-ED	Earthen Drive (ED)	190	7.5	5.9	24.6	53.9	9.4	7.6	39.5	53.8	No	NA	7.5	5.9	NA	NA	NA	9.4	7.6	NA	NA	NA
BE-407	BE-407-DZ	Drip Zone (DZ)	220	14	9.9	12.2	11.7	17.3	23.4	34.5	25.9	No	NA	14	9.9	NA	NA	NA	17.3	23.4	NA	NA	NA
BE-407	BE-407-BY	Back Yard (BY)	2,667	11.9	11.4	20.5	27.1	22.5	23.6	27.1	33.5	No	NA	11.9	11.4	NA	NA	NA	22.5	23.6	NA	NA	NA
BE-408	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	27	No	No	NA	NA	40	No	No
BE-408	BE-408-RG	Rock Garden (RG)	431	14.3	14.8	17.9	16.4	20.3	20.4	25.1	30.3	No	NA	14.3	14.8	NA	NA	NA	20.3	20.4	NA	NA	NA
BE-408	BE-408-FY	Front Yard (FY)	1,354	10.2	15	22	21	15.1	31.8	21.4	24	No	NA	10.2	15	NA	NA	NA	15.1	31.8	NA	NA	NA
BE-408	BE-408-FG	Flower Garden (FG)	220	13.4	12.5	12.4	26.9	24.2	37.4	41.6	79.9	No	NA	13.4	12.5	NA	NA	NA	24.2	37.4	NA	NA	NA
BE-408	BE-408-ED	Earthen Drive (ED)	180	13.6	123	88.8	64	24.3	130	18.3	42.3	No	NA	13.6	123	NA	NA	NA	24.3	130	NA	NA	NA
BE-408	BE-408-DZ	Drip Zone (DZ)	220	17.3	17.5	14	16.5	59.2	26.1	27.4	46.4	No	NA	17.3	17.5	NA	NA	NA	59.2	26.1	NA	NA	NA
BE-408	BE-408-BY	Back Yard (BY)	3,007	14.8	14.7	15.6	25.4	24.3	27.1	60.1	132	No	NA	14.8	14.7	NA	NA	NA	24.3	27.1	NA	NA	NA
BE-409	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	20	No	No	NA	NA	158	No	No
BE-409	BE-409-FY	Front Yard (FY)	671	20.9	19.2	18	20.3	214	143	18.5	18.4	No	NA	20.9	19.2	NA	NA	NA	214	143	NA	NA	NA
BE-409	BE-409-ED	Earthen Drive (ED)	472	13.4	22	54.5	23.3	176	450	72.2	50.3	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-409	BE-409-DZ	Drip Zone (DZ)	220	16.1	22.5	20.1	15.4	332	283	169	41.7	No	NA	16.1	22.5	NA	NA	NA	332	283	NA	NA	NA
BE-409	BE-409-BY	Back Yard (BY)	784	12.7	13.9	15	30.9	123	127	85.6	85	No	NA	12.7	13.9	NA	NA	NA	123	127	NA	NA	NA
BE-410	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	23	No	No	NA	NA	89	No	No
BE-410	BE-410-FY	Front Yard (FY)	491	12.7	13.1	18.4	27.8	94.8	127	39.1	79.8	No	NA	12.7	13.1	NA	NA	NA	94.8	127	NA	NA	NA
BE-410	BE-410-FG	Flower Garden (FG)	90	16.3	17.2	18.9	15.4	86.1	81.1	69.3	112	No	NA	16.3	17.2	NA	NA	NA	86.1	81.1	NA	NA	NA
BE-410	BE-410-ED	Earthen Drive (ED)	65	61.6	53.7	44.3	13.7	19.4	66.2	12.7	14.6	No	NA	61.6	53.7	NA	NA	NA	19.4	66.2	NA	NA	NA
BE-410	BE-410-DZ	Drip Zone (DZ)	220	16.7	9.4	26.6	22.2	199	68.7	272	43.3	No	NA	16.7	9.4	NA	NA	NA	199	68.7	NA	NA	NA
BE-410	BE-410-BY	Back Yard (BY)	2,984	15.3	16	30	28.6	115	65.2	50	76	No	NA	15.3	16	NA	NA	NA	115	65.2	NA	NA	NA
BE-411	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	31	No	No	NA	NA	113	No	No
BE-411	BE-411-VG	Vegetable Garden (VG)	1,126	134	37.7	43.6	39.5	37.6	58.2	60.6	25	No	NA	134	37.7	NA	NA	NA	37.6	58.2	NA	NA	NA
BE-411	BE-411-FY	Front Yard (FY)	2,782	20.3	21	30.2	21.3	208	63.6	48.4	58.7	No	NA	20.3	21	NA	NA	NA	208	63.6	NA	NA	NA
BE-411	BE-411-FG	Flower Garden (FG)	37	20	23.5	23.3	29.9	75.1	62	37.6	60.1	No	NA	20	23.5	NA	NA	NA	75.1	62	NA	NA	NA
BE-411	BE-411-ED	Earthen Drive (ED)	165	11.6	17	9.6	5.2	70.6	55.6	35.7	20.3	No	NA	11.6	17	NA	NA	NA	70.6	55.6	NA	NA	NA
BE-411	BE-411-DZ	Drip Zone (DZ)	220	20.8	27	20.5	11.1	84.7	32.7	9.5	12.4	No	NA	20.8	27	NA	NA	NA	84.7	32.7	NA	NA	NA
BE-411	BE-411-BY	Back Yard (BY)	1,276	31.3	47	37.7	18.6	347	251	42.4	60.6	No	NA	31.3	47	NA	NA	NA	347	251	NA	NA	NA
BE-411	BE-411-BA	Bare Area (BA)	753	16.5	21.3	11.5	8.2	132	192	26.8	31.4	No	NA	16.5	21.3	NA	NA	NA	132	192	NA	NA	NA
BE-412	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	28	No	No	NA	NA	85	No	No

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-412	BE-412-VG	Vegetable Garden (VG)	108	32.9	39.1	32.4	19.4	76.4	61.4	19	15.8	No	NA	32.9	39.1	NA	NA	NA	76.4	61.4	NA	NA	NA
BE-412	BE-412-FY	Front Yard (FY)	2,510	18.6	25.5	14.6	15.1	106	130	18.4	19.8	No	NA	18.6	25.5	NA	NA	NA	106	130	NA	NA	NA
BE-412	BE-412-FG	Flower Garden (FG)	560	27.2	32.7	62.6	15.4	61.7	66.6	22	17	No	NA	27.2	32.7	NA	NA	NA	61.7	66.6	NA	NA	NA
BE-412	BE-412-ED	Earthen Drive (ED)	820	10	24.1	34.7	37.1	58.3	135	35	18.2	No	NA	10	24.1	NA	NA	NA	58.3	135	NA	NA	NA
BE-412	BE-412-DZ	Drip Zone (DZ)	220	20.3	22.3	24.8	21.3	138	45.1	42.4	18.8	No	NA	20.3	22.3	NA	NA	NA	138	45.1	NA	NA	NA
BE-412	BE-412-BY	Back Yard (BY)	2,782	28.8	37.2	33.4	15.5	92	65.3	43.8	16.2	No	NA	28.8	37.2	NA	NA	NA	92	65.3	NA	NA	NA
BE-413	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	16	No	No	NA	NA	152	No	No
BE-413	BE-413-FY	Front Yard (FY)	1,378	15.8	19.6	9.6	26	132	97.4	11.8	45.4	No	NA	15.8	19.6	NA	NA	NA	132	97.4	NA	NA	NA
BE-413	BE-413-FG	Flower Garden (FG)	50	14.5	18	28.7	21.9	159	135	130	67.4	No	NA	14.5	18	NA	NA	NA	159	135	NA	NA	NA
BE-413	BE-413-DZ	Drip Zone (DZ)	220	12	16.3	18.2	13.4	224	207	92.2	39.9	No	NA	12	16.3	NA	NA	NA	224	207	NA	NA	NA
BE-413	BE-413-BY	Back Yard (BY)	901	11.9	13.1	13.7	14.9	133	152	136	54.8	No	NA	11.9	13.1	NA	NA	NA	133	152	NA	NA	NA
BE-414	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	15	No	No	NA	NA	73	No	No
BE-414	BE-414-FY	Front Yard (FY)	3,000	11.8	22.4	24.7	30.2	148	79.3	35.7	72.5	No	NA	11.8	22.4	NA	NA	NA	148	79.3	NA	NA	NA
BE-414	BE-414-FG	Flower Garden (FG)	99	14.6	17.6	31	34.9	60.4	108	67.4	43.8	No	NA	14.6	17.6	NA	NA	NA	60.4	108	NA	NA	NA
BE-414	BE-414-ED	Earthen Drive (ED)	792	7.6	7.7	17.5	18.1	152	45.9	111	30.3	No	NA	7.6	7.7	NA	NA	NA	152	45.9	NA	NA	NA
BE-414	BE-414-DZ	Drip Zone (DZ)	220	12.7	16.2	25.9	27.8	31.2	39.5	62.2	75.5	No	NA	12.7	16.2	NA	NA	NA	31.2	39.5	NA	NA	NA
BE-414	BE-414-BA	Bare Area (BA)	2,533	13.1	18	22.9	34.3	67.1	45.5	104	67.4	No	NA	13.1	18	NA	NA	NA	67.1	45.5	NA	NA	NA
BE-415	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	23	No	No	NA	NA	53	No	No
BE-415	BE-415-FY	Front Yard (FY)	1,730	10.8	26.7	50.5	92.8	35.8	44.9	92.4	81.9	No	NA	10.8	26.7	NA	NA	NA	35.8	44.9	NA	NA	NA
BE-415	BE-415-FG	Flower Garden (FG)	33	21.1	33.8	78.3	10.8	43.3	86.9	26.9	10.6	No	NA	21.1	33.8	NA	NA	NA	43.3	86.9	NA	NA	NA
BE-415	BE-415-ED	Earthen Drive (ED)	1,208	11.6	19	16.2	13.2	93	45.9	29.5	20.3	No	NA	11.6	19	NA	NA	NA	93	45.9	NA	NA	NA
BE-415	BE-415-DZ	Drip Zone (DZ)	220	18.8	26.4	25.4	10.3	34.7	58.1	21.1	94	No	NA	18.8	26.4	NA	NA	NA	34.7	58.1	NA	NA	NA
BE-415	BE-415-BY	Back Yard (BY)	3,025	18.4	23.4	35.1	14.7	45.2	34.7	14.1	12.2	No	NA	18.4	23.4	NA	NA	NA	45.2	34.7	NA	NA	NA
BE-416	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	13	No	No	NA	NA	21	No	No
BE-416	BE-416-FY	Front Yard (FY)	477	10.7	11.4	8.4	15.3	24.2	15.1	11.2	30.9	No	NA	10.7	11.4	NA	NA	NA	24.2	15.1	NA	NA	NA
BE-416	BE-416-FG	Flower Garden (FG)	146	11.5	11.8	9.3	9.1	23.5	22.3	13.4	11.4	No	NA	11.5	11.8	NA	NA	NA	23.5	22.3	NA	NA	NA
BE-416	BE-416-ED	Earthen Drive (ED)	797	15.6	14.6	29.4	10.6	20.9	21.3	34.8	16.2	No	NA	15.6	14.6	NA	NA	NA	20.9	21.3	NA	NA	NA
BE-416	BE-416-DZ	Drip Zone (DZ)	220	8.7	7.5	7.2	16.6	22.2	12.2	10.9	45.5	No	NA	8.7	7.5	NA	NA	NA	22.2	12.2	NA	NA	NA
BE-416	BE-416-BY	Back Yard (BY)	2,087	25.2	17.2	57.5	11.4	40.9	33.9	17.1	13.5	No	NA	25.2	17.2	NA	NA	NA	40.9	33.9	NA	NA	NA
BE-416	BE-416-BA	Bare Area (BA)	1,192	15.8	7.3	23.3	25.4	19.3	13.3	53.4	15.2	No	NA	15.8	7.3	NA	NA	NA	19.3	13.3	NA	NA	NA
BE-418	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	15	No	No	NA	NA	59	No	No
BE-418	BE-418-FY	Front Yard (FY)	911	13.5	14.6	9.3	10.5	42.6	22.7	12.9	16.7	No	NA	13.5	14.6	NA	NA	NA	42.6	22.7	NA	NA	NA
BE-418	BE-418-ED	Earthen Drive (ED)	354	10.4	17.8	18.1	6	281	97.6	37.5	9.6	No	NA	10.4	17.8	NA	NA	NA	281	97.6	NA	NA	NA
BE-418	BE-418-DZ	Drip Zone (DZ)	220	12	8.7	7.7	11.5	23.2	15.5	11.4	34.3	No	NA	12	8.7	NA	NA	NA	23.2	15.5	NA	NA	NA
BE-418	BE-418-BY	Back Yard (BY)	1,862	21.5	19.7	21.6	16.8	35.3	28.1	46.8	30.3	No	NA	21.5	19.7	NA	NA	NA	35.3	28.1	NA	NA	NA
BE-419	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	23	No	No	NA	NA	57	No	No
BE-419	BE-419-FY	Front Yard (FY)	1,202	20.7	25.1	18.6	37.1	47.4	36.8	24	34.8	No	NA	20.7	25.1	NA	NA	NA	47.4	36.8	NA	NA	NA
BE-419	BE-419-FG	Flower Garden (FG)	61	25.5	31.3	26	27.7	42.1	44	45.8	38.7	No	NA	25.5	31.3	NA	NA	NA	42.1	44	NA	NA	NA
BE-419	BE-419-ED	Earthen Drive (ED)	740	14.3	21.8	12.8	11.5	81.2	65.4	18.7	16.7	No	NA	14.3	21.8	NA	NA	NA	81.2	65.4	NA	NA	NA
BE-419	BE-419-DZ	Drip Zone (DZ)	220	19	22.2	28.4	30.9	63.3	111	44.1	29.4	No	NA	19	22.2	NA	NA	NA	63.3	111	NA	NA	NA
BE-419	BE-419-BY	Back Yard (BY)	1,341	20.3	22.7	16.9	26.8	45.3	46.8	28.2	66.1	No	NA	20.3	22.7	NA	NA	NA	45.3	46.8	NA	NA	NA
BE-419	BE-419-BA	Bare Area (BA)	290	21.2	25.9	41.1	47.5	47.8	48.9	82.2	22.3	No	NA	21.2	25.9	NA	NA	NA	47.8	48.9	NA	NA	NA
BE-420	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	26	No	No	NA	NA	54	No	No
BE-420	BE-420-FY	Front Yard (FY)	559	24.5	26.6	24.9	31	51.9	43	34.2	19.1	No	NA	24.5	26.6	NA	NA	NA	51.9	43	NA	NA	NA
BE-420	BE-420-ED	Earthen Drive (ED)	334	16.5	18.2	6.4	7.7	87.8	41	10.1	13.7	No	NA	16.5	18.2	NA	NA	NA	87.8	41	NA	NA	NA
BE-420	BE-420-DZ	Drip Zone (DZ)	220	30.1	29.1	36.3	41	78.8	79.5	57.6	60.7	No	NA	30.1	29.1	NA	NA	NA	78.8	79.5	NA	NA	NA
BE-420	BE-420-BY	Back Yard (BY)	2,714	17.7	17	12	13.3	32.8	25.2	15.1	19.7	No	NA	17.7	17	NA	NA	NA	32.8	25.2	NA	NA	NA
BE-420	BE-420-BA	Bare Area (BA)	740	39.4	42.8	34.2	36.2	78.7	50.4	94.6	96.6	No	NA	39.4	42.8	NA	NA	NA	78.7	50.4	NA	NA	NA
BE-421	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	13	No	No	NA	NA	67	No	No
BE-421	BE-421-ED	Earthen Drive (ED)	1,487	11	19.3	7.3	6.7	127	115	32.9	17.8	No	NA	11	19.3	NA	NA	NA	127	115	NA	NA	NA
BE-421	BE-421-DZ	Drip Zone (DZ)	220	11.9	10.1	11.9	8.1	64.2	64.4	26.5	12.5	No	NA	11.9	10.1	NA	NA	NA	64.2	64.4	NA	NA	NA
BE-421	BE-421-BY	Back Yard (BY)	2,457	10.3	12.7	13.1	17.2	39.4	54	38.2	63.3	No	NA	10.3	12.7	NA	NA	NA	39.4	54	NA	NA	NA
BE-421	BE-421-BA	Bare Area (BA)	712	16.6	11.9	10.3	10.2	29.9	36.9	41.8	24.5	No	NA	16.6	11.9	NA	NA	NA	29.9	36.9	NA	NA	NA
BE-422	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	18	No	No	NA	NA	52	No	No
BE-422	BE-422-RG	Rock Garden (RG)	687	19.4	18.3	24	26.2	28.4	29.7	51.4	24.3	No	NA	19.4	18.3	NA	NA	NA	28.4	29.7	NA	NA	NA
BE-422	BE-422-FY	Front Yard (FY)	4,367	13.9	12.1	14.2	15.3	49	35.7	18.6	25.8	No	NA	13.9	12.1	NA	NA	NA	49	35.7	NA	NA	NA
BE-422	BE-422-FG	Flower Garden (FG)	78	13.5	10.4	7.5	5.7	35.8	29	9.9	6.9	No	NA	13.5	10.4	NA	NA	NA	35.8	29	NA	NA	NA
BE-422	BE-422-DZ	Drip Zone (DZ)	220	14.6	15.1	17.2	16.7	32.9	103	18	15.7	No	NA	14.6	15.1	NA	NA	NA	32.9	103	NA	NA	NA
BE-422	BE-422-BY	Back Yard (BY)	2,839	15.7	17.6	25.6	23.5	91.7	77.3	149	35.4	No	NA	15.7	17.6	NA	NA	NA	91.7	77.3	NA	NA	NA
BE-422	BE-422-BA	Bare Area (BA)	1,154	14.7	43.5	17.1	10.2	54	46.9	16	8.7	No	NA	14.7	43.5	NA	NA	NA	54	46.9	NA	NA	NA
BE-423	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	23	No	No	NA	NA	197	No	No
BE-423	BE-423-ED	Earthen Drive (ED)	4,355	15.1	26.5	53	70.3	352	256	240	97.9	No	NA	15.1	26.5	NA	NA	NA	352	256	NA	NA	NA
BE-423	BE-423-DZ	Drip Zone (DZ)	219	6.9	7.7	51.4	55.5	28	24.1	874	104	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-423	BE-423-BA	Bare Area (BA)	1,234	12.4	19.3	34.1	42.1	357	216	261	68.3	No	NA	12.4	19.3	NA	NA	NA	357	216	NA	NA	NA
BE-424	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	27	No	No	NA	NA	98	No	No
BE-424	BE-424-FY	Front Yard (FY)	2,057	21.3	38.5	52.2	86.2	84.7	122	123	60.3	No	NA	21.3	38.5	NA	NA	NA	84.7	122	NA	NA	NA
BE-424	BE-424-FG	Flower Garden (FG)	28	9	11.8	21.4	25.9	22.8	22.2	52.5	57.4	No	NA	9	11.8	NA	NA	NA	22.8	22.2	NA	NA	NA
BE-424	BE-424-ED	Earthen Drive (ED) [a]	507	20.4	23.6			451	1100			Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-424	BE-424-DZ	Drip Zone (DZ)	220	29.2	38.5	36.8	36.7	231	152	45.3	47.7	No	NA	29.2	38.5	NA	NA	NA	231	152	NA	NA	NA
BE-424	BE-424-BY	Back Yard (BY)	5,624	21.3	29.2	28.5	25.9	120	153	157	80.4	No	NA	21.3	29.2	NA	NA	NA	120	153	NA	NA	NA
BE-425	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	21	No	No	NA	NA	70	No	No
BE-425	BE-425-VG	Vegetable Garden (VG)	1,309	17.9	20.9	29.7	17.4	60.7	58.2	27	24	No	NA	17.9	20.9	NA	NA	NA	60.7	58.2	NA	NA	NA
BE-425	BE-425-FY	Front Yard (FY)	3,223	18.3	23.8	25.1	30	90.2	75.8	70.3	116	No	NA	18.3	23.8	NA	NA	NA	90.2	75.8	NA	NA	NA
BE-425	BE-425-FG	Flower Garden (FG)	611	24.4	30.8	23.5	20.9	146	63.7	24.9	60.6	No	NA	24.4	30.8	NA	NA	NA	146	63.7	NA	NA	NA
BE-425	BE-425-DZ	Drip Zone (DZ)	220	14.8	14.2	35.4	23.1	44.7	31.3	51.4	42.4	No	NA	14.8	14.2	NA	NA	NA	44.7	31.3	NA	NA	NA
BE-425	BE-425-BY	Back Yard (BY)	3,614	16.2	22.7	30.2	28.1	131	57.4	46.4	18.3	No	NA	16.2	22.7	NA	NA	NA	131	57.4	NA	NA	NA
BE-428	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	11	No	No	NA	NA	103	No	No
BE-428	BE-428-RG	Rock Garden (RG)	684	11.6	13.1	15.7	20.9	76	70.9	37	15.5	No	NA	11.6	13.1	NA	NA	NA	76	70.9	NA	NA	NA
BE-428	BE-428-FY	Front Yard (FY)	1,069	11.6	9.9	19	26.5	293	87	42.8	57.6	No	NA	11.6	9.9	NA	NA	NA	293	87	NA	NA	NA
BE-428	BE-428-FG	Flower Garden (FG)	83	9.5	11.9	14	5	102	141	25.3	13.2	No	NA	9.5	11.9	NA	NA	NA	102	141	NA	NA	NA
BE-428	BE-428-ED	Earthen Drive (ED)	800	9.3	9.6	13.8	10.8	102	90.3	24.2	12.1	No	NA	9.3	9.6	NA	NA	NA	102	90.3	NA	NA	NA
BE-428	BE-428-DZ	Drip Zone (DZ)	220	10.7	7.5	10.5	8.7	168	33.1	25.1	15.7	No	NA	10.7	7.5	NA	NA	NA	168	33.1	NA	NA	NA
BE-428	BE-428-BY	Back Yard (BY)	1,510	13.3	14.9	13.3	12.8	113	74.6	64.6	19.4	No	NA	13.3	14.9	NA	NA	NA	113	74.6	NA	NA	NA
BE-429	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	15	No	No	NA	NA	108	No	No
BE-429	BE-429-VG	Vegetable Garden (VG)	129	13	17.8	18	21.6	85.7	116	62.9	24.8	No	NA	13	17.8	NA	NA	NA	85.7	116	NA	NA	NA
BE-429	BE-429-RG	Rock Garden (RG)	94	13.7	11.4	8.3	11.1	93	55.7	22.3	42.9	No	NA	13.7	11.4	NA	NA	NA	93	55.7	NA	NA	NA
BE-429	BE-429-FY	Front Yard (FY)	988	13	13.2	14.4	17.7	95.3	55.5	41	33.2	No	NA	13	13.2	NA	NA	NA	95.3	55.5	NA	NA	NA
BE-429	BE-429-FG	Flower Garden (FG)	281	17.9	22.3	17.3	13	81.4	119	338	28.7	No	NA	17.9	22.3	NA	NA	NA	81.4	119	NA	NA	NA
BE-429	BE-429-ED	Earthen Drive (ED)	259	12	17.3	24.5	24.9	122	132	35.1	24.3	No	NA	12	17.3	NA	NA	NA	122	132	NA	NA	NA
BE-429	BE-429-DZ	Drip Zone (DZ)	220	13.8	12.4	12.2	9.6	213	91.5	39.6	28.3	No	NA	13.8	12.4	NA	NA	NA	213	91.5	NA	NA	NA
BE-429	BE-429-BY	Back Yard (BY)	1,260	13.4	13.7	20.3	14.7	226	72.8	43.5	55.6	No	NA	13.4	13.7	NA	NA	NA	226	72.8	NA	NA	NA
BE-429	BE-429-BA	Bare Area (BA)	27	16.8	15.7	12.3	12.2	195	97.1	20.5	21.2	No	NA	16.8	15.7	NA	NA	NA	195	97.1	NA	NA	NA
BE-430	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	29	No	No	NA	NA	155	No	No
BE-430	BE-430-RG	Rock Garden (RG)	1,141	14.6	21	24.5	29.6	208	114	100	86.7	No	NA	14.6	21	NA	NA	NA	208	114	NA	NA	NA
BE-430	BE-430-FY	Front Yard (FY)	927	22.3	56.6	95.5	74.3	242	177	229	79.8	No	NA	22.3	56.6	NA	NA	NA	242	177	NA	NA	NA
BE-430	BE-430-DZ	Drip Zone (DZ)	220	22	25	36.9	50.7	128	288	384	145	No	NA	22	25	NA	NA	NA	128	288	NA	NA	NA
BE-430	BE-430-BY	Back Yard (BY)	411	19.4	15.8	39.9	29.2	546	105	53.7	23.6	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-433A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	8	No	No	NA	NA	20	No	No
BE-433A	BE-433A-FY	Front Yard (FY)	660	6.1	6.2	6	6.1	13.2	8.7	7.9	8.9	No	NA	6.1	6.2	NA	NA	NA	13.2	8.7	NA	NA	NA
BE-433A	BE-433A-FG	Flower Garden (FG)	126	15.1	7.6	9.2	10.9	32.7	19.5	33	29.8	No	NA	15.1	7.6	NA	NA	NA	32.7	19.5	NA	NA	NA
BE-433A	BE-433A-DZ	Drip Zone (DZ)	220	8	8.3	8.2	13.3	20.3	15.8	15.8	46.9	No	NA	8	8.3	NA	NA	NA	20.3	15.8	NA	NA	NA
BE-433A	BE-433A-BY	Back Yard (BY)	1,536	8.7	8.8	11	7	32.4	29.6	57.6	21.1	No	NA	8.7	8.8	NA	NA	NA	32.4	29.6	NA	NA	NA
BE-433B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	19	No	No	NA	NA	34	No	No
BE-433B	BE-433B-FY	Front Yard (FY)	919	13.6	12.8	13.1	28.7	75.4	92.8	237	639	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-433B	BE-433B-BY	Back Yard (BY)	955	9.4	9.5	11.4	13.5	31.4	27.3	32.1	29.6	No	NA	9.4	9.5	NA	NA	NA	31.4	27.3	NA	NA	NA
BE-434	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	8	No	No	NA	NA	15	No	No
BE-434	BE-434-FY	Front Yard (FY)	4,846	8.8	7.3	7	7.6	17	18.4	21	39.2	No	NA	8.8	7.3	NA	NA	NA	17	18.4	NA	NA	NA
BE-434	BE-434-ED	Earthen Drive (ED)	1,490	6.2	8.2	16.8	10.4	17.4	14.4	82.2	30	No	NA	6.2	8.2	NA	NA	NA	17.4	14.4	NA	NA	NA
BE-434	BE-434-DZ	Drip Zone (DZ)	220	7	8.5	7.9	9.6	16.1	19.2	14.9	16.9	No	NA	7	8.5	NA	NA	NA	16.1	19.2	NA	NA	NA
BE-434	BE-434-BY	Back Yard (BY)	653	7.3	7	6.8	9.4	9.6	7.3	6.6	22.1	No	NA	7.3	7	NA	NA	NA	9.6	7.3	NA	NA	NA
BE-435	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	28	No	No	NA	NA	36	No	No
BE-435	BE-435-PA	Play Area (PA)	260	29.9	60.3	46.7	19.7	28.1	41.4	41.7	22.1	No	NA	29.9	60.3	NA	NA	NA	28.1	41.4	NA	NA	NA
BE-435	BE-435-FY	Front Yard (FY)	1,028	33.2	41.9	24.6	9.3	34.9	34.5	33.2	11.2	No	NA	33.2	41.9	NA	NA	NA	34.9	34.5	NA	NA	NA
BE-435	BE-435-FG	Flower Garden (FG)	101	26.3	25.6	13.1	12.9	30.7	30	36.3	116	No	NA	26.3	25.6	NA	NA	NA	30.7	30	NA	NA	NA
BE-435	BE-435-ED	Earthen Drive (ED)	1,044	9.4	22.6	4.4	9.5	31	72.7	16.8	44.2	No	NA	9.4	22.6	NA	NA	NA	31	72.7	NA	NA	NA
BE-435	BE-435-DZ	Drip Zone (DZ)	220	14.2	13.3	12	15.5	55.7	31.4	28.4	33.1	No	NA	14.2	13.3	NA	NA	NA	55.7	31.4	NA	NA	NA
BE-435	BE-435-BY	Back Yard (BY)	4,409	23.2	16.6	13.2	8.2	26.1	14.7	21.2	42.3	No	NA	23.2	16.6	NA	NA	NA	26.1	14.7	NA	NA	NA
BE-437	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	39	No	No	NA	NA	29	No	No
BE-437	BE-437-VG	Vegetable Garden (VG)	34	20.3	43.9	59.3	45.8	27.7	24.9	26.1	25	No	NA	20.3	43.9	NA	NA	NA	27.7	24.9	NA	NA	NA
BE-437	BE-437-FY	Front Yard (FY)	587	21	13	47.1	62.6	22.5	22	24.7	23.3	No	NA	21	13	NA	NA	NA	22.5	22	NA	NA	NA
BE-437	BE-437-ED	Earthen Drive (ED)	1,348	16.1	37.6	32.3	35.4	29.5	34.6	36.8	28.9	No	NA	16.1	37.6	NA	NA	NA	29.5	34.6	NA	NA	NA
BE-437	BE-437-DZ	Drip Zone (DZ)	726	22.6	114	246	132	22.9	27.7	43	46.5	No	NA	22.6	114	NA	NA	NA	22.9	27.7	NA	NA	NA
BE-437	BE-437-BY	Back Yard (BY)	3,755	17.9	60.2	264	75.2	26.3	34.9	62.1	42.4	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-438	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	29	No	No	NA	NA	53	No	No
BE-438	BE-438-VG	Vegetable Garden (VG)	205	22.6	27.3	39	48.8	27.5	35.7	28.4	37.4	No	NA	22.6	27.3	NA	NA	NA	27.5	35.7	NA	NA	NA
BE-438	BE-438-PA	Play Area (PA)	317	55.1	48.8	19.2	25.6	121	126	213	74.1	No	NA	55.1	48.8	NA	NA	NA	121	126	NA	NA	NA
BE-438	BE-438-FY	Front Yard (FY)	1,660	15.2	33.9	31.3	33.1	50.8	76.8	153	67.3	No	NA	15.2	33.9	NA	NA	NA	50.8	76.8	NA	NA	NA
BE-438	BE-438-FG	Flower Garden (FG)	93	15.6	16.4	22.6	28.2	24.4	36.3	38.3	51.3	No	NA	15.6	16.4	NA	NA	NA	24.4	36.3	NA	NA	NA
BE-438	BE-438-ED	Earthen Drive (ED)	1,936	16.8	15.4	26.8	17.2	40.1	39.8	35.1	16.4	No	NA	16.8	15.4	NA	NA	NA	40.1	39.8	NA	NA	NA
BE-438	BE-438-DZ	Drip Zone (DZ)	220	21.6	26.4	19.8	21.2	37	37.1	38.8	34.8	No	NA	21.6	26.4	NA	NA	NA	37	37.1	NA	NA	NA
BE-438	BE-438-BY	Back Yard (BY)	4,032	30.7	48.9	66.7	44.5	34.1	36.3	36	25.9	No	NA	30.7	48.9	NA	NA	NA	34.1	36.3	NA	NA	NA
BE-439	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	43	No	No	NA	NA	76	No	No
BE-439	BE-439-FY	Front Yard (FY)	3,921	27.4	50	51.8	25.8	82.5	92.7	52.7	33.1	No	NA	27.4	50	NA	NA	NA	82.5	92.7	NA	NA	NA
BE-439	BE-439-FG	Flower Garden (FG)	794	19.3	23.2	106	155	41	38.7	143	74.1	No	NA	19.3	23.2	NA	NA	NA	41	38.7	NA	NA	NA
BE-439	BE-439-DZ	Drip Zone (DZ)	220	34.8	47.3	65.7	95.4	54.3	85.6	134	143	No	NA	34.8	47.3	NA	NA	NA	54.3	85.6	NA	NA	NA
BE-439	BE-439-BY	Back Yard (BY)	2,514	38.5	77.8	65.2	27.6	105	98.5	65.2	34.2	No	NA	38.5	77.8	NA	NA	NA	105	98.5	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-440	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	13	No	No	NA	NA	21	No	No
BE-440	BE-440-RG	Rock Garden (RG)	714	11.3	17.9	47	21.5	12.5	23.1	69	22.8	No	NA	11.3	17.9	NA	NA	NA	12.5	23.1	NA	NA	NA
BE-440	BE-440-ED	Earthen Drive (ED)	2,736	6.9	8.2	41.3	34.8	12.6	41.5	74.1	38.5	No	NA	6.9	8.2	NA	NA	NA	12.6	41.5	NA	NA	NA
BE-440	BE-440-DZ	Drip Zone (DZ)	220	15.6	12	16.8	16.5	18.3	15.6	20.5	20	No	NA	15.6	12	NA	NA	NA	18.3	15.6	NA	NA	NA
BE-440	BE-440-BY	Back Yard (BY)	1,780	17.6	15	15.5	22.4	19.2	16.5	17.9	25.8	No	NA	17.6	15	NA	NA	NA	19.2	16.5	NA	NA	NA
BE-441	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	20	No	No	NA	NA	50	No	No
BE-441	BE-441-VG	Vegetable Garden (VG)	1,753	22.2	25.2	36.7	20.4	42.7	58	63.3	58.2	No	NA	22.2	25.2	NA	NA	NA	42.7	58	NA	NA	NA
BE-441	BE-441-ED	Earthen Drive (ED)	7,988	9.9	17	19.7	24.2	16.7	33.8	18.4	22.6	No	NA	9.9	17	NA	NA	NA	16.7	33.8	NA	NA	NA
BE-441	BE-441-DZ	Drip Zone (DZ)	220	11.3	17.2	28.7	17.2	23.6	50.9	33.2	17.7	No	NA	11.3	17.2	NA	NA	NA	23.6	50.9	NA	NA	NA
BE-441	BE-441-BY	Back Yard (BY)	13,953	26.9	28.2	36.5	41.1	96.2	69.5	78.3	103	No	NA	26.9	28.2	NA	NA	NA	96.2	69.5	NA	NA	NA
BE-442	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	12	No	No	NA	NA	54	No	No
BE-442	BE-442-RG	Rock Garden (RG)	134	7.3	6.6	13	19.6	39.7	19	39.5	40.2	No	NA	7.3	6.6	NA	NA	NA	39.7	19	NA	NA	NA
BE-442	BE-442-FY	Front Yard (FY)	2,959	12.9	16.1	20.5	29.9	84.8	66.7	23.1	29.1	No	NA	12.9	16.1	NA	NA	NA	84.8	66.7	NA	NA	NA
BE-442	BE-442-ED	Earthen Drive (ED)	641	9	11.1	9.1	6.8	25.4	120	11.1	8.3	No	NA	9	11.1	NA	NA	NA	25.4	120	NA	NA	NA
BE-442	BE-442-DZ	Drip Zone (DZ)	220	9.5	7.2	25.9	21.9	30	19.2	52.6	24.9	No	NA	9.5	7.2	NA	NA	NA	30	19.2	NA	NA	NA
BE-442	BE-442-BY	Back Yard (BY)	5,448	19.6	23.1	32.5	29.6	81.5	46.9	27.7	30.1	No	NA	19.6	23.1	NA	NA	NA	81.5	46.9	NA	NA	NA
BE-443	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	16	No	No	NA	NA	86	No	No
BE-443	BE-443-RG	Rock Garden (RG)	315	15.5	14	13.2	14.9	114	36.8	32.7	21.2	No	NA	15.5	14	NA	NA	NA	114	36.8	NA	NA	NA
BE-443	BE-443-FY	Front Yard (FY)	3,982	15.1	16.3	40.3	51.7	134	77.7	75.6	57.1	No	NA	15.1	16.3	NA	NA	NA	134	77.7	NA	NA	NA
BE-443	BE-443-DZ	Drip Zone (DZ)	220	17.6	19	18	21.8	131	36.7	81	37.6	No	NA	17.6	19	NA	NA	NA	131	36.7	NA	NA	NA
BE-443	BE-443-BY	Back Yard (BY)	1,343	15.7	15.6	68.4	62.7	122	115	82.7	154	No	NA	15.7	15.6	NA	NA	NA	122	115	NA	NA	NA
BE-444	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	22	No	No	NA	NA	95	No	No
BE-444	BE-444-FY	Front Yard (FY)	2,217	18.4	23.8	17.4	35.8	176	110	34.6	49.1	No	NA	18.4	23.8	NA	NA	NA	176	110	NA	NA	NA
BE-444	BE-444-FG	Flower Garden (FG)	33	15.4	14.8	18.4	20.2	96.9	105	141	28.1	No	NA	15.4	14.8	NA	NA	NA	96.9	105	NA	NA	NA
BE-444	BE-444-DZ	Drip Zone (DZ)	220	16.1	19.8	24.1	32	75.8	73.7	81.3	37.9	No	NA	16.1	19.8	NA	NA	NA	75.8	73.7	NA	NA	NA
BE-444	BE-444-BY	Back Yard (BY)	1,681	20.8	39.4	107	54.3	72.1	74.3	58.8	38.2	No	NA	20.8	39.4	NA	NA	NA	72.1	74.3	NA	NA	NA
BE-446	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	15	No	No	NA	NA	64	No	No
BE-446	BE-446-VG	Vegetable Garden (VG)	59	11.4	13.4	11.8	14.5	21.7	24.8	40.3	55.9	No	NA	11.4	13.4	NA	NA	NA	21.7	24.8	NA	NA	NA
BE-446	BE-446-FY	Front Yard (FY)	1,958	13.5	13.2	20	24.8	141	42.5	40.4	43.1	No	NA	13.5	13.2	NA	NA	NA	141	42.5	NA	NA	NA
BE-446	BE-446-FG	Flower Garden (FG)	192	13.6	18	20.6	17	53.9	84.4	58.2	26.4	No	NA	13.6	18	NA	NA	NA	53.9	84.4	NA	NA	NA
BE-446	BE-446-DZ	Drip Zone (DZ)	220	11	19.8	27.3	89.5	50.9	101	105	163	No	NA	11	19.8	NA	NA	NA	50.9	101	NA	NA	NA
BE-446	BE-446-BY	Back Yard (BY)	2,357	15.7	13.3	14	9.8	123	31.2	19.7	14.6	No	NA	15.7	13.3	NA	NA	NA	123	31.2	NA	NA	NA
BE-447	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	22	No	No	NA	NA	140	No	No
BE-447	BE-447-FY	Front Yard (FY)	745	15	11.7	14.9	43.9	143	127	57.6	54.3	No	NA	15	11.7	NA	NA	NA	143	127	NA	NA	NA
BE-447	BE-447-FG	Flower Garden (FG)	254	16.4	17.4	51.4	144	83.4	102	31.3	33.5	No	NA	16.4	17.4	NA	NA	NA	83.4	102	NA	NA	NA
BE-447	BE-447-DZ	Drip Zone (DZ)	220	17.3	23.7	18.2	123	212	103	43.8	77.3	No	NA	17.3	23.7	NA	NA	NA	212	103	NA	NA	NA
BE-447	BE-447-BY	Back Yard (BY)	1,507	21.6	45.9	70.6	126	194	195	100	88.4	No	NA	21.6	45.9	NA	NA	NA	194	195	NA	NA	NA
BE-448	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	26	No	No	NA	NA	96	No	No
BE-448	BE-448-FY	Front Yard (FY)	2,071	18.9	21.2	27.9	29.8	114	188	46.4	40.5	No	NA	18.9	21.2	NA	NA	NA	114	188	NA	NA	NA
BE-448	BE-448-FG	Flower Garden (FG)	42	12.9	13.5	19.8	19.1	78.7	34.6	40.9	22.3	No	NA	12.9	13.5	NA	NA	NA	78.7	34.6	NA	NA	NA
BE-448	BE-448-ED	Earthen Drive (ED)	2,164	20.9	27.7	52.3	44.8	111	143	86.6	99.5	No	NA	20.9	27.7	NA	NA	NA	111	143	NA	NA	NA
BE-448	BE-448-DZ	Drip Zone (DZ)	220	17.7	39.7	20.4	33	94.3	40	37.7	52.6	No	NA	17.7	39.7	NA	NA	NA	94.3	40	NA	NA	NA
BE-448	BE-448-BY	Back Yard (BY)	958	36.5	42.1	35.7	30.3	74.1	78.9	47.6	38.8	No	NA	36.5	42.1	NA	NA	NA	74.1	78.9	NA	NA	NA
BE-449	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	14	No	No	NA	NA	37	No	No
BE-449	BE-449-RG	Rock Garden (RG)	314	10.1	21.2	27.8	28.5	24.2	26.1	56.2	95.5	No	NA	10.1	21.2	NA	NA	NA	24.2	26.1	NA	NA	NA
BE-449	BE-449-FY	Front Yard (FY)	1,509	7.9	13.9	36.5	56.6	23.8	50.5	28.9	28.3	No	NA	7.9	13.9	NA	NA	NA	23.8	50.5	NA	NA	NA
BE-449	BE-449-FG	Flower Garden (FG)	138	10.1	13.4	28	14	28.7	50	44.6	16.9	No	NA	10.1	13.4	NA	NA	NA	28.7	50	NA	NA	NA
BE-449	BE-449-ED	Earthen Drive (ED)	2,334	7.8	13.4	18.9	22.9	69.7	35	31.3	189	No	NA	7.8	13.4	NA	NA	NA	69.7	35	NA	NA	NA
BE-449	BE-449-DZ	Drip Zone (DZ)	220	10.4	18.5	32.1	20	25.9	28.7	31.6	18.2	No	NA	10.4	18.5	NA	NA	NA	25.9	28.7	NA	NA	NA
BE-450	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	21	No	No	NA	NA	123	No	No
BE-450	BE-450-RG	Rock Garden (RG)	26	11.5	11.4	12.4	13.1	125	156	40.7	27.7	No	NA	11.5	11.4	NA	NA	NA	125	156	NA	NA	NA
BE-450	BE-450-PA	Play Area (PA)	163	12.4	16	14.4	15.2	77.2	58.2	21.8	20.1	No	NA	12.4	16	NA	NA	NA	77.2	58.2	NA	NA	NA
BE-450	BE-450-FY	Front Yard (FY)	949	16	20.3	14.9	24.6	105	42.2	23.7	34.7	No	NA	16	20.3	NA	NA	NA	105	42.2	NA	NA	NA
BE-450	BE-450-FG	Flower Garden (FG)	66	16.7	19.8	17	15.2	44.6	64.8	42.4	21.2	No	NA	16.7	19.8	NA	NA	NA	44.6	64.8	NA	NA	NA
BE-450	BE-450-ED	Earthen Drive (ED)	427	20.9	28	19.2	72.7	168	359	174	28.9	No	NA	20.9	28	NA	NA	NA	168	359	NA	NA	NA
BE-450	BE-450-DZ	Drip Zone (DZ)	220	20.2	18.2	24.8	21.8	90.5	93	22.1	52.3	No	NA	20.2	18.2	NA	NA	NA	90.5	93	NA	NA	NA
BE-450	BE-450-BY	Back Yard (BY)	3,416	24.8	30.4	29.7	33.7	91.5	57.7	41.6	30.3	No	NA	24.8	30.4	NA	NA	NA	91.5	57.7	NA	NA	NA
BE-450	BE-450-BA	Bare Area (BA)	215	19.9	38.4	50.4	44.2	192	195	62.2	57.6	No	NA	19.9	38.4	NA	NA	NA	192	195	NA	NA	NA
BE-451	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	34	No	No	NA	NA	82	No	No
BE-451	BE-451-VG	Vegetable Garden (VG)	572	29.9	52.4	37.3	40.2	284	17.4	38.1	15.4	No	NA	29.9	52.4	NA	NA	NA	284	17.4	NA	NA	NA
BE-451	BE-451-RG	Rock Garden (RG)	490	21.4	42.3	30.9	53	82.8	84.4	100	66.6	No	NA	21.4	42.3	NA	NA	NA	82.8	84.4	NA	NA	NA
BE-451	BE-451-PA	Play Area (PA)	326	18.5	21.4	30	32.9	55.8	58	65	39.7	No	NA	18.5	21.4	NA	NA	NA	55.8	58	NA	NA	NA
BE-451	BE-451-FY	Front Yard (FY)	4,688	21.8	29	44.1	46.4	75.3	84.5	50.6	45.8	No	NA	21.8	29	NA	NA	NA	75.3	84.5	NA	NA	NA
BE-451	BE-451-ED	Earthen Drive (ED)	5,440	19.5	76.2	57.2	36.9	272	55.1	44.7	41.6	No	NA	19.5	76.2	NA	NA	NA	272	55.1	NA	NA	NA
BE-451	BE-451-DZ	Drip Zone (DZ)	220	27.6	34	24.2	21.1	94.4	39.4	40.7	198	No	NA	27.6	34	NA	NA	NA	94.4	39.4	NA	NA	NA
BE-451	BE-451-BY	Back Yard (BY)	4,575	16.3	20.8	53.7	46.7	64.9	63.7	84.5	68.8	No	NA	16.3	20.8	NA	NA	NA	64.9	63.7	NA	NA	NA
BE-452	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	16	No	No	NA	NA	59	No	No
BE-452	BE-452-RG	Rock Garden (RG)	223	12.8	12.2	13.1	29.6	33.1	27.2	21.2	86	No	NA	12.8	12.2	NA	NA	NA	33.1	27.2	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-452	BE-452-FY	Front Yard (FY)	483	7.3	29.2	23.5	44.2	27.2	102	34.7	16.7	No	NA	7.3	29.2	NA	NA	NA	27.2	102	NA	NA	NA
BE-452	BE-452-DZ	Drip Zone (DZ)	220	14.7	16.5	19.9	16	67.2	107	56.8	143	No	NA	14.7	16.5	NA	NA	NA	67.2	107	NA	NA	NA
BE-452	BE-452-BY	Back Yard (BY)	2,152	13	12.4	14	13.6	56.4	23.9	21.4	19	No	NA	13	12.4	NA	NA	NA	56.4	23.9	NA	NA	NA
BE-453	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	25	No	No	NA	NA	89	No	No
BE-453	BE-453-FY	Front Yard (FY)	6,942	17.7	49.5	53.2	45.5	158	88.3	40.2	10.6	No	NA	17.7	49.5	NA	NA	NA	158	88.3	NA	NA	NA
BE-453	BE-453-FG	Flower Garden (FG)	100	12.2	16.7	29.2	40.1	39.8	104	67.6	11.8	No	NA	12.2	16.7	NA	NA	NA	39.8	104	NA	NA	NA
BE-453	BE-453-ED	Earthen Drive (ED)	819	12.5	28	45.4	27.5	37.5	140	32.8	13.9	No	NA	12.5	28	NA	NA	NA	37.5	140	NA	NA	NA
BE-453	BE-453-DZ	Drip Zone (DZ)	220	18.1	15.4	40.1	22.3	79.4	48.3	69.8	17.5	No	NA	18.1	15.4	NA	NA	NA	79.4	48.3	NA	NA	NA
BE-453	BE-453-BY	Back Yard (BY)	2,427	25.1	34.2	35.7	73.2	74.3	91.5	87.8	179	No	NA	25.1	34.2	NA	NA	NA	74.3	91.5	NA	NA	NA
BE-454	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	19	No	No	NA	NA	52	No	No
BE-454	BE-454-VG	Vegetable Garden (VG)	158	15.9	18.1	21.6	57.4	46.3	45.8	47.5	36.8	No	NA	15.9	18.1	NA	NA	NA	46.3	45.8	NA	NA	NA
BE-454	BE-454-RG	Rock Garden (RG)	105	18.5	21.8	31.3	26.1	25.7	33.2	42.1	38.2	No	NA	18.5	21.8	NA	NA	NA	25.7	33.2	NA	NA	NA
BE-454	BE-454-FY	Front Yard (FY)	4,602	23.9	24.6	41.9	49.1	81.1	56.5	50.4	53.6	No	NA	23.9	24.6	NA	NA	NA	81.1	56.5	NA	NA	NA
BE-454	BE-454-FG	Flower Garden (FG)	518	19	24.3	25.7	38.4	56.1	77.8	67.2	133	No	NA	19	24.3	NA	NA	NA	56.1	77.8	NA	NA	NA
BE-454	BE-454-ED	Earthen Drive (ED)	1,719	10.6	13.2	73.5	24.6	49.1	31	46.3	21.5	No	NA	10.6	13.2	NA	NA	NA	49.1	31	NA	NA	NA
BE-454	BE-454-DZ	Drip Zone (DZ)	220	19.2	20.7	21.4	30	63.1	71.9	46.1	24.8	No	NA	19.2	20.7	NA	NA	NA	63.1	71.9	NA	NA	NA
BE-454	BE-454-BY	Back Yard (BY)	4,220	17.4	16	38	29.7	65.5	37.9	102	53.8	No	NA	17.4	16	NA	NA	NA	65.5	37.9	NA	NA	NA
BE-455	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	24	No	No	NA	NA	52	No	No
BE-455	BE-455-RG	Rock Garden (RG)	832	26.5	45.3	22.5	18	138	41.7	24.3	16.2	No	NA	26.5	45.3	NA	NA	NA	138	41.7	NA	NA	NA
BE-455	BE-455-FY	Front Yard (FY)	2,043	12.7	26.7	26.5	35.6	160	27.3	40.8	36.5	No	NA	12.7	26.7	NA	NA	NA	160	27.3	NA	NA	NA
BE-455	BE-455-FG	Flower Garden (FG)	46	16.2	19.9	20.4	20.9	52.3	33.1	22.7	18.9	No	NA	16.2	19.9	NA	NA	NA	52.3	33.1	NA	NA	NA
BE-455	BE-455-DZ	Drip Zone (DZ)	220	27	35.4	41.3	32.1	62.1	41.8	35.7	34.1	No	NA	27	35.4	NA	NA	NA	62.1	41.8	NA	NA	NA
BE-455	BE-455-BY	Back Yard (BY)	2,780	8.4	8.6	11.7	13.2	50.3	18.1	63.5	21.3	No	NA	8.4	8.6	NA	NA	NA	50.3	18.1	NA	NA	NA
BE-456	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	23	No	No	NA	NA	90	No	No
BE-456	BE-456-RG	Rock Garden (RG)	1,778	18.7	34.2	22.8	22.5	125	153	102	49.1	No	NA	18.7	34.2	NA	NA	NA	125	153	NA	NA	NA
BE-456	BE-456-FY	Front Yard (FY)	753	20.1	20.1	30.4	33.7	181	36.4	16.4	27.9	No	NA	20.1	20.1	NA	NA	NA	181	36.4	NA	NA	NA
BE-456	BE-456-FG	Flower Garden (FG)	2,988	15.9	23.6	18.6	20.3	69.9	79.4	24.9	21.1	No	NA	15.9	23.6	NA	NA	NA	69.9	79.4	NA	NA	NA
BE-456	BE-456-DZ	Drip Zone (DZ)	220	18.7	20	27	28.1	117	92.4	79.7	31.7	No	NA	18.7	20	NA	NA	NA	117	92.4	NA	NA	NA
BE-456	BE-456-BY	Back Yard (BY)	1,298	20.4	26.3	28.7	30.3	58.1	41.1	26.3	30.1	No	NA	20.4	26.3	NA	NA	NA	58.1	41.1	NA	NA	NA
BE-457	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	9	No	No	NA	NA	26	No	No
BE-457	BE-457-RG	Rock Garden (RG)	562	38.5	7	9.9	32.6	58.9	16.2	19.5	49	No	NA	38.5	7	NA	NA	NA	58.9	16.2	NA	NA	NA
BE-457	BE-457-FY	Front Yard (FY)	2,177	9.4	10.1	16.9	17.8	48.3	35.1	22.7	31.2	No	NA	9.4	10.1	NA	NA	NA	48.3	35.1	NA	NA	NA
BE-457	BE-457-FG	Flower Garden (FG)	157	5.6	4.9	5.2	13.7	20.1	13.7	13.2	56.9	No	NA	5.6	4.9	NA	NA	NA	20.1	13.7	NA	NA	NA
BE-457	BE-457-ED	Earthen Drive (ED)	564	6.5	3.5	17	17.1	43.7	9.9	57.6	35.8	No	NA	6.5	3.5	NA	NA	NA	43.7	9.9	NA	NA	NA
BE-457	BE-457-DZ	Drip Zone (DZ)	220	17.4	14	14.1	18.5	58.1	33.7	28.6	42.2	No	NA	17.4	14	NA	NA	NA	58.1	33.7	NA	NA	NA
BE-457	BE-457-BY	Back Yard (BY)	2,532	4	3.7	3.5	3.9	8.9	6.1	6.1	5.9	No	NA	4	3.7	NA	NA	NA	8.9	6.1	NA	NA	NA
BE-458	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	24	No	No	NA	NA	52	No	No
BE-458	BE-458-FY	Front Yard (FY)	1,707	9.8	8.5	31.1	47.4	14.7	11.6	57.6	101	No	NA	9.8	8.5	NA	NA	NA	14.7	11.6	NA	NA	NA
BE-458	BE-458-FG	Flower Garden (FG)	271	16.6	15.7	36.3	40.2	31.4	24.9	40.9	74.5	No	NA	16.6	15.7	NA	NA	NA	31.4	24.9	NA	NA	NA
BE-458	BE-458-DZ	Drip Zone (DZ)	220	22.4	28.4	32.9	29.5	43.9	39	36.4	36.9	No	NA	22.4	28.4	NA	NA	NA	43.9	39	NA	NA	NA
BE-458	BE-458-BY	Back Yard (BY)	396	30.5	35.3	53.4	30.1	78.1	68.7	83.2	18.9	No	NA	30.5	35.3	NA	NA	NA	78.1	68.7	NA	NA	NA
BE-458	BE-458-BA	Bare Area (BA)	176	28.7	41.9	40.8	29.8	92.8	118	68.5	26.6	No	NA	28.7	41.9	NA	NA	NA	92.8	118	NA	NA	NA
BE-459	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	23	No	No	NA	NA	84	No	No
BE-459	BE-459-PA	Play Area (PA)	79	15.5	11.4	10.5	65.6	48.8	23.4	45	106	No	NA	15.5	11.4	NA	NA	NA	48.8	23.4	NA	NA	NA
BE-459	BE-459-FY	Front Yard (FY)	821	12.3	31.5	19.3	118	107	114	157	53.9	No	NA	12.3	31.5	NA	NA	NA	107	114	NA	NA	NA
BE-459	BE-459-DZ	Drip Zone (DZ)	650	10.6	22.8	21.5	52.5	170	546	183	551	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-459	BE-459-BY	Back Yard (BY)	10,567	22.7	27.6	41.5	54.9	183	140	94.4	50.6	No	NA	22.7	27.6	NA	NA	NA	183	140	NA	NA	NA
BE-460	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	12	No	No	NA	NA	58	No	No
BE-460	BE-460-FY	Front Yard (FY)	2,830	14.7	15.6	16.7	14.1	101	71.3	68.2	32.3	No	NA	14.7	15.6	NA	NA	NA	101	71.3	NA	NA	NA
BE-460	BE-460-ED	Earthen Drive (ED)	1,317	10.4	9.5	20.2	20.4	66	31.5	134	90.8	No	NA	10.4	9.5	NA	NA	NA	66	31.5	NA	NA	NA
BE-460	BE-460-DZ	Drip Zone (DZ)	220	10.8	10.7	15.4	10.9	55.6	56.8	96.7	48.1	No	NA	10.8	10.7	NA	NA	NA	55.6	56.8	NA	NA	NA
BE-460	BE-460-BY	Back Yard (BY)	5,234	12.5	10.8	9.1	11.5	100	28.1	35	51.9	No	NA	12.5	10.8	NA	NA	NA	100	28.1	NA	NA	NA
BE-461	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	10	No	No	NA	NA	23	No	No
BE-461	BE-461-FY	Front Yard (FY)	2,624	6	8.5	21.2	29.9	14.2	15.7	74.2	67.4	No	NA	6	8.5	NA	NA	NA	14.2	15.7	NA	NA	NA
BE-461	BE-461-FG	Flower Garden (FG)	38	3.8	10.8	15.7	17.3	10.1	20.8	22.3	25.8	No	NA	3.8	10.8	NA	NA	NA	10.1	20.8	NA	NA	NA
BE-461	BE-461-ED	Earthen Drive (ED)	1,434	6.9	13	12	10.9	20.5	34.5	15.8	15.9	No	NA	6.9	13	NA	NA	NA	20.5	34.5	NA	NA	NA
BE-461	BE-461-DZ	Drip Zone (DZ)	220	5.4	5.5	6.4	5.3	15.5	11.7	13.8	7.2	No	NA	5.4	5.5	NA	NA	NA	15.5	11.7	NA	NA	NA
BE-461	BE-461-BY	Back Yard (BY)	2,460	15.3	20.1	40.6	37.7	55.2	29.6	20.8	29.1	No	NA	15.3	20.1	NA	NA	NA	55.2	29.6	NA	NA	NA
BE-462	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	19	No	No	NA	NA	90	No	No
BE-462	BE-462-PA	Play Area (PA)	92	15.8	24.2	34.3	13.6	123	159	79	9.1	No	NA	15.8	24.2	NA	NA	NA	123	159	NA	NA	NA
BE-462	BE-462-FY	Front Yard (FY)	1,281	18	17	19.6	17.1	77.8	78.7	55	51.5	No	NA	18	17	NA	NA	NA	77.8	78.7	NA	NA	NA
BE-462	BE-462-ED	Earthen Drive (ED)	450	9.1	11	10.1	7.1	62	87.3	75.8	24.5	No	NA	9.1	11	NA	NA	NA	62	87.3	NA	NA	NA
BE-462	BE-462-DZ	Drip Zone (DZ)	220	12	15.5	19.8	29.1	88.3	81.7	81.4	45	No	NA	12	15.5	NA	NA	NA	88.3	81.7	NA	NA	NA
BE-462	BE-462-BY	Back Yard (BY)	2,243	21.7	36	36	23.3	68.2	59.5	24.8	8.7	No	NA	21.7	36	NA	NA	NA	68.2	59.5	NA	NA	NA
BE-463	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	18	No	No	NA	NA	90	No	No
BE-463	BE-463-FY	Front Yard (FY)	733	14.1	15.7	20.2	24.8	183	94	48.3	70.9	No	NA	14.1	15.7	NA	NA	NA	183	94	NA	NA	NA
BE-463	BE-463-FG	Flower Garden (FG)	48	18.8	17.7	17.7	20.2	88.7	67.4	92.2	60.4	No	NA	18.8	17.7	NA	NA	NA	88.7	67.4	NA	NA	NA
BE-463	BE-463-DZ	Drip Zone (DZ)	220	18.2	18.1	16.3	18.1	151	68.6	99.6	55.2	No	NA	18.2	18.1	NA	NA	NA	151	68.6	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-463	BE-463-BY	Back Yard (BY)	4,622	15.6	20.8	22.4	23.4	95.9	56	36.6	34.8	No	NA	15.6	20.8	NA	NA	NA	95.9	56	NA	NA	NA
BE-500	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	25	No	No	NA	NA	69	No	No
BE-500	BE-500-VG	Vegetable Garden (VG)	412	26.5	24.6	28.5	28.4	46.2	43.3	41.9	23.4	No	NA	26.5	24.6	NA	NA	NA	46.2	43.3	NA	NA	NA
BE-500	BE-500-RG	Rock Garden (RG)	685	15.5	34.4	63.3	90	72.7	54.5	39.9	24.4	No	NA	15.5	34.4	NA	NA	NA	72.7	54.5	NA	NA	NA
BE-500	BE-500-FY	Front Yard (FY)	4,346	16.6	36.4	57.1	34.6	131	65.6	34.4	32.9	No	NA	16.6	36.4	NA	NA	NA	131	65.6	NA	NA	NA
BE-500	BE-500-FG	Flower Garden (FG)	308	15.7	23	15.1	29.2	36	59.7	31.7	31	No	NA	15.7	23	NA	NA	NA	36	59.7	NA	NA	NA
BE-500	BE-500-ED	Earthen Drive (ED)	137	7.3	8	61.7	117	174	91.5	96.2	120	No	NA	7.3	8	NA	NA	NA	174	91.5	NA	NA	NA
BE-500	BE-500-BY	Back Yard (BY)	2,152	26.7	43.2	53.7	35.3	77.5	38.6	27.2	26.5	No	NA	26.7	43.2	NA	NA	NA	77.5	38.6	NA	NA	NA
BE-501A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	17	No	No	NA	NA	53	No	No
BE-501A	BE-501A-ED	Earthen Drive (ED)	1,244	9.5	21.6	46.8	47.9	191	37.5	76.3	78.1	No	NA	9.5	21.6	NA	NA	NA	191	37.5	NA	NA	NA
BE-501A	BE-501A-DZ	Drip Zone (DZ)	220	14.1	14.1	28.3	40.5	36.5	30.3	27.3	13.6	No	NA	14.1	14.1	NA	NA	NA	36.5	30.3	NA	NA	NA
BE-501A	BE-501A-BY	Back Yard (BY)	1,841	19.7	18.1	33.1	45.2	45.6	36.8	26.1	16.7	No	NA	19.7	18.1	NA	NA	NA	45.6	36.8	NA	NA	NA
BE-501B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	18	No	No	NA	NA	66	No	No
BE-501B	BE-501B-RG	Rock Garden (RG)	290	11.8	19.6	74.8	34.8	20.5	30.3	74.8	14.9	No	NA	11.8	19.6	NA	NA	NA	20.5	30.3	NA	NA	NA
BE-501B	BE-501B-FY	Front Yard (FY)	1,720	16.5	16.3	12.2	28.3	43.9	28	32.1	62.7	No	NA	16.5	16.3	NA	NA	NA	43.9	28	NA	NA	NA
BE-501B	BE-501B-ED	Earthen Drive (ED)	681	14.8	12.3	97.7	62	173	196	59	15.4	No	NA	14.8	12.3	NA	NA	NA	173	196	NA	NA	NA
BE-501B	BE-501B-DZ	Drip Zone (DZ)	220	8.3	11	20.5	16.8	19.6	48.7	17	41.5	No	NA	8.3	11	NA	NA	NA	19.6	48.7	NA	NA	NA
BE-501B	BE-501B-BY	Back Yard (BY)	920	23.8	35.4	90.7	62.9	35.5	44.2	23.3	19.3	No	NA	23.8	35.4	NA	NA	NA	35.5	44.2	NA	NA	NA
BE-502	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	17	No	No	NA	NA	45	No	No
BE-502	BE-502-RG	Rock Garden (RG)	112	12.1	13.7	11.4	10.7	29.1	27.2	21	38.1	No	NA	12.1	13.7	NA	NA	NA	29.1	27.2	NA	NA	NA
BE-502	BE-502-FY	Front Yard (FY)	3,762	18.1	14.8	35.1	41.7	47.4	32.9	118	306	No	NA	18.1	14.8	NA	NA	NA	47.4	32.9	NA	NA	NA
BE-502	BE-502-FG	Flower Garden (FG)	77	7.6	7.7	12.6	14.8	12.1	12.6	53.2	38.5	No	NA	7.6	7.7	NA	NA	NA	12.1	12.6	NA	NA	NA
BE-502	BE-502-ED	Earthen Drive (ED)	2,689	9.7	19.8	21.9	35.4	34.7	105	96.3	68.9	No	NA	9.7	19.8	NA	NA	NA	34.7	105	NA	NA	NA
BE-502	BE-502-DZ	Drip Zone (DZ)	220	13.3	16.9	21.9	26.9	34.1	33.2	51.7	72.5	No	NA	13.3	16.9	NA	NA	NA	34.1	33.2	NA	NA	NA
BE-502	BE-502-BY	Back Yard (BY)	4,601	25	35.7	49.8	33.7	67.9	85.9	88.9	81	No	NA	25	35.7	NA	NA	NA	67.9	85.9	NA	NA	NA
BE-503	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	22	No	No	NA	NA	175	No	No
BE-503	BE-503-FY	Front Yard (FY)	3,012	20	28.8	37.4	36.1	187	213	85	50.8	No	NA	20	28.8	NA	NA	NA	187	213	NA	NA	NA
BE-503	BE-503-DZ	Drip Zone (DZ)	220	18.2	14.9	36.8	30.4	192	77.3	174	139	No	NA	18.2	14.9	NA	NA	NA	192	77.3	NA	NA	NA
BE-503	BE-503-BY	Back Yard (BY)	2,508	18.9	26.6	43	54.5	220	200	190	129	No	NA	18.9	26.6	NA	NA	NA	220	200	NA	NA	NA
BE-505	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	34	No	No	NA	NA	168	No	No
BE-505	BE-505-FY	Front Yard (FY)	1,444	25.5	49.1	55.4	58.3	159	127	112	67	No	NA	25.5	49.1	NA	NA	NA	159	127	NA	NA	NA
BE-505	BE-505-ED	Earthen Drive (ED)	1,446	29.6	32.4	44.9	28.4	199	163	99.1	44.9	No	NA	29.6	32.4	NA	NA	NA	199	163	NA	NA	NA
BE-505	BE-505-DZ	Drip Zone (DZ)	220	24.7	42.3	69.4	43.3	353	200	232	23.7	No	NA	24.7	42.3	NA	NA	NA	353	200	NA	NA	NA
BE-505	BE-505-BY	Back Yard (BY)	3,616	23.7	29.2	48.9	39.2	138	99.7	185	57.8	No	NA	23.7	29.2	NA	NA	NA	138	99.7	NA	NA	NA
BE-506	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	31	No	No	NA	NA	151	No	No
BE-506	BE-506-RG	Rock Garden (RG)	633	17.6	28.3	30.7	32.1	170	181	172	75	No	NA	17.6	28.3	NA	NA	NA	170	181	NA	NA	NA
BE-506	BE-506-FY	Front Yard (FY)	987	24.1	40.7	46.3	36.9	178	259	120	191	No	NA	24.1	40.7	NA	NA	NA	178	259	NA	NA	NA
BE-506	BE-506-FG	Flower Garden (FG)	235	30.6	11.5	31.3	29.6	173	94.6	555	331	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-506	BE-506-DZ	Drip Zone (DZ)	220	36.3	40	51.6	56.3	219	196	186	214	No	NA	36.3	40	NA	NA	NA	219	196	NA	NA	NA
BE-506	BE-506-BY	Back Yard (BY)	1,014	30.2	32.6	35.5	9.5	70.2	283	170	75.5	No	NA	30.2	32.6	NA	NA	NA	70.2	283	NA	NA	NA
BE-506	BE-506-BA	Bare Area (BA)	304	25.2	29.9	47.4	37.5	404	366	49.2	115	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-508	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	32	No	No	NA	NA	129	No	No
BE-508	BE-508-RG	Rock Garden (RG)	161	75.1	158	161	103	259	721	636	216	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-508	BE-508-FY	Front Yard (FY)	2,322	16.3	22	36.2	31.8	100	177	203	123	No	NA	16.3	22	NA	NA	NA	100	177	NA	NA	NA
BE-508	BE-508-FG	Flower Garden (FG)	477	15.1	105	55	93.1	82.1	212	156	179	No	NA	15.1	105	NA	NA	NA	82.1	212	NA	NA	NA
BE-508	BE-508-ED	Earthen Drive (ED)	1,486	10.5	21.7	37	32.5	119	106	94.2	61.7	No	NA	10.5	21.7	NA	NA	NA	119	106	NA	NA	NA
BE-508	BE-508-DZ	Drip Zone (DZ)	220	17.2	29.7	47.4	89.1	112	239	186	146	No	NA	17.2	29.7	NA	NA	NA	112	239	NA	NA	NA
BE-508	BE-508-BY	Back Yard (BY)	2,664	18.7	30.2	36.4	30.3	93	119	117	68.9	No	NA	18.7	30.2	NA	NA	NA	93	119	NA	NA	NA
BE-509	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	39	No	No	NA	NA	116	No	No
BE-509	BE-509-PA	Play Area (PA)	37	36.7	57.3	81.2	53.7	180	168	207	61.4	No	NA	36.7	57.3	NA	NA	NA	180	168	NA	NA	NA
BE-509	BE-509-FG	Flower Garden (FG)	133	22.4	32.5	38.7	55.1	68.9	68.1	72.3	46.1	No	NA	22.4	32.5	NA	NA	NA	68.9	68.1	NA	NA	NA
BE-509	BE-509-ED	Earthen Drive (ED)	1,310	12.9	47.9	96.7	47.7	38.1	125	93.2	15.5	No	NA	12.9	47.9	NA	NA	NA	38.1	125	NA	NA	NA
BE-509	BE-509-DZ	Drip Zone (DZ)	220	25	29.9	29.8	25.2	48.2	96.3	62.7	54.3	No	NA	25	29.9	NA	NA	NA	48.2	96.3	NA	NA	NA
BE-509	BE-509-BY	Back Yard (BY)	2,709	27.3	32.7	75.9	43.3	159	141	151	79.1	No	NA	27.3	32.7	NA	NA	NA	159	141	NA	NA	NA
BE-509	BE-509-BA	Bare Area (BA)	828	45.1	68.7	57.3	36.5	226	85.5	56.4	33.2	No	NA	45.1	68.7	NA	NA	NA	226	85.5	NA	NA	NA
BE-510	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	21	No	No	NA	NA	119	No	No
BE-510	BE-510-FY	Front Yard (FY)	2,902	17.4	29.9	42	46.2	132	168	107	64.9	No	NA	17.4	29.9	NA	NA	NA	132	168	NA	NA	NA
BE-510	BE-510-ED	Earthen Drive (ED)	598	15.8	17.5	30.7	49.3	82.4	144	175	103	No	NA	15.8	17.5	NA	NA	NA	82.4	144	NA	NA	NA
BE-510	BE-510-DZ	Drip Zone (DZ)	220	10.6	21.5	26	29.8	43.8	79.8	117	234	No	NA	10.6	21.5	NA	NA	NA	43.8	79.8	NA	NA	NA
BE-510	BE-510-BA	Bare Area (BA)	1,233	23.2	26.7	41.6	28.9	134	126	92	43.7	No	NA	23.2	26.7	NA	NA	NA	134	126	NA	NA	NA
BE-511	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	28	No	No	NA	NA	189	No	No
BE-511	BE-511-VG	Vegetable Garden (VG)	40	22.7	39.2	76.6	34.8	238	292	382	345	No	NA	22.7	39.2	NA	NA	NA	238	292	NA	NA	NA
BE-511	BE-511-RG	Rock Garden (RG)	338	25.4	34.4	37.1	33.5	199	139	113	68.8	No	NA	25.4	34.4	NA	NA	NA	199	139	NA	NA	NA
BE-511	BE-511-FY	Front Yard (FY)	2,895	23.3	27.8	41.2	46.7	200	191	222	181	No	NA	23.3	27.8	NA	NA	NA	200	191	NA	NA	NA
BE-511	BE-511-FG	Flower Garden (FG)	321	18.5	26	32.2	30.4	135	114	66.8	43.9	No	NA	18.5	26	NA	NA	NA	135	114	NA	NA	NA
BE-511	BE-511-DZ	Drip Zone (DZ)	220	24.7	25.3	41.6	27.8	167	133	153	146	No	NA	24.7	25.3	NA	NA	NA	167	133	NA	NA	NA
BE-511	BE-511-BY	Back Yard (BY)	3,192	21.9	32.6	46.9	41.2	219	257	163	78.8	No	NA	21.9	32.6	NA	NA	NA	219	257	NA	NA	NA
BE-513A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	28	No	No	NA	NA	89	No	No

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-513A	BE-513A-VG	Vegetable Garden (VG)	1,057	16.2	42.1	28.7	42	58.9	158	76.9	87.5	No	NA	16.2	42.1	NA	NA	NA	58.9	158	NA	NA	NA
BE-513A	BE-513A-RG	Rock Garden (RG)	63	15.5	18.9	10.8	10.1	20.2	51.8	18.3	18.4	No	NA	15.5	18.9	NA	NA	NA	20.2	51.8	NA	NA	NA
BE-513A	BE-513A-FY	Front Yard (FY)	1,685	93.4	27.5	14.7	13.1	148	231	20.8	15.1	No	NA	93.4	27.5	NA	NA	NA	148	231	NA	NA	NA
BE-513A	BE-513A-FG	Flower Garden (FG)	121	16.1	9.3	20.3	50.6	38.7	22.6	34.2	67.9	No	NA	16.1	9.3	NA	NA	NA	38.7	22.6	NA	NA	NA
BE-513A	BE-513A-DZ	Drip Zone (DZ)	220	19.1	20.2	32.7	40	50.1	40.8	61.9	54.7	No	NA	19.1	20.2	NA	NA	NA	50.1	40.8	NA	NA	NA
BE-513A	BE-513A-BY	Back Yard (BY)	2,718	28	39.9	52.8	37.8	75	106	251	55.5	No	NA	28	39.9	NA	NA	NA	75	106	NA	NA	NA
BE-513B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	15	No	No	NA	NA	60	No	No
BE-513B	BE-513B-VG	Vegetable Garden (VG)	68	8.6	6	11.7	48.7	26.9	15.4	33.6	96.4	No	NA	8.6	6	NA	NA	NA	26.9	15.4	NA	NA	NA
BE-513B	BE-513B-FY	Front Yard (FY)	3,171	15.6	20.6	42	146	71	70	54	52.3	No	NA	15.6	20.6	NA	NA	NA	71	70	NA	NA	NA
BE-513B	BE-513B-FG	Flower Garden (FG)	119	11.3	15.6	47.5	43	19	28.3	57	29.5	No	NA	11.3	15.6	NA	NA	NA	19	28.3	NA	NA	NA
BE-513B	BE-513B-ED	Earthen Drive (ED)	1,592	11.1	17.9	43.8	53.5	150	127	117	66.7	No	NA	11.1	17.9	NA	NA	NA	150	127	NA	NA	NA
BE-513B	BE-513B-DZ	Drip Zone (DZ)	220	22.9	16.8	29.6	32.2	53.8	34	61.4	66.8	No	NA	22.9	16.8	NA	NA	NA	53.8	34	NA	NA	NA
BE-513B	BE-513B-BY	Back Yard (BY)	406	14	19.6	30.1	17.4	54.6	80.1	85.1	24.4	No	NA	14	19.6	NA	NA	NA	54.6	80.1	NA	NA	NA
BE-514	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	31	No	No	NA	NA	179	No	No
BE-514	BE-514-FY	Front Yard (FY)	1,165	21.6	24.5	168	69.8	111	157	54.9	16.1	No	NA	21.6	24.5	NA	NA	NA	111	157	NA	NA	NA
BE-514	BE-514-FG	Flower Garden (FG)	52	21.8	69.1	98.1	53.4	318	174	37.1	17	No	NA	21.8	69.1	NA	NA	NA	318	174	NA	NA	NA
BE-514	BE-514-DZ	Drip Zone (DZ)	220	21.6	31.2	58.9	75.4	249	253	69.1	37.6	No	NA	21.6	31.2	NA	NA	NA	249	253	NA	NA	NA
BE-514	BE-514-BY	Back Yard (BY)	2,929	18.4	16.9	43.7	31.8	140	81.8	78.4	64.9	No	NA	18.4	16.9	NA	NA	NA	140	81.8	NA	NA	NA
BE-515	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	19	No	No	NA	NA	113	No	No
BE-515	BE-515-RG	Rock Garden (RG)	62	13	12.1	13.9	21	160	90.3	85.6	179	No	NA	13	12.1	NA	NA	NA	160	90.3	NA	NA	NA
BE-515	BE-515-FY	Front Yard (FY)	4,990	17.1	38.9	48.7	34.3	142	114	45.1	24.9	No	NA	17.1	38.9	NA	NA	NA	142	114	NA	NA	NA
BE-515	BE-515-DZ	Drip Zone (DZ)	220	12.2	14.7	16.3	22.2	76.6	117	122	128	No	NA	12.2	14.7	NA	NA	NA	76.6	117	NA	NA	NA
BE-516A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	21	No	No	NA	NA	39	No	No
BE-516A	BE-516A-DZ	Drip Zone (DZ)	220	14.1	15.2	11.7	10.4	77.5	18.4	15.5	13.3	No	NA	14.1	15.2	NA	NA	NA	77.5	18.4	NA	NA	NA
BE-516A	BE-516A-BA	Bare Area (BA)	651	19.1	28.5	35.5	52.8	692	91.7	64.3	137	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-516B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	21	No	No	NA	NA	59	No	No
BE-516B	BE-516B-RG	Rock Garden (RG)	133	17.6	18.9	26.1	27.7	49.3	50.9	53.8	50.2	No	NA	17.6	18.9	NA	NA	NA	49.3	50.9	NA	NA	NA
BE-516B	BE-516B-DZ	Drip Zone (DZ)	220	23.3	29	32.1	29.6	52.8	55.4	49.7	46.1	No	NA	23.3	29	NA	NA	NA	52.8	55.4	NA	NA	NA
BE-516B	BE-516B-BA	Bare Area (BA)	485	15.3	16.8	25	50	69.4	73.7	47.1	111	No	NA	15.3	16.8	NA	NA	NA	69.4	73.7	NA	NA	NA
BE-517	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	31	No	No	NA	NA	100	No	No
BE-517	BE-517-FY	Front Yard (FY)	1,895	14.3	15.1	20.5	27	161	107	149	201	No	NA	14.3	15.1	NA	NA	NA	161	107	NA	NA	NA
BE-517	BE-517-FG	Flower Garden (FG)	52	15.8	23.6	27.2	30.6	346	611	601	186	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-517	BE-517-ED	Earthen Drive (ED)	283	12.2	12.8	20.4	18.1	214	54.8	61.8	48.3	No	NA	12.2	12.8	NA	NA	NA	214	54.8	NA	NA	NA
BE-517	BE-517-DZ	Drip Zone (DZ)	291	17.7	21.1	25.3	22	403	616	417	80	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-517	BE-517-BY	Back Yard (BY)	3,552	17.4	95.8	67	27.4	137	213	155	60.5	No	NA	17.4	95.8	NA	NA	NA	137	213	NA	NA	NA
BE-518	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	16	No	No	NA	NA	62	No	No
BE-518	BE-518-VG	Vegetable Garden (VG)	84	6.1	9.8	5.4	18.9	17.4	32.5	34.3	98.4	No	NA	6.1	9.8	NA	NA	NA	17.4	32.5	NA	NA	NA
BE-518	BE-518-RG	Rock Garden (RG)	437	7.8	16.7	12.3	0.085	33.2	48.5	20.4	0.2	No	NA	7.8	16.7	NA	NA	NA	33.2	48.5	NA	NA	NA
BE-518	BE-518-PA	Play Area (PA)	292	10.2	12.4	14.1	25.6	30.2	164	105	77.9	No	NA	10.2	12.4	NA	NA	NA	30.2	164	NA	NA	NA
BE-518	BE-518-FG	Flower Garden (FG)	69	15.5	15.6	8.3	9.4	25.2	13.1	10.7	11.4	No	NA	15.5	15.6	NA	NA	NA	25.2	13.1	NA	NA	NA
BE-518	BE-518-ED	Earthen Drive (ED)	2,186	20.2	22.7	29.9	17.8	69.1	63.9	24.2	35.2	No	NA	20.2	22.7	NA	NA	NA	69.1	63.9	NA	NA	NA
BE-518	BE-518-DZ	Drip Zone (DZ)	220	17.4	12.3	15.8	14.3	59.4	41.5	82.7	45.7	No	NA	17.4	12.3	NA	NA	NA	59.4	41.5	NA	NA	NA
BE-518	BE-518-BY	Back Yard (BY)	3,025	14.5	18.2	16.7	20.8	72.8	62.9	60.3	47.5	No	NA	14.5	18.2	NA	NA	NA	72.8	62.9	NA	NA	NA
BE-518	BE-518-BA	Bare Area (BA)	520	15.4	28.7	22.6	11.6	107	115	16	13.5	No	NA	15.4	28.7	NA	NA	NA	107	115	NA	NA	NA
BE-519	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	23	No	No	NA	NA	166	No	No
BE-519	BE-519-FY	Front Yard (FY)	1,199	19	21.6	38.3	46.8	348	61.1	25.7	41.7	No	NA	19	21.6	NA	NA	NA	348	61.1	NA	NA	NA
BE-519	BE-519-ED	Earthen Drive (ED)	840	11.9	28.2	45.8	11.4	110	141	32.2	14.7	No	NA	11.9	28.2	NA	NA	NA	110	141	NA	NA	NA
BE-519	BE-519-DZ	Drip Zone (DZ)	220	19	25.6	37	35.8	167	203	98.8	69	No	NA	19	25.6	NA	NA	NA	167	203	NA	NA	NA
BE-519	BE-519-BY	Back Yard (BY)	3,936	20.5	30	33.6	41.6	130	212	286	153	No	NA	20.5	30	NA	NA	NA	130	212	NA	NA	NA
BE-520	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	21	No	No	NA	NA	96	No	No
BE-520	BE-520-RG	Rock Garden (RG)	2,322	15.8	30.2	18.3	30	55.3	98.6	51.4	286	No	NA	15.8	30.2	NA	NA	NA	55.3	98.6	NA	NA	NA
BE-520	BE-520-FY	Front Yard (FY)	763	19.2	28	15.5	13	108	81.9	39.4	23.5	No	NA	19.2	28	NA	NA	NA	108	81.9	NA	NA	NA
BE-520	BE-520-FG	Flower Garden (FG)	151	14.9	21.2	17.8	54.3	79.3	182	32.5	32.6	No	NA	14.9	21.2	NA	NA	NA	79.3	182	NA	NA	NA
BE-520	BE-520-ED	Earthen Drive (ED)	1,207	11.9	16.3	52.7	39.5	58.8	45.9	43.2	44.4	No	NA	11.9	16.3	NA	NA	NA	58.8	45.9	NA	NA	NA
BE-520	BE-520-BA	Bare Area (BA)	735	20.7	22.4	25.2	33.6	151	88.6	144	83.9	No	NA	20.7	22.4	NA	NA	NA	151	88.6	NA	NA	NA
BE-521	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	27	No	No	NA	NA	152	No	No
BE-521	BE-521-FY	Front Yard (FY)	1,674	18.1	52.2	1.1	52.9	407	123	0.21	110	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-521	BE-521-FG	Flower Garden (FG)	38	26.9	34.5	42.6	41.6	376	196	135	271	No	NA	26.9	34.5	NA	NA	NA	376	196	NA	NA	NA
BE-521	BE-521-ED	Earthen Drive (ED)	557	11.8	14.8	24.3	50	173	101	126	31	No	NA	11.8	14.8	NA	NA	NA	173	101	NA	NA	NA
BE-521	BE-521-DZ	Drip Zone (DZ)	220	24.2	32.2	35.8	51.9	239	188	97.3	123	No	NA	24.2	32.2	NA	NA	NA	239	188	NA	NA	NA
BE-521	BE-521-BY	Back Yard (BY)	6,369	27.7	35.9	44.6	37.5	151	126	72.9	31	No	NA	27.7	35.9	NA	NA	NA	151	126	NA	NA	NA
BE-521	BE-521-RG	Rock Garden (RG) [F]	30																				
BE-522	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	17	No	No	NA	NA	103	No	No
BE-522	BE-522-VG	Vegetable Garden (VG)	27	16.1	25.3	13.9	16.8	101	114	47.9	86.2	No	NA	16.1	25.3	NA	NA	NA	101	114	NA	NA	NA
BE-522	BE-522-FY	Front Yard (FY)	2,478	16.1	15.5	35.5	44.1	89.5	88.6	64.3	25.6	No	NA	16.1	15.5	NA	NA	NA	89.5	88.6	NA	NA	NA
BE-522	BE-522-FG	Flower Garden (FG)	41	10.6	13.3	20.5	34.2	61.7	96.2	162	186	No	NA	10.6	13.3	NA	NA	NA	61.7	96.2	NA	NA	NA
BE-522	BE-522-ED	Earthen Drive (ED)	258	12.3	16.5	27.1	59.1	39.6	80	83.9	69.5	No	NA	12.3	16.5	NA	NA	NA	39.6	80	NA	NA	NA
BE-522	BE-522-DZ	Drip Zone (DZ)	220	11.5	9	15.5	26.4	102	59.5	111	112	No	NA	11.5	9	NA	NA	NA	102	59.5	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-522	BE-522-BY	Back Yard (BY)	1,122	21.2	26.8	44.7	42.2	178	205	204	170	No	NA	21.2	26.8	NA	NA	NA	178	205	NA	NA	NA
BE-523	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	29	No	No	NA	NA	121	No	No
BE-523	BE-523-RG	Rock Garden (RG)	435	24.9	81.9	40.7	114	164	610	53.8	33.7	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-523	BE-523-FY	Front Yard (FY)	1,292	20.3	19.3	39	39.7	167	81.4	105	51.9	No	NA	20.3	19.3	NA	NA	NA	167	81.4	NA	NA	NA
BE-523	BE-523-ED	Earthen Drive (ED)	554	10.3	12.8	23.3	100	41.7	114	59.2	95.9	No	NA	10.3	12.8	NA	NA	NA	41.7	114	NA	NA	NA
BE-523	BE-523-DZ	Drip Zone (DZ)	220	43.9	63	43.9	39.7	174	201	239	152	No	NA	43.9	63	NA	NA	NA	174	201	NA	NA	NA
BE-523	BE-523-BY	Back Yard (BY)	759	34.6	27.4	35.8	59.7	202	159	184	169	No	NA	34.6	27.4	NA	NA	NA	202	159	NA	NA	NA
BE-524	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	31	No	No	NA	NA	164	No	No
BE-524	BE-524-RG	Rock Garden (RG)	834	21	36.2	49.9	47.2	111	179	232	70.2	No	NA	21	36.2	NA	NA	NA	111	179	NA	NA	NA
BE-524	BE-524-FY	Front Yard (FY)	169	24.7	35.7	38.9	73	128	212	148	101	No	NA	24.7	35.7	NA	NA	NA	128	212	NA	NA	NA
BE-524	BE-524-ED	Earthen Drive (ED)	1,954	12.5	26.6	47.3	24.1	80.2	118	56.2	16.7	No	NA	12.5	26.6	NA	NA	NA	80.2	118	NA	NA	NA
BE-524	BE-524-DZ	Drip Zone (DZ)	220	20.8	27.2	44.8	56.3	153	172	251	330	No	NA	20.8	27.2	NA	NA	NA	153	172	NA	NA	NA
BE-524	BE-524-BY	Back Yard (BY)	2,621	30.8	52.2	44.3	84.2	180	227	138	176	No	NA	30.8	52.2	NA	NA	NA	180	227	NA	NA	NA
BE-525	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	31	No	No	NA	NA	169	No	No
BE-525	BE-525-FY	Front Yard (FY)	1,975	17.8	33.9	40.8	46.8	143	122	101	81.4	No	NA	17.8	33.9	NA	NA	NA	143	122	NA	NA	NA
BE-525	BE-525-ED	Earthen Drive (ED)	982	46.8	31.5	39	36.5	67.9	126	74.6	73.1	No	NA	46.8	31.5	NA	NA	NA	67.9	126	NA	NA	NA
BE-525	BE-525-DZ	Drip Zone (DZ)	220	25.2	37.8	59.9	15	189	291	258	89	No	NA	25.2	37.8	NA	NA	NA	189	291	NA	NA	NA
BE-525	BE-525-BY	Back Yard (BY)	1,282	19.1	31.2	47	51.7	218	167	134	52.2	No	NA	19.1	31.2	NA	NA	NA	218	167	NA	NA	NA
BE-526	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	11	No	No	NA	NA	48	No	No
BE-526	BE-526-RG	Rock Garden (RG)	1,011	14.3	16.3	21.5	17.8	19.7	26.7	80.2	38.8	No	NA	14.3	16.3	NA	NA	NA	19.7	26.7	NA	NA	NA
BE-526	BE-526-FY	Front Yard (FY)	942	11.5	12.7	14.2	28.1	48.9	102	238	70.2	No	NA	11.5	12.7	NA	NA	NA	48.9	102	NA	NA	NA
BE-526	BE-526-FG	Flower Garden (FG)	55	7.8	8	10.5	16.9	46	26.6	85.3	276	No	NA	7.8	8	NA	NA	NA	46	26.6	NA	NA	NA
BE-526	BE-526-DZ	Drip Zone (DZ)	220	9.2	10.9	10	14.2	61.4	86.5	149	160	No	NA	9.2	10.9	NA	NA	NA	61.4	86.5	NA	NA	NA
BE-526	BE-526-BY	Back Yard (BY)	903	8.6	11.1	11.5	24	27.7	20.3	45.6	55.2	No	NA	8.6	11.1	NA	NA	NA	27.7	20.3	NA	NA	NA
BE-527A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	19	No	No	NA	NA	74	No	No
BE-527A	BE-527A-FY	Front Yard (FY)	1,661	15.5	23.5	27.5	27.7	92.2	73.3	149	230	No	NA	15.5	23.5	NA	NA	NA	92.2	73.3	NA	NA	NA
BE-527A	BE-527A-FG	Flower Garden (FG)	95	16.3	14.1	15.3	12.9	47.8	41.8	38.9	34.7	No	NA	16.3	14.1	NA	NA	NA	47.8	41.8	NA	NA	NA
BE-527A	BE-527A-DZ	Drip Zone (DZ)	220	18.6	21.7	18.6	13	75.6	107	89.3	32.6	No	NA	18.6	21.7	NA	NA	NA	75.6	107	NA	NA	NA
BE-527A	BE-527A-BY	Back Yard (BY)	2,274	20.8	20	22.1	34.3	46.2	92.4	93.3	88.2	No	NA	20.8	20	NA	NA	NA	46.2	92.4	NA	NA	NA
BE-527B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	30	No	No	NA	NA	145	No	No
BE-527B	BE-527B-FY	Front Yard (FY)	2,787	24.4	30.9	27.6	35.2	190	136	79.1	93.6	No	NA	24.4	30.9	NA	NA	NA	190	136	NA	NA	NA
BE-527B	BE-527B-DZ	Drip Zone (DZ)	220	20.2	33.2	33.4	41.7	40.3	118	90.2	110	No	NA	20.2	33.2	NA	NA	NA	40.3	118	NA	NA	NA
BE-527B	BE-527B-BY	Back Yard (BY)	1,323	29.3	33.5	37.1	48	116	226	254	248	No	NA	29.3	33.5	NA	NA	NA	116	226	NA	NA	NA
BE-528	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	27	No	No	NA	NA	88	No	No
BE-528	BE-528-FY	Front Yard (FY)	599	19.7	31.8	87.6	80.3	175	163	276	88	No	NA	19.7	31.8	NA	NA	NA	175	163	NA	NA	NA
BE-528	BE-528-DZ	Drip Zone (DZ)	516	16.4	31.4	48.2	45.3	236	434	235	160	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-528	BE-528-BY	Back Yard (BY)	5,061	15.8	25.9	32.4	33.8	71.5	125	86.3	47.5	No	NA	15.8	25.9	NA	NA	NA	71.5	125	NA	NA	NA
BE-528	BE-528-BA	Bare Area (BA)	237	11	22.8	133	89.8	118	481	1530	174	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-529	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	22	No	No	NA	NA	81	No	No
BE-529	BE-529-VG	Vegetable Garden (VG)	7	34.7	22.8	35.1	35.1	76.3	86.8	169	117	No	NA	34.7	22.8	NA	NA	NA	76.3	86.8	NA	NA	NA
BE-529	BE-529-RG	Rock Garden (RG)	948	21.1	16.7	27.7	47.1	54.7	32.2	96.3	114	No	NA	21.1	16.7	NA	NA	NA	54.7	32.2	NA	NA	NA
BE-529	BE-529-FY	Front Yard (FY)	474	25.4	28.3	27.8	53.9	153	177	162	140	No	NA	25.4	28.3	NA	NA	NA	153	177	NA	NA	NA
BE-529	BE-529-FG	Flower Garden (FG)	199	25.5	31.5	15	6.7	55.4	62.5	28.3	8.4	No	NA	25.5	31.5	NA	NA	NA	55.4	62.5	NA	NA	NA
BE-529	BE-529-ED	Earthen Drive (ED)	543	11.1	14.4	71.1	86.8	50.6	70.6	105	25.1	No	NA	11.1	14.4	NA	NA	NA	50.6	70.6	NA	NA	NA
BE-529	BE-529-DZ	Drip Zone (DZ)	220	18.7	23.4	29.5	29.5	86	108	103	55.6	No	NA	18.7	23.4	NA	NA	NA	86	108	NA	NA	NA
BE-529	BE-529-BY	Back Yard (BY)	1,811	15.9	16	16	14.6	49.4	47.9	61.3	77.9	No	NA	15.9	16	NA	NA	NA	49.4	47.9	NA	NA	NA
BE-530	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	16	No	No	NA	NA	48	No	No
BE-530	BE-530-VG	Vegetable Garden (VG)	601	22	25.3	38.3	51.5	36.1	34.2	39.3	51.5	No	NA	22	25.3	NA	NA	NA	36.1	34.2	NA	NA	NA
BE-530	BE-530-RG	Rock Garden (RG)	1,892	9.8	21.6	25.6	38.3	48.3	86	61.9	64.2	No	NA	9.8	21.6	NA	NA	NA	48.3	86	NA	NA	NA
BE-530	BE-530-ED	Earthen Drive (ED)	335	9.3	15.2	42.2	23.9	85.8	130	75.1	20.2	No	NA	9.3	15.2	NA	NA	NA	85.8	130	NA	NA	NA
BE-530	BE-530-DZ	Drip Zone (DZ)	220	4.8	5.2	7.4	17.3	14.2	9.9	13.7	63.7	No	NA	4.8	5.2	NA	NA	NA	14.2	9.9	NA	NA	NA
BE-530	BE-530-BY	Back Yard (BY)	2,857	21.5	24.7	45.2	57	38.7	29.7	39.6	40.9	No	NA	21.5	24.7	NA	NA	NA	38.7	29.7	NA	NA	NA
BE-530	BE-530-BA	Bare Area (BA)	231	15.6	14.2	22	18.3	31.9	19.5	79.5	71.8	No	NA	15.6	14.2	NA	NA	NA	31.9	19.5	NA	NA	NA
BE-531	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	36	No	No	NA	NA	74	No	No
BE-531	BE-531-FY	Front Yard (FY)	3,596	15.9	35.2	42.4	25.6	66.9	95.6	227	26.2	No	NA	15.9	35.2	NA	NA	NA	66.9	95.6	NA	NA	NA
BE-531	BE-531-DZ	Drip Zone (DZ)	220	34.6	48.1	15.7	9.3	134	25.3	13.6	12.3	No	NA	34.6	48.1	NA	NA	NA	134	25.3	NA	NA	NA
BE-532	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	24	No	No	NA	NA	93	No	No
BE-532	BE-532-VG	Vegetable Garden (VG)	1,553	25	27.8	31.7	14.4	103	83.7	15.4	12.9	No	NA	25	27.8	NA	NA	NA	103	83.7	NA	NA	NA
BE-532	BE-532-FY	Front Yard (FY)	2,699	17.4	20.4	28.9	40.5	117	56.8	69.9	67	No	NA	17.4	20.4	NA	NA	NA	117	56.8	NA	NA	NA
BE-532	BE-532-FG	Flower Garden (FG) [A]	66	12.7	13.3			66.3	63			No	NA	12.7	13.3	NA	NA	NA	66.3	63	NA	NA	NA
BE-532	BE-532-ED	Earthen Drive (ED)	607	11.1	37.2	41.5	18	71.8	88.7	69.9	11.6	No	NA	11.1	37.2	NA	NA	NA	71.8	88.7	NA	NA	NA
BE-532	BE-532-DZ	Drip Zone (DZ)	220	11.2	14.6	29.7	41	72.6	187	61.8	109	No	NA	11.2	14.6	NA	NA	NA	72.6	187	NA	NA	NA
BE-532	BE-532-BY	Back Yard (BY)	2,312	29.8	45.3	44.7	50.6	98.8	92	27	18.2	No	NA	29.8	45.3	NA	NA	NA	98.8	92	NA	NA	NA
BE-533	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	22	No	No	NA	NA	118	No	No
BE-533	BE-533-FY	Front Yard (FY)	1,319	27.6	50.3	76.1	47.5	122	258	130	30.2	No	NA	27.6	50.3	NA	NA	NA	122	258	NA	NA	NA
BE-533	BE-533-FG	Flower Garden (FG)	39	14.8	14.4	14.8	38.2	58.6	73.4	30.6	99.7	No	NA	14.8	14.4	NA	NA	NA	58.6	73.4	NA	NA	NA
BE-533	BE-533-ED	Earthen Drive (ED)	398	5.1	18	44.4	26.2	20	31.5	28.3	9.1	No	NA	5.1	18	NA	NA	NA	20	31.5	NA	NA	NA
BE-533	BE-533-DZ	Drip Zone (DZ)	220	18.8	40.4	52.2	46.3	145	275	106	27.6	No	NA	18.8	40.4	NA	NA	NA	145	275	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-533	BE-533-BY	Back Yard (BY)	2,611	6.2	7.2	14.7	29.6	39.5	52	39.3	37	No	NA	6.2	7.2	NA	NA	NA	39.5	52	NA	NA	NA
BE-534	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	44	No	No	NA	NA	92	No	No
BE-534	BE-534-RG	Rock Garden (RG)	70	45.3	104	37.8	31.9	50.7	59.4	17.2	12.9	No	NA	45.3	104	NA	NA	NA	50.7	59.4	NA	NA	NA
BE-534	BE-534-ED	Earthen Drive (ED)	2,887	14.3	65.2	62.2	57.7	81.8	104	605	188	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-534	BE-534-DZ	Drip Zone (DZ)	220	32.3	45.9	39.9	35.4	134	124	53.9	31.8	No	NA	32.3	45.9	NA	NA	NA	134	124	NA	NA	NA
BE-534	BE-534-BY	Back Yard (BY)	2,019	22.2	42.6	55	32.4	53.1	108	100	35.3	No	NA	22.2	42.6	NA	NA	NA	53.1	108	NA	NA	NA
BE-534	BE-534-BA	Bare Area (BA)	806	27	34.7	68.6	49.4	86.4	180	139	109	No	NA	27	34.7	NA	NA	NA	86.4	180	NA	NA	NA
BE-535	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	NA	22	No	No	NA	NA	105	No	No
BE-535	BE-535-FY	Front Yard (FY)	890	15.8	29.1	52.8	64.5	78.2	125	100	48.1	No	NA	15.8	29.1	NA	NA	NA	78.2	125	NA	NA	NA
BE-535	BE-535-FG	Flower Garden (FG)	58	9.6	12.2	18.7	16	32.5	39.3	38.9	41.6	No	NA	9.6	12.2	NA	NA	NA	32.5	39.3	NA	NA	NA
BE-535	BE-535-ED	Earthen Drive (ED)	2,509	21.2	40.9	56.9	81.3	66.6	105	79.1	66.1	No	NA	21.2	40.9	NA	NA	NA	66.6	105	NA	NA	NA
BE-535	BE-535-DZ	Drip Zone (DZ)	220	12.6	14.2	20.9	36.2	121	63	93.2	122	No	NA	12.6	14.2	NA	NA	NA	121	63	NA	NA	NA
BE-535	BE-535-BY	Back Yard (BY)	7,084	19.6	27	38.2	60.9	120	113	116	71.8	No	NA	19.6	27	NA	NA	NA	120	113	NA	NA	NA
BE-535	BE-535-BA	Bare Area (BA)	403	21.4	25.1	39.7	62.8	269	155	106	139	No	NA	21.4	25.1	NA	NA	NA	269	155	NA	NA	NA
BE-536	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	28	No	No	NA	NA	114	No	No
BE-536	BE-536-RG	Rock Garden (RG)	159	52.5	61.9	73.3	74.5	192	145	25.8	65.2	No	NA	52.5	61.9	NA	NA	NA	192	145	NA	NA	NA
BE-536	BE-536-FY	Front Yard (FY)	1,351	12.1	15.8	30.4	51.1	163	111	114	44.9	No	NA	12.1	15.8	NA	NA	NA	163	111	NA	NA	NA
BE-536	BE-536-ED	Earthen Drive (ED)	415	13.3	13.6	28.4	99.3	43	27.4	245	45.4	No	NA	13.3	13.6	NA	NA	NA	43	27.4	NA	NA	NA
BE-536	BE-536-DZ	Drip Zone (DZ)	220	7.5	17.6	33.6	35.5	44.8	168	148	36.4	No	NA	7.5	17.6	NA	NA	NA	44.8	168	NA	NA	NA
BE-536	BE-536-BY	Back Yard (BY)	2,914	30.5	40.4	58.9	45.5	139	114	92.9	32.2	No	NA	30.5	40.4	NA	NA	NA	139	114	NA	NA	NA
BE-537	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	NA	17	No	No	NA	NA	64	No	No
BE-537	BE-537-PA	Play Area (PA)	77	20.7	20.2	17.8	13.3	72.3	60.1	42.7	17.2	No	NA	20.7	20.2	NA	NA	NA	72.3	60.1	NA	NA	NA
BE-537	BE-537-FY	Front Yard (FY)	2,157	22.3	24	19	18.7	110	98.4	52.5	36.1	No	NA	22.3	24	NA	NA	NA	110	98.4	NA	NA	NA
BE-537	BE-537-ED	Earthen Drive (ED)	2,013	6.2	8.5	11.5	11.2	20.2	28	42.8	28	No	NA	6.2	8.5	NA	NA	NA	20.2	28	NA	NA	NA
BE-538	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	17	No	No	NA	NA	43	No	No
BE-538	BE-538-PA	Play Area (PA)	264	15.6	8.7	17.8	27.6	67.8	26.1	96	34.9	No	NA	15.6	8.7	NA	NA	NA	67.8	26.1	NA	NA	NA
BE-538	BE-538-FY	Front Yard (FY)	1,071	19.9	16.4	20	25.2	63.6	27.2	26.5	51.2	No	NA	19.9	16.4	NA	NA	NA	63.6	27.2	NA	NA	NA
BE-538	BE-538-ED	Earthen Drive (ED)	1,290	21	49.3	37.1	21.1	293	430	85.6	20.9	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-538	BE-538-DZ	Drip Zone (DZ)	220	17.3	17.4	24.3	30.6	76.2	43.2	34.7	45.8	No	NA	17.3	17.4	NA	NA	NA	76.2	43.2	NA	NA	NA
BE-538	BE-538-BY	Back Yard (BY)	3,263	15.3	11.6	10.2	16.6	56.1	35.7	17.7	30.3	No	NA	15.3	11.6	NA	NA	NA	56.1	35.7	NA	NA	NA
BE-539	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	18	No	No	NA	NA	83	No	No
BE-539	BE-539-VG	Vegetable Garden (VG)	19	17.6	18.6	35.5	23	80.1	86.2	70.1	21.2	No	NA	17.6	18.6	NA	NA	NA	80.1	86.2	NA	NA	NA
BE-539	BE-539-RG	Rock Garden (RG)	146	18.5	18.1	24.6	58.2	63.7	81.6	69.4	96.4	No	NA	18.5	18.1	NA	NA	NA	63.7	81.6	NA	NA	NA
BE-539	BE-539-FY	Front Yard (FY)	1,070	15.5	9.8	8.8	22.5	70.2	39.9	16.3	46.4	No	NA	15.5	9.8	NA	NA	NA	70.2	39.9	NA	NA	NA
BE-539	BE-539-FG	Flower Garden (FG)	26	15.8	15.1	13.3	14.7	126	133	49.8	28.2	No	NA	15.8	15.1	NA	NA	NA	126	133	NA	NA	NA
BE-539	BE-539-ED	Earthen Drive (ED)	427	12	24.9	9.4	19.5	51	77.6	25.9	87.5	No	NA	12	24.9	NA	NA	NA	51	77.6	NA	NA	NA
BE-539	BE-539-DZ	Drip Zone (DZ)	220	22	23.6	32.3	57.2	78.5	90.9	84.2	150	No	NA	22	23.6	NA	NA	NA	78.5	90.9	NA	NA	NA
BE-540	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	19	No	No	NA	NA	57	No	No
BE-540	BE-540-FY	Front Yard (FY)	11,292	12.1	34.7	31.6	42.5	66.5	102	57	146	No	NA	12.1	34.7	NA	NA	NA	66.5	102	NA	NA	NA
BE-540	BE-540-ED	Earthen Drive (ED)	27,390	17	8.2	10	5.5	65.4	13.7	9.6	6.7	No	NA	17	8.2	NA	NA	NA	65.4	13.7	NA	NA	NA
BE-540	BE-540-DZ	Drip Zone (DZ)	1,567	13.5	44.2	50.3	62.9	546	173	43.9	44.1	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-540	BE-540-BY	Back Yard (BY)	4,710	11.6	11.8	8.1	6.4	137	31.8	10.6	8.8	No	NA	11.6	11.8	NA	NA	NA	137	31.8	NA	NA	NA
BE-542	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	NA	18	No	No	NA	NA	45	No	No
BE-542	BE-542-FY	Front Yard (FY)	1,948	14.8	21.5	38.3	60.8	51.4	43.8	78.5	33.5	No	NA	14.8	21.5	NA	NA	NA	51.4	43.8	NA	NA	NA
BE-542	BE-542-ED	Earthen Drive (ED)	7,824	11	21.1	15.8	43.3	59.8	34.3	22.6	46	No	NA	11	21.1	NA	NA	NA	59.8	34.3	NA	NA	NA
BE-542A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	23	No	No	NA	NA	29	No	No
BE-542A	BE-542A-FY	Front Yard (FY)	798	27.6	29.3	23.8	11.1	49.5	28	27.2	13.2	No	NA	27.6	29.3	NA	NA	NA	49.5	28	NA	NA	NA
BE-542A	BE-542A-FG	Flower Garden (FG)	153	10.6	13.3	14.6	15.1	16.4	16.4	19.9	23.3	No	NA	10.6	13.3	NA	NA	NA	16.4	16.4	NA	NA	NA
BE-542A	BE-542A-ED	Earthen Drive (ED)	701	9.1	16.7	32.8	34.8	13.3	20.3	38.2	29.8	No	NA	9.1	16.7	NA	NA	NA	13.3	20.3	NA	NA	NA
BE-542A	BE-542A-DZ	Drip Zone (DZ)	220	10.8	14.7	27.4	27.1	18.3	17.5	32.7	21	No	NA	10.8	14.7	NA	NA	NA	18.3	17.5	NA	NA	NA
BE-542A	BE-542A-BY	Back Yard (BY)	3,042	20.9	42.1	28.1	13	37.1	43.5	25.4	13.8	No	NA	20.9	42.1	NA	NA	NA	37.1	43.5	NA	NA	NA
BE-542A	BE-542A-BA	Bare Area (BA)	124	38.4	31.8	32.9	41	53.2	45.6	51.9	47	No	NA	38.4	31.8	NA	NA	NA	53.2	45.6	NA	NA	NA
BE-542B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	34	No	No	NA	NA	29	No	No
BE-542B	BE-542B-FY	Front Yard (FY)	348	46.6	99.6	13.3	7.6	48	17.8	11.8	9.9	No	NA	46.6	99.6	NA	NA	NA	48	17.8	NA	NA	NA
BE-542B	BE-542B-FG	Flower Garden (FG)	71	12.2	9.7	10.8	10.3	20.4	16.9	16.8	16.4	No	NA	12.2	9.7	NA	NA	NA	20.4	16.9	NA	NA	NA
BE-542B	BE-542B-ED	Earthen Drive (ED)	1,189	11.8	31.3	12.3	8.6	22.8	37.2	14.6	12	No	NA	11.8	31.3	NA	NA	NA	22.8	37.2	NA	NA	NA
BE-542B	BE-542B-DZ	Drip Zone (DZ)	220	12.9	23.4	21.8	9.7	26.8	26.3	20.3	12	No	NA	12.9	23.4	NA	NA	NA	26.8	26.3	NA	NA	NA
BE-542B	BE-542B-BY	Back Yard (BY)	4,542	21.5	42	17.4	9.5	31.7	44.2	20.9	13.3	No	NA	21.5	42	NA	NA	NA	31.7	44.2	NA	NA	NA
BE-542C	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	28	No	No	NA	NA	37	No	No
BE-542C	BE-542C-FY	Front Yard (FY)	980	35.6	24.1	11.4	7.6	884	238	131	26.5	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-542C	BE-542C-ED	Earthen Drive (ED)	1,152	10.8	45.6	9.1	15.4	28.9	37.5	11.8	16.4	No	NA	10.8	45.6	NA	NA	NA	28.9	37.5	NA	NA	NA
BE-542C	BE-542C-DZ	Drip Zone (DZ)	220	35.6	26.9	15.5	9.6	37.8	23.9	15.7	11.6	No	NA	35.6	26.9	NA	NA	NA	37.8	23.9	NA	NA	NA
BE-542C	BE-542C-BY	Back Yard (BY)	4,206	22.5	37.6	12.5	8.2	37.2	50.6	15.2	11.4	No	NA	22.5	37.6	NA	NA	NA	37.2	50.6	NA	NA	NA
BE-542C	BE-542C-BA	Bare Area (BA)	234	6.2	20.6	22.4	18.8	10	46.5	60.6	82.2	No	NA	6.2	20.6	NA	NA	NA	10	46.5	NA	NA	NA
BE-542D	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	31	No	No	NA	NA	53	No	No
BE-542D	BE-542D-FY	Front Yard (FY)	393	9.8	33.5	13.6	8.3	45.6	44.4	16.5	12.5	No	NA	9.8	33.5	NA	NA	NA	45.6	44.4	NA	NA	NA
BE-542D	BE-542D-ED	Earthen Drive (ED)	1,372	6.8	11.7	22.2	11.7	29	29.4	66.8	16.5	No	NA	6.8	11.7	NA	NA	NA	29	29.4	NA	NA	NA
BE-542D	BE-542D-DZ	Drip Zone (DZ)	220	19.9	56.5	30	20.8	46.8	87.7	23.9	12.9	No	NA	19.9	56.5	NA	NA	NA	46.8	87.7	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-542D	BE-542D-BY	Back Yard (BY)	4,005	10.5	55.2	17.6	10.3	24.8	70.7	16.2	12.1	No	NA	10.5	55.2	NA	NA	NA	24.8	70.7	NA	NA	NA
BE-542D	BE-542D-BA	Bare Area (BA)	202	24.1	37.7	57.3	71.5	52.8	63.6	61.3	15.4	No	NA	24.1	37.7	NA	NA	NA	52.8	63.6	NA	NA	NA
BE-542E	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	18	No	No	NA	NA	31	No	No
BE-542E	BE-542E-FG	Flower Garden (FG)	33	5.9	16.7	30.7	19.4	15.3	33.7	51.3	21.1	No	NA	5.9	16.7	NA	NA	NA	15.3	33.7	NA	NA	NA
BE-542E	BE-542E-ED	Earthen Drive (ED)	1,232	7.3	8.2	26.6	16	31	16.8	40.3	17.7	No	NA	7.3	8.2	NA	NA	NA	31	16.8	NA	NA	NA
BE-542E	BE-542E-DZ	Drip Zone (DZ)	220	13.7	22.1	10.9	11.4	26.3	27.7	13	12.7	No	NA	13.7	22.1	NA	NA	NA	26.3	27.7	NA	NA	NA
BE-542E	BE-542E-BY	Back Yard (BY)	1,295	18.1	35.7	51.1	12.3	34.9	55.6	44	11.2	No	NA	18.1	35.7	NA	NA	NA	34.9	55.6	NA	NA	NA
BE-542E	BE-542E-BA	Bare Area (BA)	262	9.8	22	34.3	10.7	18.7	35.2	29	14.5	No	NA	9.8	22	NA	NA	NA	18.7	35.2	NA	NA	NA
BE-542F	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	23	No	No	NA	NA	51	No	No
BE-542F	BE-542F-PA	Play Area (PA)	15	19.8	34	47.9	48.8	43.4	70.7	82	70.2	No	NA	19.8	34	NA	NA	NA	43.4	70.7	NA	NA	NA
BE-542F	BE-542F-FY	Front Yard (FY)	673	22.4	36.3	37.5	45.7	38.5	62	91.1	59.2	No	NA	22.4	36.3	NA	NA	NA	38.5	62	NA	NA	NA
BE-542F	BE-542F-ED	Earthen Drive (ED)	785	9.2	27.2	51	39.7	30.7	100	53.6	23.1	No	NA	9.2	27.2	NA	NA	NA	30.7	100	NA	NA	NA
BE-542F	BE-542F-DZ	Drip Zone (DZ)	220	14.3	18.6	12.3	15.4	28.1	27	14	204	No	NA	14.3	18.6	NA	NA	NA	28.1	27	NA	NA	NA
BE-542F	BE-542F-BY	Back Yard (BY)	729	14.9	18.8	8.1	8.2	29.3	37.8	11.5	11.7	No	NA	14.9	18.8	NA	NA	NA	29.3	37.8	NA	NA	NA
BE-542G	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	36	No	No	NA	NA	68	No	No
BE-542G	BE-542G-FY	Front Yard (FY)	155	39	49.5	78.4	15.2	137	153	50.7	17.3	No	NA	39	49.5	NA	NA	NA	137	153	NA	NA	NA
BE-542G	BE-542G-ED	Earthen Drive (ED)	2,497	19.1	16.2	34.5	20.6	50.1	32.3	31.5	42.1	No	NA	19.1	16.2	NA	NA	NA	50.1	32.3	NA	NA	NA
BE-542G	BE-542G-DZ	Drip Zone (DZ)	220	23.5	45.7	24.6	30.3	61.7	42.8	22.1	33.2	No	NA	23.5	45.7	NA	NA	NA	61.7	42.8	NA	NA	NA
BE-542G	BE-542G-BY	Back Yard (BY)	1,335	24.8	51.1	77.3	71.7	52	66.3	81.9	53.4	No	NA	24.8	51.1	NA	NA	NA	52	66.3	NA	NA	NA
BE-542G	BE-542G-BA	Bare Area (BA)	375	25.1	41.7	43	22.7	57.2	35.3	17.3	16.8	No	NA	25.1	41.7	NA	NA	NA	57.2	35.3	NA	NA	NA
BE-542H	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	34	No	No	NA	NA	55	No	No
BE-542H	BE-542H-FY	Front Yard (FY)	2,201	26.4	64.3	57.4	13.1	48.4	70.5	26.7	13.2	No	NA	26.4	64.3	NA	NA	NA	48.4	70.5	NA	NA	NA
BE-542H	BE-542H-ED	Earthen Drive (ED)	3,156	20	28.7	60.8	29.4	53.2	89.3	45.2	17	No	NA	20	28.7	NA	NA	NA	53.2	89.3	NA	NA	NA
BE-542H	BE-542H-DZ	Drip Zone (DZ)	220	24.6	31.9	22.7	13.9	52.6	43.6	33.3	17.9	No	NA	24.6	31.9	NA	NA	NA	52.6	43.6	NA	NA	NA
BE-542H	BE-542H-BY	Back Yard (BY)	573	24.2	33.9	16.9	8.7	49.6	25.7	15.2	10.6	No	NA	24.2	33.9	NA	NA	NA	49.6	25.7	NA	NA	NA
BE-542I	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	31	No	No	NA	NA	66	No	No
BE-542I	BE-542I-FY	Front Yard (FY)	138	15.9	32	58.1	28.1	50.4	66	14.9	14.4	No	NA	15.9	32	NA	NA	NA	50.4	66	NA	NA	NA
BE-542I	BE-542I-ED	Earthen Drive (ED)	370	14.7	25.9	119	33	60.7	84.8	48.7	22.2	No	NA	14.7	25.9	NA	NA	NA	60.7	84.8	NA	NA	NA
BE-542I	BE-542I-DZ	Drip Zone (DZ)	220	18.2	28.8	51.2	12.5	40.8	54.2	30	13.5	No	NA	18.2	28.8	NA	NA	NA	40.8	54.2	NA	NA	NA
BE-542I	BE-542I-BY	Back Yard (BY)	745	18.9	63.1	70.7	14.5	41	96.1	15.9	11.2	No	NA	18.9	63.1	NA	NA	NA	41	96.1	NA	NA	NA
BE-542J	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	33	No	No	NA	NA	55	No	No
BE-542J	BE-542J-FY	Front Yard (FY)	499	21.5	45.4	48.8	49.1	30.3	28.9	25.8	19.9	No	NA	21.5	45.4	NA	NA	NA	30.3	28.9	NA	NA	NA
BE-542J	BE-542J-FG	Flower Garden (FG)	80	25.3	32.1	62.2	63	49.6	67.9	55.3	33.6	No	NA	25.3	32.1	NA	NA	NA	49.6	67.9	NA	NA	NA
BE-542J	BE-542J-ED	Earthen Drive (ED)	2,057	12.4	49.4	118	9.9	40.5	92.8	44.7	10.2	No	NA	12.4	49.4	NA	NA	NA	40.5	92.8	NA	NA	NA
BE-542J	BE-542J-DZ	Drip Zone (DZ)	220	18.9	22	76.2	39.4	58.2	46.9	32.4	16.5	No	NA	18.9	22	NA	NA	NA	58.2	46.9	NA	NA	NA
BE-542J	BE-542J-BY	Back Yard (BY)	1,429	26	45	69.4	27.6	56.9	57.7	23.6	13	No	NA	26	45	NA	NA	NA	56.9	57.7	NA	NA	NA
BE-542K	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	21	No	No	NA	NA	44	No	No
BE-542K	BE-542K-RG	Rock Garden (RG)	41	11.7	26.8	12.6	8.4	39.7	84.6	19	12.1	No	NA	11.7	26.8	NA	NA	NA	39.7	84.6	NA	NA	NA
BE-542K	BE-542K-FY	Front Yard (FY)	1,939	22	21.9	13.7	15.1	59.1	28.9	14	14.7	No	NA	22	21.9	NA	NA	NA	59.1	28.9	NA	NA	NA
BE-542K	BE-542K-ED	Earthen Drive (ED)	975	7.3	7.5	56.9	9.6	32	13.1	33.7	13.3	No	NA	7.3	7.5	NA	NA	NA	32	13.1	NA	NA	NA
BE-542K	BE-542K-DZ	Drip Zone (DZ)	220	18.2	22.4	14	19.6	40.6	51.3	31.1	23.4	No	NA	18.2	22.4	NA	NA	NA	40.6	51.3	NA	NA	NA
BE-542K	BE-542K-BY	Back Yard (BY)	616	35.2	35.3	15.5	9.1	78.7	27.7	17.7	11.2	No	NA	35.2	35.3	NA	NA	NA	78.7	27.7	NA	NA	NA
BE-542L	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	58	Yes	Yes	NA	NA	68	No	No
BE-542L	BE-542L-ED	Earthen Drive (ED)	3,215	45.9	83.8	29.3	13.1	69.6	25.9	17.1	12.5	No	NA	45.9	83.8	NA	NA	NA	69.6	25.9	NA	NA	NA
BE-542L	BE-542L-DZ	Drip Zone (DZ)	220	42.9	64.1	39.6	31.8	125	64.6	19.9	19.3	No	NA	42.9	64.1	NA	NA	NA	125	64.6	NA	NA	NA
BE-542L	BE-542L-BY	Back Yard (BY)	16,172	27.5	65	52.5	11.9	56.4	88.4	48.8	12.8	No	NA	27.5	65	NA	NA	NA	56.4	88.4	NA	NA	NA
BE-542L	BE-542L-RG	Rock Garden (RG)	93	28	65	53	12	56	88	49	13	No	NA	28	65	NA	NA	NA	56	88	NA	NA	NA
BE-542M	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	44	No	No	NA	NA	60	No	No
BE-542M	BE-542M-RG	Rock Garden (RG)	603	26.5	37.9	52.3	26.5	37.3	34.3	53	15.1	No	NA	26.5	37.9	NA	NA	NA	37.3	34.3	NA	NA	NA
BE-542M	BE-542M-FY	Front Yard (FY)	566	104	99.4	43.6	12	101	71.3	18.9	12.8	No	NA	104	99.4	NA	NA	NA	101	71.3	NA	NA	NA
BE-542M	BE-542M-FG	Flower Garden (FG)	348	43.4	55.7	34.7	13.3	74.9	89	26.5	15.4	No	NA	43.4	55.7	NA	NA	NA	74.9	89	NA	NA	NA
BE-542M	BE-542M-ED	Earthen Drive (ED)	8,238	17	23.9	8.5	7.3	59.9	47.1	10.6	10.4	No	NA	17	23.9	NA	NA	NA	59.9	47.1	NA	NA	NA
BE-542M	BE-542M-DZ	Drip Zone (DZ)	220	8.2	9.5	17.3	14.9	39.2	39.4	31.2	18.1	No	NA	8.2	9.5	NA	NA	NA	39.2	39.4	NA	NA	NA
BE-542M	BE-542M-BY	Back Yard (BY)	11,005	46	51	15.9	11.1	59.5	74.6	15.9	14.1	No	NA	46	51	NA	NA	NA	59.5	74.6	NA	NA	NA
BE-542N	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	22	No	No	NA	NA	75	No	No
BE-542N	BE-542N-FG	Flower Garden (FG)	427	19.7	18.7	42.6	55.1	65.6	47	54.8	75.8	No	NA	19.7	18.7	NA	NA	NA	65.6	47	NA	NA	NA
BE-542N	BE-542N-ED	Earthen Drive (ED)	5,645	11.8	26.2	54.2	15.7	200	128	53.5	16.9	No	NA	11.8	26.2	NA	NA	NA	200	128	NA	NA	NA
BE-542N	BE-542N-DZ	Drip Zone (DZ)	220	33.5	27.1	34.8	43.3	76.1	68.2	64.2	33.8	No	NA	33.5	27.1	NA	NA	NA	76.1	68.2	NA	NA	NA
BE-542N	BE-542N-BY	Back Yard (BY)	1,700	12.4	15.3	43.7	41.6	27.2	27.1	56.6	28.1	No	NA	12.4	15.3	NA	NA	NA	27.2	27.1	NA	NA	NA
BE-542N	BE-542N-BA	Bare Area (BA)	1,169	22.3	30.6	30.9	21.8	65.8	75.4	83.2	26.2	No	NA	22.3	30.6	NA	NA	NA	65.8	75.4	NA	NA	NA
BE-542O	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	40	No	No	NA	NA	72	No	No
BE-542O	BE-542O-VG	Vegetable Garden (VG)	259	23.5	17.5	17.2	10.7	25.1	51.8	27.1	15.5	No	NA	23.5	17.5	NA	NA	NA	25.1	51.8	NA	NA	NA
BE-542O	BE-542O-FY	Front Yard (FY)	1,554	61.1	71.9	32.3	19.7	111	75	28	12.5	No	NA	61.1	71.9	NA	NA	NA	111	75	NA	NA	NA
BE-542O	BE-542O-FG	Flower Garden (FG)	1,110	28.8	35.2	60.1	40.3	65.6	73.5	34	76.1	No	NA	28.8	35.2	NA	NA	NA	65.6	73.5	NA	NA	NA
BE-542O	BE-542O-ED	Earthen Drive (ED)	4,202	21.6	85.1	56.8	10.9	86	90.7	17.9	12.7	No	NA	21.6	85.1	NA	NA	NA	86	90.7	NA	NA	NA
BE-542O	BE-542O-DZ	Drip Zone (DZ)	220	15.6	27.6	30.7	21.9	64.2	62.9	54.8	64.7	No	NA	15.6	27.6	NA	NA	NA	64.2	62.9	NA	NA	NA
BE-542O	BE-542O-BY	Back Yard (BY)	3,943	28.5	40.5	77.4	43.3	69.6	98.2	61.2	69.8	No	NA	28.5	40.5	NA	NA	NA	69.6	98.2	NA	NA	NA
BE-542O	BE-542O-BA	Bare Area (BA)	1,301	24.7	38	28.6	26.8	14.6	90.7	31.9	11.8	No	NA	24.7	38	NA	NA	NA	14.6	90.7	NA	NA	NA

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-543A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	53	No	No	NA	NA	100	No	No
BE-543A	BE-543A-RG	Rock Garden (RG)	362	51.6	88.1	32.9	20	100	119	16	11.1	No	NA	51.6	88.1	NA	NA	NA	100	119	NA	NA	NA
BE-543A	BE-543A-FY	Front Yard (FY)	1,771	65.5	93.9	46.1	21.5	94.8	87.3	14.4	13.6	No	NA	65.5	93.9	NA	NA	NA	94.8	87.3	NA	NA	NA
BE-543A	BE-543A-FG	Flower Garden (FG)	130	21.4	46	86.3	37.1	51.2	87	110	17.2	No	NA	21.4	46	NA	NA	NA	51.2	87	NA	NA	NA
BE-543A	BE-543A-ED	Earthen Drive (ED)	3,149	11.1	68.8	29.9	18.2	227	165	57.9	15.5	No	NA	11.1	68.8	NA	NA	NA	227	165	NA	NA	NA
BE-543A	BE-543A-DZ	Drip Zone (DZ)	220	31.9	40.6	71.2	80.5	102	54.3	47	41.4	No	NA	31.9	40.6	NA	NA	NA	102	54.3	NA	NA	NA
BE-543A	BE-543A-BY	Back Yard (BY)	1,135	20.3	43.3	36.1	35	38	77.8	43.3	36.2	No	NA	20.3	43.3	NA	NA	NA	38	77.8	NA	NA	NA
BE-543B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	27	No	No	NA	NA	70	No	No
BE-543B	BE-543B-FG	Flower Garden (FG)	87	14	12	40.7	96.6	94.9	66.9	63.1	44.6	No	NA	14	12	NA	NA	NA	94.9	66.9	NA	NA	NA
BE-543B	BE-543B-ED	Earthen Drive (ED)	2,356	10.1	28.5	44.5	50.2	14.7	53.7	47	24.7	No	NA	10.1	28.5	NA	NA	NA	14.7	53.7	NA	NA	NA
BE-543B	BE-543B-DZ	Drip Zone (DZ)	220	18.5	61.6	79.9	93.4	132	99.6	108	58.2	No	NA	18.5	61.6	NA	NA	NA	132	99.6	NA	NA	NA
BE-543B	BE-543B-BY	Back Yard (BY)	1,668	21.6	28.3	47.7	26.6	49.5	55.3	75.9	32.5	No	NA	21.6	28.3	NA	NA	NA	49.5	55.3	NA	NA	NA
BE-544A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	29	No	No	NA	NA	47	No	No
BE-544A	BE-544A-VG	Vegetable Garden (VG)	3,087	30	34.5	28	32.1	74.5	68.7	24.3	25.7	No	NA	30	34.5	NA	NA	NA	74.5	68.7	NA	NA	NA
BE-544A	BE-544A-RG	Rock Garden (RG)	992	23.2	29.6	19.5	14	38	41	18	39.1	No	NA	23.2	29.6	NA	NA	NA	38	41	NA	NA	NA
BE-544A	BE-544A-FY	Front Yard (FY)	4,274	11.8	41.8	24.8	29.2	36.9	41.7	34	116	No	NA	11.8	41.8	NA	NA	NA	36.9	41.7	NA	NA	NA
BE-544A	BE-544A-FG	Flower Garden (FG)	204	10.5	11.9	18.1	16.2	57	22.8	17.2	24.2	No	NA	10.5	11.9	NA	NA	NA	57	22.8	NA	NA	NA
BE-544A	BE-544A-ED	Earthen Drive (ED)	9,868	14.8	46	39.8	13.1	58.9	71.2	34.3	19.4	No	NA	14.8	46	NA	NA	NA	58.9	71.2	NA	NA	NA
BE-544A	BE-544A-DZ	Drip Zone (DZ)	245	30.9	38.9	39	19.9	46.3	41.4	35.2	18.5	No	NA	30.9	38.9	NA	NA	NA	46.3	41.4	NA	NA	NA
BE-544A	BE-544A-BY	Back Yard (BY)	9,446	45.9	41.8	41.5	21.9	63.2	62.2	26.3	17.2	No	NA	45.9	41.8	NA	NA	NA	63.2	62.2	NA	NA	NA
BE-544A	BE-544A-BA	Bare Area (BA)	212	26.8	12.1	6.6	7.6	42.5	11.2	9.3	11.9	No	NA	26.8	12.1	NA	NA	NA	42.5	11.2	NA	NA	NA
BE-544B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	19	No	No	NA	NA	65	No	No
BE-544B	BE-544B-FY	Front Yard (FY)	920	16	17	18.6	16.2	34.4	27.4	17.2	17.3	No	NA	16	17	NA	NA	NA	34.4	27.4	NA	NA	NA
BE-544B	BE-544B-ED	Earthen Drive (ED)	3,139	17.9	24.4	21.6	19.3	252	87.5	31.2	41.1	No	NA	17.9	24.4	NA	NA	NA	252	87.5	NA	NA	NA
BE-544B	BE-544B-DZ	Drip Zone (DZ)	220	17.7	18.3	52.4	22.2	27.6	22.8	53.7	27.8	No	NA	17.7	18.3	NA	NA	NA	27.6	22.8	NA	NA	NA
BE-544C	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	42	No	No	NA	NA	91	No	No
BE-544C	BE-544C-VG	Vegetable Garden (VG)	621	36.7	77.3	36.3	15.6	151	374	14.7	9.4	No	NA	36.7	77.3	NA	NA	NA	151	374	NA	NA	NA
BE-544C	BE-544C-RG	Rock Garden (RG)	784	29.4	28.7	27.6	31.6	51.7	47.2	49.5	53.5	No	NA	29.4	28.7	NA	NA	NA	51.7	47.2	NA	NA	NA
BE-544C	BE-544C-FY	Front Yard (FY)	23,982	42.2	64.9	64.1	15.5	144	89.7	48.3	11.3	No	NA	42.2	64.9	NA	NA	NA	144	89.7	NA	NA	NA
BE-544C	BE-544C-FG	Flower Garden (FG)	404	48.7	87.1	80.4	45.7	115	113	39.3	13.1	No	NA	48.7	87.1	NA	NA	NA	115	113	NA	NA	NA
BE-544C	BE-544C-ED	Earthen Drive (ED)	3,619	24.7	49.7	26.1	11.3	37.7	53.2	14.1	13.1	No	NA	24.7	49.7	NA	NA	NA	37.7	53.2	NA	NA	NA
BE-544C	BE-544C-DZ	Drip Zone (DZ)	220	10.8	13.1	11.4	8.9	30.2	22.2	17.4	12.8	No	NA	10.8	13.1	NA	NA	NA	30.2	22.2	NA	NA	NA
BE-544C	BE-544C-BY	Back Yard (BY)	9,143	28.6	39.6	28.1	45.1	30.6	53.8	21.4	58.3	No	NA	28.6	39.6	NA	NA	NA	30.6	53.8	NA	NA	NA
BE-544C	BE-544C-BA	Bare Area (BA)	1,007	19.4	25.1	25.9	30.4	37	46	15.5	10.7	No	NA	19.4	25.1	NA	NA	NA	37	46	NA	NA	NA
BE-545A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	15	No	No	NA	NA	34	No	No
BE-545A	BE-545A-FY	Front Yard (FY)	653	11.7	7.8	20	19.7	49.2	13	39.8	31.7	No	NA	11.7	7.8	NA	NA	NA	49.2	13	NA	NA	NA
BE-545A	BE-545A-FG	Flower Garden (FG)	502	13.3	24.5	46.3	39	33.3	55.1	53.7	24.4	No	NA	13.3	24.5	NA	NA	NA	33.3	55.1	NA	NA	NA
BE-545A	BE-545A-ED	Earthen Drive (ED)	949	7.6	9.2	28.8	67.9	23.2	32.7	48.9	87.1	No	NA	7.6	9.2	NA	NA	NA	23.2	32.7	NA	NA	NA
BE-545A	BE-545A-DZ	Drip Zone (DZ)	220	17.7	17	17.2	10.8	30.2	31	33.6	19.8	No	NA	17.7	17	NA	NA	NA	30.2	31	NA	NA	NA
BE-545A	BE-545A-BY	Back Yard (BY)	1,250	15.5	24.6	51.2	11.2	39.2	47.7	20.7	12.7	No	NA	15.5	24.6	NA	NA	NA	39.2	47.7	NA	NA	NA
BE-545A	BE-545A-BA	Bare Area (BA)	2,070	13.6	10.3	17.4	12.8	30	23.2	20.8	14.4	No	NA	13.6	10.3	NA	NA	NA	30	23.2	NA	NA	NA
BE-545B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	18	No	No	NA	NA	35	No	No
BE-545B	BE-545B-FY	Front Yard (FY)	893	12.4	15	13.5	10.2	23	24.6	23.3	14.6	No	NA	12.4	15	NA	NA	NA	23	24.6	NA	NA	NA
BE-545B	BE-545B-ED	Earthen Drive (ED)	2,602	8.2	8.1	11.8	15.4	23.6	34.8	40.7	37.3	No	NA	8.2	8.1	NA	NA	NA	23.6	34.8	NA	NA	NA
BE-545B	BE-545B-DZ	Drip Zone (DZ)	220	9	17.2	14.8	11.6	17.4	47.1	46.2	19.1	No	NA	9	17.2	NA	NA	NA	17.4	47.1	NA	NA	NA
BE-545B	BE-545B-BY	Back Yard (BY)	606	22.9	43.2	63.8	15.4	71.8	57.3	16.6	12.8	No	NA	22.9	43.2	NA	NA	NA	71.8	57.3	NA	NA	NA
BE-545B	BE-545B-BA	Bare Area (BA)	1,620	9.3	18.7	16.4	8.1	14.5	24	16.8	11.8	No	NA	9.3	18.7	NA	NA	NA	14.5	24	NA	NA	NA
BE-546A	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	30	No	No	NA	NA	64	No	No
BE-546A	BE-546A-FY	Front Yard (FY)	2,119	26	40.5	44	26.8	56.5	39.6	27.6	19.1	No	NA	26	40.5	NA	NA	NA	56.5	39.6	NA	NA	NA
BE-546A	BE-546A-FG	Flower Garden (FG)	157	21.8	25.1	25.3	19.4	59.4	46.5	20.5	13.6	No	NA	21.8	25.1	NA	NA	NA	59.4	46.5	NA	NA	NA
BE-546A	BE-546A-ED	Earthen Drive (ED)	1,106	15.3	24.1	42.7	49.1	81.8	174	99	112	No	NA	15.3	24.1	NA	NA	NA	81.8	174	NA	NA	NA
BE-546A	BE-546A-DZ	Drip Zone (DZ)	337	20.3	33.9	53.8	32.3	599	166	78.6	31.7	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-546A	BE-546A-BY	Back Yard (BY)	1,991	25.8	47.8	30.4	19.7	43.2	43	19.5	10.4	No	NA	25.8	47.8	NA	NA	NA	43.2	43	NA	NA	NA
BE-546B	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	28	No	No	NA	NA	70	No	No
BE-546B	BE-546B-FY	Front Yard (FY)	5,417	10.1	12.4	15.6	16.8	137	67.3	54.6	44	No	NA	10.1	12.4	NA	NA	NA	137	67.3	NA	NA	NA
BE-546B	BE-546B-ED	Earthen Drive (ED)	2,609	11.5	19.5	19.8	23.8	49.9	77.2	89.9	34.2	No	NA	11.5	19.5	NA	NA	NA	49.9	77.2	NA	NA	NA
BE-546B	BE-546B-DZ	Drip Zone (DZ)	147	13.5	26.2	28.8	31.2	41.3	42.4	34.8	18.1	No	NA	13.5	26.2	NA	NA	NA	41.3	42.4	NA	NA	NA
BE-546B	BE-546B-BY	Back Yard (BY)	949	25.3	79.6	84.1	53.5	88.4	75.6	72.6	74.9	No	NA	25.3	79.6	NA	NA	NA	88.4	75.6	NA	NA	NA
BE-600	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	30	No	No	NA	NA	86	No	No
BE-600	BE-600-RG	Rock Garden (RG)	743	17.3	79	56.3	44.6	25.7	238	220	23.9	No	NA	17.3	79	NA	NA	NA	25.7	238	NA	NA	NA
BE-600	BE-600-FY	Front Yard (FY)	19,013	0.33	68.6	35.7	21.6	0.075	257	152	29.1	No	NA	0.33	68.6	NA	NA	NA	0.075	257	NA	NA	NA
BE-600	BE-600-ED	Earthen Drive (ED)	21,033	11	13.4	26.5	13.7	16	26.6	35.5	19.6	No	NA	11	13.4	NA	NA	NA	16	26.6	NA	NA	NA
BE-600	BE-600-DZ	Drip Zone (DZ)	220	28.3	11.5	8.1	14.9	65.5	17.1	15.6	22.4	No	NA	28.3	11.5	NA	NA	NA	65.5	17.1	NA	NA	NA
BE-600	BE-600-BY	Back Yard (BY)	2,217	23.1	11	11.4	11.9	51.5	26.6	16.1	20.8	No	NA	23.1	11	NA	NA	NA	51.5	26.6	NA	NA	NA
BE-601	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	38	No	No	NA	NA	59	No	No
BE-601	BE-601-FY	Front Yard (FY)	54,515	72.5	59.2	20.4	12.7	141	32.7	18.1	17.5	No	NA	72.5	59.2	NA	NA	NA	141	32.7	NA	NA	NA
BE-601	BE-601-ED	Earthen Drive (ED)	10,103	12.9	12.3	63.2	55.8	42.4	51.6	49.9	36.5	No	NA	12.9	12.3	NA	NA	NA	42.4	51.6	NA	NA	NA
BE-602	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	32	No	No	NA	NA	39	No	No

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Table 1: Step 1 and Step 2 Yard Component Removal Summary

Property	RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (SQUARE FEET)	Step 1: Evaluate Pre-Removal Component Arsenic Soil Concentration (mg/kg)				Step 1: Evaluate Pre-Removal Component Lead Soil Concentration (mg/kg)				Step 1: Does Component Exceed NTE Value of 250 mg/kg Arsenic or 400 mg/kg Lead?	"Yes" indicates at least one component in yard exceeds	Component Arsenic Concentrations (mg/kg) after Step 1 NTE Removal		Step 2A: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Arsenic			Component Lead Concentrations (mg/kg) after Step 1 NTE Removal		Step 2B: Evaluate Property-Specific Surface Soil Risk After Step 1 Removals - Lead		
				0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.	0 to 2 in.	2 to 6 in.	6 to 12 in.	12 to 18 in.			0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Arsenic	0 to 6 in. DWA Property-Average Soil Arsenic exceeds 54 mg/kg	New property identified as having exceedance	0 to 2 in.	2 to 6 in.	0 to 6 in. DWA Property-Average Soil Lead	0 to 6 in. DWA Property-Average Soil Lead exceeds 281 mg/kg	New property identified as having exceedance
BE-602	BE-602-RG	Rock Garden (RG)	1,762	5.2	6	13.1	19.8	6.7	6.7	12.1	18	No	NA	5.2	6	NA	NA	NA	6.7	6.7	NA	NA	NA
BE-602	BE-602-FY	Front Yard (FY)	3,257	52.5	72.2	80	34	69.3	99.7	68.4	56.9	No	NA	52.5	72.2	NA	NA	NA	69.3	99.7	NA	NA	NA
BE-602	BE-602-FG	Flower Garden (FG)	248	26.6	36.5	44.8	29.5	60.6	29	45.1	29.8	No	NA	26.6	36.5	NA	NA	NA	60.6	29	NA	NA	NA
BE-602	BE-602-ED	Earthen Drive (ED)	12,890	18.2	42	18.2	12.4	40.7	33.6	15.7	30.5	No	NA	18.2	42	NA	NA	NA	40.7	33.6	NA	NA	NA
BE-602	BE-602-DZ	Drip Zone (DZ)	220	14.9	15.8	19.5	37.8	20.3	16.9	19.6	20.5	No	NA	14.9	15.8	NA	NA	NA	20.3	16.9	NA	NA	NA
BE-602	BE-602-BY	Back Yard (BY)	55,432	47.2	37.8	34.8	37.3	57.1	33.6	27.4	29.6	No	NA	47.2	37.8	NA	NA	NA	57.1	33.6	NA	NA	NA
BE-603	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	34	No	No	NA	NA	55	No	No
BE-603	BE-603-RG	Rock Garden (RG)	1,790	8.7	9.4	9.4	20.5	19.2	17.1	14.3	24.1	No	NA	8.7	9.4	NA	NA	NA	19.2	17.1	NA	NA	NA
BE-603	BE-603-FY	Front Yard (FY)	29,411	40.8	44.8	12.9	9.4	87.2	57.5	17.4	13.4	No	NA	40.8	44.8	NA	NA	NA	87.2	57.5	NA	NA	NA
BE-603	BE-603-FG	Flower Garden (FG)	1,239	8.1	17.2	38.1	54.6	23	83.5	43.3	38.7	No	NA	8.1	17.2	NA	NA	NA	23	83.5	NA	NA	NA
BE-603	BE-603-ED	Earthen Drive (ED)	3,663	31.4	37.9	34.2	12.4	80.7	28.9	32.9	15.9	No	NA	31.4	37.9	NA	NA	NA	80.7	28.9	NA	NA	NA
BE-603	BE-603-DZ	Drip Zone (DZ)	220	8.1	17.3	27.9	23.9	21	86.8	47.8	30.2	No	NA	8.1	17.3	NA	NA	NA	21	86.8	NA	NA	NA
BE-603	BE-603-BY	Back Yard (BY)	43,408	61.6	96.6	26.9	22.1	109	53.9	25.4	20.7	No	NA	61.6	96.6	NA	NA	NA	109	53.9	NA	NA	NA
BE-701	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	40	No	No	NA	NA	98	No	No
BE-701	BE-701-VG	Vegetable Garden (VG)	1,406	43.6	80.6	44.7	9.9	178	298	30.3	11	No	NA	43.6	80.6	NA	NA	NA	178	298	NA	NA	NA
BE-701	BE-701-RG	Rock Garden (RG)	74	22.3	41.9	42.6	13.6	58.5	56.3	9.3	9.7	No	NA	22.3	41.9	NA	NA	NA	58.5	56.3	NA	NA	NA
BE-701	BE-701-PA	Play Area (PA)	384	7.6	36.6	38.1	10.1	29.9	58	10.5	7.8	No	NA	7.6	36.6	NA	NA	NA	29.9	58	NA	NA	NA
BE-701	BE-701-FY	Front Yard (FY)	4,289	20.5	37.5	31.5	15.7	86.3	124	32.6	15.2	No	NA	20.5	37.5	NA	NA	NA	86.3	124	NA	NA	NA
BE-701	BE-701-ED	Earthen Drive (ED)	3,575	20.3	40.9	44.1	12.8	53.2	45.3	31.3	10.7	No	NA	20.3	40.9	NA	NA	NA	53.2	45.3	NA	NA	NA
BE-701	BE-701-DZ	Drip Zone (DZ)	220	35.4	41.5	40.4	13.5	76.4	47.2	14.1	8.2	No	NA	35.4	41.5	NA	NA	NA	76.4	47.2	NA	NA	NA
BE-701	BE-701-BY	Back Yard (BY)	6,071	35.3	47.3	43.9	24.3	132	91.5	17.8	21.3	No	NA	35.3	47.3	NA	NA	NA	132	91.5	NA	NA	NA
BE-702	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	62	Yes	Yes	NA	NA	135	No	No
BE-702	BE-702-RG	Rock Garden (RG)	167	16	104	20.7	102	89.6	107	60	24.7	No	NA	16	104	NA	NA	NA	89.6	107	NA	NA	NA
BE-702	BE-702-FY	Front Yard (FY)	9,926	29.3	84.4	84.4	23.6	90.2	97.4	22.2	40.7	No	NA	29.3	84.4	NA	NA	NA	90.2	97.4	NA	NA	NA
BE-702	BE-702-ED	Earthen Drive (ED)	3,764	33.5	78.5	77.6	17.6	107	122	41.3	19.5	No	NA	33.5	78.5	NA	NA	NA	107	122	NA	NA	NA
BE-702	BE-702-DZ	Drip Zone (DZ)	220	21.4	38.6	18.6	49.7	139	384	132	19.2	No	NA	21.4	38.6	NA	NA	NA	139	384	NA	NA	NA
BE-702	BE-702-BY	Back Yard (BY)	6,549	31.9	93.8	29.3	16.8	91.5	41.7	17	18.4	No	NA	31.9	93.8	NA	NA	NA	91.5	41.7	NA	NA	NA
BE-703	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	57	Yes	Yes	NA	NA	105	No	No
BE-703	BE-703-FY	Front Yard (FY)	833	37.2	140	106	17.4	226	84.4	11	10.8	No	NA	37.2	140	NA	NA	NA	226	84.4	NA	NA	NA
BE-703	BE-703-FG	Flower Garden (FG)	90	40.4	39.9	73.2	102	77.8	78.4	63.5	15.9	No	NA	40.4	39.9	NA	NA	NA	77.8	78.4	NA	NA	NA
BE-703	BE-703-ED	Earthen Drive (ED)	6,985	31.6	64.6	52.6	18.9	136	175	49.3	11.7	No	NA	31.6	64.6	NA	NA	NA	136	175	NA	NA	NA
BE-703	BE-703-DZ	Drip Zone (DZ)	220	17.3	47.4	83.6	64.3	35.8	77.4	30.1	8.7	No	NA	17.3	47.4	NA	NA	NA	35.8	77.4	NA	NA	NA
BE-703	BE-703-BY	Back Yard (BY)	1,815	30.9	56.8	120	74.5	69.2	103	72.4	7.9	No	NA	30.9	56.8	NA	NA	NA	69.2	103	NA	NA	NA
BE-704	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	92	Yes	Yes	NA	NA	99	No	No
BE-704	BE-704-FY	Front Yard (FY)	866,657	90.3	93.6	21.2	18	195	51.6	30.2	30.8	No	NA	90.3	93.6	NA	NA	NA	195	51.6	NA	NA	NA
BE-705	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	NA	NA	57	Yes	No	NA	NA	78	No	No
BE-705	BE-705-FY	Front Yard (FY)	7,226	63.7	89.3	77.4	36.2	131	112	128	28.4	No	NA	63.7	89.3	NA	NA	NA	131	112	NA	NA	NA
BE-705	BE-705-ED	Earthen Drive (ED)	6,673	23.5	64	64.6	21.3	31	101	34.9	16.6	No	NA	23.5	64	NA	NA	NA	31	101	NA	NA	NA
BE-705	BE-705-DZ	Drip Zone (DZ)	1,802	171	814	98.6	24.9	288	634	43.1	25.5	Yes	NA	28	28	NA	NA	NA	40	40	NA	NA	NA
BE-705	BE-705-BY	Back Yard (BY)	7,542	85.6	57.9	40.3	42.2	157	33.5	42	214	No	NA	85.6	57.9	NA	NA	NA	157	33.5	NA	NA	NA
BE-800	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	45	No	No	NA	NA	63	No	No
BE-800	BE-800-PA	Play Area (PA)	525	18.1	20.5	19	16.5	88.1	148	114	115	No	NA	18.1	20.5	NA	NA	NA	88.1	148	NA	NA	NA
BE-800	BE-800-FY	Front Yard (FY)	6,466	56.9	115	30.3	9.3	111	66	17	10.5	No	NA	56.9	115	NA	NA	NA	111	66	NA	NA	NA
BE-800	BE-800-ED	Earthen Drive (ED)	1,758	19.3	13.1	69.7	7.4	41.5	32.2	290	9.8	No	NA	19.3	13.1	NA	NA	NA	41.5	32.2	NA	NA	NA
BE-800	BE-800-DZ	Drip Zone (DZ)	220	46.6	36.9	51.5	14.5	59.8	25.7	47.7	12.8	No	NA	46.6	36.9	NA	NA	NA	59.8	25.7	NA	NA	NA
BE-800	BE-800-BY	Back Yard (BY)	13,726	60.4	48.2	10.9	6.4	68.9	15.2	12.1	8.8	No	NA	60.4	48.2	NA	NA	NA	68.9	15.2	NA	NA	NA
BE-801	Property-Specific Average	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	57	Yes	Yes	NA	NA	83	No	No
BE-801	BE-801-FY	Front Yard (FY)	9,314	45.4	90.2	24	15.3	173	89.1	27.2	26.1	No	NA	45.4	90.2	NA	NA	NA	173	89.1	NA	NA	NA
BE-801	BE-801-FG	Flower Garden (FG)	261	31	80	106	78.2	43.5	142	139	48.3	No	NA	31	80	NA	NA	NA	43.5	142	NA	NA	NA
BE-801	BE-801-ED	Earthen Drive (ED)	1,450	55.5	52.1	11.3	10.6	50.5	17	13.4	14.1	No	NA	55.5	52.1	NA	NA	NA	50.5	17	NA	NA	NA
BE-801	BE-801-DZ	Drip Zone (DZ)	220	24.9	32.1	76	44.4	38.1	60.8	93.1	39.2	No	NA	24.9	32.1	NA	NA	NA	38.1	60.8	NA	NA	NA
BE-801	BE-801-BY	Back Yard (BY)	18,150	66.8	60.5	20.7	8	267	28.5	14.6	10.3	No	NA	66.8	60.5	NA	NA	NA	267	28.5	NA	NA	NA

A. Sampling refusal at 6 or 12 inches during sampling. Concentrations to 18 inches assumed based upon the 0 to 6 inch samples. No further sampling planned.

B. Unable to sample due to tree and power line hazard. Additional sampling will be attempted.

C. Sampling refusal at 6 inches during sampling. Exceedance to 24 inches assumed based upon the 0 to 6 inch samples.

D. Not sampled previously due to lack of gas line location. Additional sampling will be attempted

E. Not sampled because the soils were new fill material. No further sampling planned.

F. Not sampled due to gas line. No further sampling planned.

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Table 2 Non-Residential Property Summary

Map Reference Number	Category	Property Identifier/Geocode	Field Sample ID (s)	Acres	Square Feet	Developed Commercially?	Average As mg/kg 0 to 6 inch	Average Pb mg/kg 0 to 6 inch	Exceed 120 mg/kg As? [1,2]	Exceed 1766 mg/kg Pb? [1,2]	Average As mg/kg 0 to 12 inch	Average Pb mg/kg 0 to 12 inch	Exceed 54 mg/kg As? [2]	Exceed 281 mg/kg Pb? [2]	Prop Type	Sub Category	Zone Code	Notes
1	Data Needed	02313932202010000	OA-1005-SL-01, -02, -03	41.21	1,795,108	NO	114.8	60.9	NO	NO	74.9	40.8	YES	NO	IMP_R - Improved Property - Rural	Non-Qualified Ag	Industrial -2	House and Yard. Need additional data within 125 feet of house.
2	No Remedial Action or Institutional Controls	02313932101010000	OA-1006-SL-03, -04, -06, -07, -10, -11	20.739	903,391	NO	34.4	42.1	NO	NO	25.8	53.9	NO	NO	VAC_R - Vacant Land - Rural	Non-Qualified Ag	Industrial -2	
3	Data Needed	02313932202190000	OA-1006-SL-01, -02,-05	20.0954	875,356	YES	102.1	59.3	NO	NO	65.4	38.6	NA	NA	IMP_R - Improved Property - Rural	Commercial Property	Industrial -2	Additional samples needed.
4	Data Needed	02313932101020000	OA-1006-SL-08, -09, -12, -13, -14	14.866	647,563	NO	65.7	61.6	NO	NO	55.3	44.7	YES	NO	VAC_R - Vacant Land - Rural	Residential Property	Industrial -2	No buildings noted. Additional information about the property needed to determine if commercial or residential.
5	Remedial Action to meet Residential RAOs or Institutional Controls Needed	02313932101070000	OA-1007-SL-01, -02, -03, -04	14.7944	644,444	NO	211.4	228.8	NO [1]	NO	129.3	143.8	YES	NO	CN - Centrally Assessed Non-Value Property	Centrally Assessed	Industrial -2	Power lines.
6	No Remedial Action or Institutional Controls	02313932202030000	OA-1010-SL-01, -02, -03, -04, -05	12.57	547,549	YES	67.9	46.9	NO	NO	46.7	32.0	NA	NA	IMP_R - Improved Property - Rural	Commercial Property	Industrial -2	
7	Data Needed	02313932101060000	OA-1003-SL-01, -02	18.46	804,118	NO	136.5	244.2	YES	NO	82.9	143.9	YES	NO	IMP_R - Improved Property - Rural	Residential Property	Industrial -2	Small shed may be present. Additional information about property needed.
8	No Remedial Action or Institutional Controls	02301606101040000	BE-1037-SL-01, -02, -03, -04	4.03	175,547	YES	33.4	148.2	NO	NO	29.3	103.4	NA	NA	EP - Exempt Property	Commercial Property	Mixed Use	
9	No Remedial Action or Institutional Controls	02301606101050G001	BE-1035-SL-03	0.795	34,630	YES	23.3	118.9	NO	NO	38.2	254.5	NA	NA	EP - Exempt Property	Commercial Property	Mixed Use	
10	No Remedial Action or Institutional Controls	02301606101050000	BE-1035-SL-01, -02, BE-1036-SL-01	4.12	179,467	YES	27.2	158.4	NO	NO	28.7	173.9	NA	NA	EP_PART - Partial Exempt Property	Commercial Property	Mixed Use	
11	No Remedial Action or Institutional Controls	02301606101050G002	OA-1036-SL-02	1.235	53,797	NO	11.5	27.6	NO	NO	10.5	20.8	NO	NO	VAC_U - Vacant Land - Urban	Commercial Property	Mixed Use	
12	Data Needed	02313931321120000	BE-1034-SL-01, -02, -03	12.866	560,443	YES	104.6	72.8	NO	NO	80.1	54.2	NA	NA	IMP_R - Improved Property - Rural	Commercial Property	Mixed Use	Current data samples are from east of drainage. Need additional data from northeast and southwest open areas. Part of this property was previously developed into low income housing.
13	No Remedial Action or Institutional Controls	02313931317020000	BE-1032-SL-01, -02, -03	1.645	71,656	YES	30.2	273.5	NO	NO	44.3	154.2	NO	NO	IMP_R - Improved Property - Rural	Commercial Property	Mixed Use	
14	No Remedial Action or Institutional Controls	02313836403090000	BE-1033-SL-01, -02,-03, 04	1.463	63,728	NO	33.7	65.8	NO	NO	22.6	39.7	NO	NO	IMP_R - Improved Property - Rural	Commercial Property	Mixed Use	
15	Data Needed	02313932301020000	OA-1002-SL-01	35.125	1,530,045	YES	259.5	647.4	YES	NO	222.4	494.7	NA	NA	IMP_R - Improved Property - Rural	Non-Qualified Ag	Industrial -2	
16	Data Needed	02313929101030001, and several small pieces inside: 02313929101070000, 02313929101060000, 02313929101050000 that say residential	OA-1004-SL-01 to SL-15	41	1,795,108	NO	120.9	66.9	YES	NO	91.1	49.3	YES	NO	VAC_R - Vacant Land - Rural	Non-Qualified Ag, 3 small pieces say residential	Industrial -2	Additional information needed. Three small parcels within are identified as residential but houses or development is not currently evident.
17	Data Needed	02313932202210000	No Sample Data	7.41	322,780	UNKNOWN									EP - Exempt Property	Residential Property	Industrial -2	Additional information needed. Identified as residential but looks like garage and shed on the property.
18	Data Needed	02313931128010000	No Sample Data	10.288	448,145	UNKNOWN									IMP_R - Improved Property - Rural	Commercial Property	Industrial -2	Sample Data Needed
19	Data Needed	02313931128090000	No Sample Data	3.21	139,828	YES									IMP_R - Improved Property - Rural	Commercial Property	Industrial -2	Sample Data Needed
20	Data Needed	02313931128070000	No Sample Data	3.21	139,828	UNKNOWN									IMP_R - Improved Property - Rural	Commercial Property	Industrial -2	Sample Data Needed
21	Data Needed	02313931128050000	No Sample Data	3.21	139,828	YES									IMP_R - Improved Property - Rural	Commercial Property	Industrial -2	Sample Data Needed
22	Data Needed	02313931128110000	No Sample Data	5.01	218,236	YES									IMP_R - Improved Property - Rural	Commercial Property	Industrial -2	Sample Data Needed
23	Data Needed	02313931128030000	No Sample Data	5.01	218,236	UNKNOWN									IMP_U- Improved Property - Urban	Commercial Property	Industrial -2	Sample Data Needed
24	Additional Data Needed for Vacant Lot	02313931113060000	BE-1022-SL-01	0.256	11,151	NO	127.1	120.9	YES	NO	71.6	71.2	YES	NO	VAC_R - Vacant Land - Rural	Residential Property	Mixed Use	Undeveloped residential; Additional data needed
25	Additional Data Needed for Vacant Lot	02313931113220000	BE-1015-SL-01/BE-1017-SL-01/BE-1019-SL-01	0.574	25,003	NO	88.7	158.0	NO	NO	57.8	101.2	YES	NO	IMP_R - Improved Property - Rural	Residential Property	Mixed Use	Undeveloped residential; Additional data needed
26	Additional Data Needed for Vacant Lot	02313931116270000	BE-1007-SL-01	0.144	6,273	NO	158.5	132.7	YES	NO	85.1	71.7	YES	NO	VAC_R - Vacant Land - Rural	Residential Property	Mixed Use	Undeveloped residential; Additional data needed

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Table 2 Non-Residential Property Summary

Map Reference Number	Category	Property Identifier/Geocode	Field Sample ID (s)	Acres	Square Feet	Developed Commercially?	Average As mg/kg 0 to 6 inch	Average Pb mg/kg 0 to 6 inch	Exceed 120 mg/kg As? [1,3]	Exceed 1766 mg/kg Pb? [1,2]	Average As mg/kg 0 to 12 inch	Average Pb mg/kg 0 to 12 inch	Exceed 54 mg/kg As? [2]	Exceed 281 mg/kg Pb? [2]	Prop Type	Sub Category	Zone Code	Notes
27	Additional Data Needed for Vacant Lot	02313931317060000	BE-1031-SL-01, BE-1031-SL-02,BE-1031-SL-02	2.077	90,474	NO	84.4	74.4	NO	NO	63.3	47.4	YES	NO	VAC_R - Vacant Land - Rural	Residential Property	Mixed Use	Undeveloped residential; Additional data needed
28	No Remedial Action or Institutional Controls	02313931113170000	BE-1012	0.144	6,273	NO	81.8	58.6	NO	NO	49.7	38.7	NO	NO	VAC_R - Vacant Land - Rural	Residential Property	Mixed Use	Undeveloped residential
29	Additional Data Needed for Vacant Lot	02313931116100000	BE-1011	0.344	14,985	NO	234.3	239.7	YES	NO	155.4	127.4	YES	NO	VAC_R - Vacant Land - Rural	Residential Property	Mixed Use	Undeveloped residential; Additional data needed
30	Additional Data Needed for Vacant Lot	02313931113130000	BE-1014, BE-1016, BE-1018, BE-1020	1.006	43,821	NO	107.9	116.2	NO	NO	67.0	69.3	YES	NO	VAC_R - Vacant Land - Rural	Residential Property	Mixed Use	Undeveloped residential; Additional data needed
31	Additional Data Needed for Vacant Lot	02313931113200000	BE-1013	0.287	12,502	NO	112.0	127.7	NO	NO	65.8	73.4	YES	NO	VAC_R - Vacant Land - Rural	Residential Property	Mixed Use	Undeveloped residential; Additional data needed
32	Additional Data Needed for Vacant Lot	02313931124050000	BE-1001, BE-1002, BE-1004	1.098	47,829	NO	164.8	107.3	YES	NO	96.3	63.1	YES	NO	VAC_R - Vacant Land - Rural	Residential Property	Mixed Use	Undeveloped residential; Additional data needed
33	Additional Data Needed for Vacant Lot	02313931113010000	BE-1021	0.256	11,151	NO	120.4	131.3	YES	NO	88.2	80.4	YES	NO	VAC_R - Vacant Land - Rural	Residential Property	Mixed Use	Undeveloped residential; Additional data needed
34	Additional Data Needed for Vacant Lot	02313931116110000	BE-1005, BE-1006, BE-1008, BE-1009, BE-1010	1.493	65,035	NO	163.9	111.8	YES	NO	115.7	65.0	YES	NO	VAC_R - Vacant Land - Rural	Residential Property	Mixed Use	Undeveloped residential; Additional data needed
35	No Remedial Action or Institutional Controls	02313836403110000	BE-1033-SL-03	0.501	21,824	NO	41.6	71.2	NO	NO	28.9	43.2	NO	NO	VAC_R - Vacant Land - Rural	Residential Property	Mixed Use	Undeveloped residential
36	No Remedial Action or Institutional Controls	02313931103010000	BE-1023, BE-1024, BE-1025, BE-1026, BE-1027, BE-1028,BE-1029, BE-1030	2.689	117,133	NO	61.6	69.8	NO	NO	42.2	48.2	NO	NO	VAC_R - Vacant Land - Rural	Residential Property	Mixed Use	Undeveloped residential
37	Data Needed	02301606210090000	No Sample Data	0.105	4,593	YES									APT_U - Apartment Urban	Commercial Property	Mixed Use	Building takes up most of property
38	Data Needed	02301606210110000	No Sample Data	0.336	14,617	YES									IMP_U - Improved Property - Urban	Commercial Property	Mixed Use	Building and paved parking lot, perhaps some grass and trees
39	Data Needed	02301606212040000	No Sample Data	0.092	4,000	UNKNOWN									VAC_R - Vacant Land - Rural	Commercial Property	Mixed Use	Vacant
40	Data Needed	02301606212070000	No Sample Data	0.276	12,013	UNKNOWN									VAC_U - Vacant Land - Urban	Commercial Property	Mixed Use	Vacant
41	Data Needed	02301606213040000	No Sample Data	0.425	18,509	YES									IMP_U - Improved Property - Urban	Commercial Property	Mixed Use	Building and pavement
42	Data Needed	02301606215070000	No Sample Data	0.079	3,443	YES									IMP_U - Improved Property - Urban	Commercial Property	Mixed Use	Large building
43	Data Needed	02301606215080000	No Sample Data	0.188	8,178	YES									IMP_U - Improved Property - Urban	Commercial Property	Mixed Use	Large tree and other equipment
44	Data Needed	02313836403020000	No Sample Data	0.182	7,925	YES									IMP_U - Improved Property - Urban	Commercial Property	Mixed Use	Large building and paved
45	Data Needed	02313836403060000	No Sample Data	0.393	17,133	YES									IMP_U - Improved Property - Urban	Commercial Property	Mixed Use	Building and paved lot
46	Data Needed	02313931107180000	No Sample Data	0.402	17,516	YES									IMP_R - Improved Property - Rural	Commercial Property	Mixed Use	Shop, trailers and vehicles
47	Data Needed	02313931108140000	No Sample Data	0.761	33,170	YES									IMP_R - Improved Property - Rural	Commercial Property	Mixed Use	Salvage Yard
48	Data Needed	02313931110010000	No Sample Data	1.971	85,857	YES									IMP_R - Improved Property - Rural	Commercial Property	Mixed Use	Shop and vehicles
49	Data Needed	02313931111070000	No Sample Data	0.290	12,612	YES									IMP_R - Improved Property - Rural	Commercial Property	Mixed Use	Shop and vehicles
50	Data Needed	02313931122010000	No Sample Data	0.431	18,767	YES									IMP_R - Improved Property - Rural	Commercial Property	Mixed Use	Building and timbers around lot
51	Data Needed	02313931302150000	No Sample Data	0.445	19,397	YES									IMP_U - Improved Property - Urban	Commercial Property	Mixed Use	Large building and paved lot
52	Data Needed	02313931307270000	No Sample Data	0.294	12,805	YES									IMP_U - Improved Property - Urban	Commercial Property	Mixed Use	Large building and paved lot
53	Data Needed	02313931321090000	No Sample Data	1.399	60,961	YES									IMP_R - Improved Property - Rural	Commercial Property	Mixed Use	Buildings and unpaved Road
54	Data Needed	02313931304130000	No Sample Data	0.086	3,754	UNKNOWN									EP - Exempt Property	EP - Exempt Property	Mixed Use	Heavily treed, no obvious buildings
55	Data Needed	02313931321170000	No Sample Data	0.344	15,000	YES									EP - Exempt Property	EP - Exempt Property	Mixed Use	Building and pavement

1. Property 5 compared to 7670 mg/kg arsenic and 1766 mg/kg lead cleanup levels for Utility Worker scenario
2. Property 15 compared to 200 mg/kg arsenic and 3087 mg/kg lead cleanup levels for Dirt Bike Rider Scenario
3. NA if developed commercial/industrial

LEGEND:

	Data Needed (Additional arsenic or lead data or other information about the property necessary to determine the need for RA)
	Remedial Action or Institutional Controls needed to meet Residential Remedial Action Objectives or prevent land use change to Residential
	Additional Data Needed for Vacant Lot; No Institutional Controls applicable - already vacant residential
	Non-residential remedial action needed and Residential remedial action or institutional controls needed (0 to 6" exceeds non-residential risk numbers and 0 to 12" exceeds Residential RAOs)
	No Remedial Action or Institutional Controls needed (0 to 6" less than non-residential risk criteria and 0 to 12" less than Residential RAOs)
YES	Exceeds risk criteria or Remedial Action Objective Identified in Header or in Footnote

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Table 3 Properties To Be Sampled

PARCELID	Acres	LegalDescriptionShort	Subdivision	AddressLine1	CityStateZip	PropType
2301606208160000	0.076801	GREAT FALLS SEVENTH ADDITION, S06, T20 N, R04 E, BLOCK 612, S 13 1/3 LT 5, N 13 1/3 LT 6	GREAT FALLS SEVENTH ADDITION	117 13TH ST NE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931308240000	0.086303	GREAT FALLS NINTH ADDITION, S31, T21 N, R04 E, BLOCK 626, Lot 007	GREAT FALLS NINTH ADDITION	1712 MONTANA AVE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931106060000	0.071817	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 061, Lot 012	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931106080000	0.071848	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 061, Lot 010	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931107010000	0.143548	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 060, Lot 016, LTS 16-17	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931108010000	0.5741	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 054, Lot 016, LTS 16-23	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931108140000	0.761483	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 054, Lot 004, LTS 4-14	NORTH GREAT FALLS TOWNSITE	3120 RAINBOW DAM RD	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313931112100000	0.14367	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 068, Lot 010	NORTH GREAT FALLS TOWNSITE	27TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931112220000	0.143649	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 068, Lot 022	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931115290000	0.071806	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 059, Lot 029	NORTH GREAT FALLS TOWNSITE	32ND AVE NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931115360000	0.143769	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 059, Lot 035, LTS 35-36	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931123200000	0.071782	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 058, Lot 048	NORTH GREAT FALLS TOWNSITE	30TH AVE NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931124010000	0.287221	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 057, Lot 001, LOTS 1,3,6, & 41	NORTH GREAT FALLS TOWNSITE	32ND AVE NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931106090000	0.071853	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 061, Lot 009	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931107060000	0.28722	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 060, Lot 012, LTS 12-15	NORTH GREAT FALLS TOWNSITE	2920 RAINBOW DAM RD	BLACK EAGLE, MT 59414	IMP_R - Improved Property - Rural
2313931108170000	0.215358	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 054, Lot 001, LTS 1-3	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931112210000	0.133944	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 068, Lot 021	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931112230000	0.143625	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 068, Lot 023	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931114150000	0.717716	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 062, Lot 007, LTS 7-11, 12A & 13-15	NORTH GREAT FALLS TOWNSITE			IMP_R - Improved Property - Rural
2313931114180000	0.215461	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 062, Lot 016, LOTS 16-18	NORTH GREAT FALLS TOWNSITE			IMP_R - Improved Property - Rural
2313931115050000	0.077496	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 059, Lot 005, AM PL 10-03	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931115070000	0.155001	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 059, Lot 007, LTS 7 & 8	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931115090000	0.123991	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 059, Lot 006, LOTS 6 & 9	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931115100000	0.292797	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 059, Lot 010, LTS 10,12,17, & 18	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931115340000	0.559626	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 059, Lot 030, LTS 30A-34A PL 30-2013	NORTH GREAT FALLS TOWNSITE	29TH ST NE	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313931116070000	0.130648	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 055, Lot 005, LTS 5-7	NORTH GREAT FALLS TOWNSITE	31ST ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931116200000	0.662976	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 056, Lot 010, LTS 10-13,15,18,24-25,29	NORTH GREAT FALLS TOWNSITE	31ST ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931121100000	2.235425	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 064, Lot 01A, PORTIONS OF BLOCKS 63 & 69 OF PL 2020-022	NORTH GREAT FALLS TOWNSITE	27TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931123110000	0.579498	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 058, Lot 039, LOTS 39-46	NORTH GREAT FALLS TOWNSITE	30TH AVE NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931128010000	10.30461	S31, T21 N, R04 E, 3304, PARCEL 000, IN NENENE MK 3J		177 BLACK EAGLE RD	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313932202210000	7.445735	SAINT MICHAELS ADDITION, S32, T21 N, R04 E, Lot 002, 23-06	SAINT MICHAELS ADDITION	3201 RAINBOW DAM RD	GREAT FALLS, MT 59404	EP - Exempt Property
2313931103010000	2.688991	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 072, Lot 1A, AM PLAT 2019-47	NORTH GREAT FALLS TOWNSITE	2524 26TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931106020000	0.071777	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 061, Lot 016	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931106040000	0.143567	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 061, Lot 014, LOTS 14 & 17	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931107240000	0.215247	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 060, Lot 018, LTS 18-20	NORTH GREAT FALLS TOWNSITE	2900 RAINBOW DAM RD	BLACK EAGLE, MT 59414	IMP_R - Improved Property - Rural
2313931111070000	0.289524	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 071, Lot 005, LTS 5-7	NORTH GREAT FALLS TOWNSITE	BLACK EAGLE RD	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313931114010000	0.387501	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 062, Lot 001, LTS 1-5	NORTH GREAT FALLS TOWNSITE			IMP_R - Improved Property - Rural
2313931114060000	0.046498	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 062, Lot 006	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931115210000	0.2155	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 059, Lot 019, LTS 19-21	NORTH GREAT FALLS TOWNSITE	30TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931115420000	0.359189	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 059, Lot 038, LTS 38-42	NORTH GREAT FALLS TOWNSITE	29TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931115430000	0.071813	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 059, Lot 043	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931116040000	0.103737	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 055, Lot 003, LTS 3-4	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931122100000	0.28956	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 063, Lot 007, LOTS 7-10	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931123100000	0.437365	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 058, Lot 005, LOTS 5-10	NORTH GREAT FALLS TOWNSITE	30TH AVE NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931128050000	3.212848	VICKS INDUSTRIAL PARK ADD, S31, T21 N, R04 E, Lot 004, PL 31-06	VICKS INDUSTRIAL PARK ADD	3001 BARLEY LN	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural

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Table 3 Properties To Be Sampled

PARCELID	Acres	LegalDescriptionShort	Subdivision	AddressLine1	CityStateZip	PropType
2313931128070000	3.20913	VICKS INDUSTRIAL PARK ADD, S31, T21 N, R04 E, Lot 005, PL 31-06	VICKS INDUSTRIAL PARK ADD	2901 BARLEY LN	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313932202010000	19.90733	RAINBOW VIEW ADDITION, S32, T21 N, R04 E, Lot 002, 6-06	RAINBOW VIEW ADDITION	3121 RAINBOW DAM RD	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313932202190000	20.6145	SAINT MICHAELS ADDITION, S32, T21 N, R04 E, Lot 1A-1, AM PL 2017-05	SAINT MICHAELS ADDITION	3109 RAINBOW DAM RD	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313931106070000	0.071815	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 061, Lot 011	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931106200000	0.143541	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 061, Lot 020	NORTH GREAT FALLS TOWNSITE	2800 RAINBOW DAM RD	BLACK EAGLE, MT 59414	IMP_R - Improved Property - Rural
2313931107100000	0.071849	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 060, Lot 008	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931108030000	0.07179	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 054, Lot 015	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931112080000	0.388058	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 068, Lot 006, LTS 6-8	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931112090000	0.143636	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 068, Lot 009	NORTH GREAT FALLS TOWNSITE	27TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931114190000	0.071831	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 062, Lot 019	NORTH GREAT FALLS TOWNSITE	29TH ST NE	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313931114240000	0.359263	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 062, Lot 020, LTS 20-24	NORTH GREAT FALLS TOWNSITE	3100 29TH ST NE	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313931115270000	0.359431	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 059, Lot 023, LTS 23-27	NORTH GREAT FALLS TOWNSITE	3120 30TH ST NE	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313931121070000	0.738157	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 064, Lot 04A, PL 2020-022	NORTH GREAT FALLS TOWNSITE	191 BLACK EAGLE RD	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931122010000	0.430821	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 063, Lot 001, LTS 1-6	NORTH GREAT FALLS TOWNSITE	2825 32ND AVE NE	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313931124020000	0.071806	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 057, Lot 002	NORTH GREAT FALLS TOWNSITE	31ST ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931128030000	5.009518	VICKS INDUSTRIAL PARK ADD, S31, T21 N, R04 E, Lot 003, PL 31-06	VICKS INDUSTRIAL PARK ADD	2900 BARLEY LN	GREAT FALLS, MT 59404	IMP_U - Improved Property - Urban
2313932101020000	14.86601	NORTH GREAT FALLS TOWNSITE, S32, T21 N, R04 E, BLOCK 045, Lot 21A, AM PL 2016-07	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313932101060000	11.7582	S32, T21 N, R04 E, 3635, PARCEL 000, IN SE/4NE/4 MK 15		3526 RAINBOW DAM RD	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313932301020000	35.70229	RIVERSIDE ADDITION, S32, T21 N, R04 E, IN NE4 MK 15A & LOTS 30-31 BLOCK 31 & LOT 7 BLOCK 36 RIVERSIDE TO GREAT FALLS	RIVERSIDE ADDITION	3500 RAINBOW DAM RD	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313931106130000	0.186732	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 061, Lot 005, LTS 5-7	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931106180000	0.287014	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 061, Lot 018, LTS 18-19	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931107110000	0.287357	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 060, Lot 007, LOTS 7,9-11	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931111040000	0.093955	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 071, Lot 003, LTS 3-4	NORTH GREAT FALLS TOWNSITE	2501 RAINBOW DAM RD	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931113040000	0.310203	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 065, Lot 003, LTS 3-4	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931114340000	0.718491	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 062, Lot 030, LTS 30-34	NORTH GREAT FALLS TOWNSITE	28TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931115110000	0.077498	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 059, Lot 011	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931115440000	0.0718	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 059, Lot 044	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931123040000	0.143637	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 058, Lot 004, LOT 4 & 47	NORTH GREAT FALLS TOWNSITE	30TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931128090000	3.209288	VICKS INDUSTRIAL PARK ADD, S31, T21 N, R04 E, Lot 001, PL 31-06	VICKS INDUSTRIAL PARK ADD	183 BLACK EAGLE RD	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313931128110000	5.007516	VICKS INDUSTRIAL PARK ADD, S31, T21 N, R04 E, Lot 002, PL 31-06	VICKS INDUSTRIAL PARK ADD	2800 BARLEY LN	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313931106150000	0.35904	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 061, LTS 3-4,8,13 & 15	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931106170000	0.143518	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 061, Lot 001, LTS 1-2	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931107180000	0.402105	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 060, Lot 001, LTS 1-6	NORTH GREAT FALLS TOWNSITE	2904 RAINBOW DAM RD	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313931107210000	0.215303	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 060, Lot 021, LTS 21-23	NORTH GREAT FALLS TOWNSITE	29TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931112010000	0.244336	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 068, Lot 001, LTS 1 & 24	NORTH GREAT FALLS TOWNSITE	BLACK EAGLE RD	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931114290000	0.359258	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 062, Lot 025, LTS 25-29	NORTH GREAT FALLS TOWNSITE	29TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931115010000	0.496625	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 059, Lot 001, AM PL 10-03 LTS 1-4 & 46A	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931115160000	0.286996	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 059, Lot 013, LTS 13-16	NORTH GREAT FALLS TOWNSITE	30TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931115220000	0.287233	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 059, Lot 022, LOTS 22,28,37 & 45	NORTH GREAT FALLS TOWNSITE	30TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931116010000	0.05507	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 055, Lot 001, LTS 1-2	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931123010000	0.215404	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 058, Lot 001, LOTS 1-3	NORTH GREAT FALLS TOWNSITE	30TH AVE NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2301606212040000	0.091833	GREAT FALLS SEVENTH ADDITION, S06, T20 N, R04 E, BLOCK 616, Lot 007	GREAT FALLS SEVENTH ADDITION	120 23RD AVE SW	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2301606211090000	0.091718	GREAT FALLS SEVENTH ADDITION, S06, T20 N, R04 E, BLOCK 615, Lot 004	GREAT FALLS SEVENTH ADDITION	123 16TH ST NE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2301606213050000	0.092056	GREAT FALLS SEVENTH ADDITION, S06, T20 N, R04 E, BLOCK 617, Lot 008, R 338 D 547 09/08/2000	GREAT FALLS SEVENTH ADDITION			IMP_U - Improved Property - Urban
2301606209140000	0.143428	GREAT FALLS SEVENTH ADDITION, S06, T20 N, R04 E, BLOCK 613, Lot 006, LT 6, N 10 FT LT 7	GREAT FALLS SEVENTH ADDITION	119 14TH ST NE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban

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PARCELID	Acres	LegalDescriptionShort	Subdivision	AddressLine1	CityStateZip	PropType
2301606211050000	0.092344	GREAT FALLS SEVENTH ADDITION, S06, T20 N, R04 E, BLOCK 615, Lot 009	GREAT FALLS SEVENTH ADDITION	1624 SMELTER AVE NE	BLACK EAGLE, MT 59414-1008	IMP_U - Improved Property - Urban
2301606211080000	0.091801	GREAT FALLS SEVENTH ADDITION, S06, T20 N, R04 E, BLOCK 615, Lot 003	GREAT FALLS SEVENTH ADDITION	125 16TH ST NE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2301606212070000	0.275775	GREAT FALLS SEVENTH ADDITION, S06, T20 N, R04 E, BLOCK 616, Lot 001, LTS 1,2, AND 8 BORRIES INC 1/2 INTEREST 3-D CLUB INC 1/2 INTI	GREAT FALLS SEVENTH ADDITION	1700 SMELTER AVE	BLACK EAGLE, MT 59414	VAC_U - Vacant Land - Urban
2301606213040000	0.424919	GREAT FALLS SEVENTH ADDITION, S06, T20 N, R04 E, BLOCK 617, LTS 1-3 LS 500 FT, LTS 6-7	GREAT FALLS SEVENTH ADDITION	1800 SMELTER AVE NE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2301606215070000	0.079042	GREAT FALLS SEVENTH ADDITION, S06, T20 N, R04 E, BLOCK 619, Lot 012, BAL OF 12, AND W 43 FT LT 13	GREAT FALLS SEVENTH ADDITION	110 21ST ST NE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2301606215080000	0.187745	GREAT FALLS SEVENTH ADDITION, S06, T20 N, R04 E, BLOCK 619, Lot 012, N 15 FT OF W 26 OF E 102 AND N 25 FT OF E 76 FT LT 12 AND E	GREAT FALLS SEVENTH ADDITION	2022 SMELTER AVE NE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2301606208100000	0.114437	GREAT FALLS SEVENTH ADDITION, S06, T20 N, R04 E, BLOCK 612, Lot 018	GREAT FALLS SEVENTH ADDITION	128 14TH ST NE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2301606210110000	0.335555	GREAT FALLS SEVENTH ADDITION, S06, T20 N, R04 E, BLOCK 614, 30-05, LOTS 4A, 5A & 6	GREAT FALLS SEVENTH ADDITION	113 15TH ST NE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2301606213010000	0.085671	GREAT FALLS SEVENTH ADDITION, S06, T20 N, R04 E, BLOCK 617, Lot 003, S10' OF W/2 LOT 3, ALL LOT 4	GREAT FALLS SEVENTH ADDITION	123 18TH ST NE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313836403030000	0.233735	S36, T21 N, R03 E, TRACT 1 OF COS #5074		1223 SMELTER AVE NE	BLACK EAGLE, MT 59414	APT_U - Apartment Urban
2313931302230000	0.129394	GREAT FALLS EIGHTH ADDITION, S31, T21 N, R04 E, BLOCK 623, Lot 008, LT 8 AND W2 LT 9	GREAT FALLS EIGHTH ADDITION	1714 COLORADO AVE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931307270000	0.293969	GREAT FALLS NINTH ADDITION, S31, T21 N, R04 E, BLOCK 625, LTS 5A & 6A	GREAT FALLS NINTH ADDITION	329 15TH ST	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931309300000	0.08621	GREAT FALLS NINTH ADDITION, S31, T21 N, R04 E, BLOCK 627, Lot 003	GREAT FALLS NINTH ADDITION	1904 MONTANA AVE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931311220000	0.129168	GREAT FALLS SEVENTEENTH ADDITION, S31, T21 N, R04 E, BLOCK 001, Lot 006	GREAT FALLS SEVENTEENTH ADDITION	1820 CHICAGO AVE	BLACK EAGLE, MT 59414	VAC_U - Vacant Land - Urban
2313931313090000	0.366477	S31, T21 N, R04 E, MK 20X		1900 CHICAGO AVE	BLACK EAGLE, MT 59414	IMP_R - Improved Property - Rural
2313931313140000	0.189782	LIGGETT ADDITION, S31, T21 N, R04 E, BLOCK 001, Lot 003, PLAT 30-02	LIGGETT ADDITION	509 19TH ST NE	BLACK EAGLE, MT 59414	VAC_R - Vacant Land - Rural
2313836403020000	0.181929	S36, T21 N, R03 E, TRACT 2 OF COS #5074		1217 SMELTER AVE NE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931301070000	0.344962	GREAT FALLS EIGHTH ADDITION, S31, T21 N, R04 E, BLOCK 624, Lot 025, LT 25-28	GREAT FALLS EIGHTH ADDITION	1513 SMELTER AVE NE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931301160000	0.086143	GREAT FALLS EIGHTH ADDITION, S31, T21 N, R04 E, BLOCK 624, Lot 016	GREAT FALLS EIGHTH ADDITION	1528 COLORADO AVE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931301180000	0.17232	GREAT FALLS EIGHTH ADDITION, S31, T21 N, R04 E, BLOCK 624, Lot 014, LTS 14-15	GREAT FALLS EIGHTH ADDITION	1524 COLORADO AVE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931302200000	0.172386	GREAT FALLS EIGHTH ADDITION, S31, T21 N, R04 E, BLOCK 623, Lot 011, LTS 11-12	GREAT FALLS EIGHTH ADDITION	1722 COLORADO AVE	BLACK EAGLE, MT 59414	VAC_U - Vacant Land - Urban
2313931302210000	0.129333	GREAT FALLS EIGHTH ADDITION, S31, T21 N, R04 E, BLOCK 623, Lot 009, E2 LT 9 AND LT 10	GREAT FALLS EIGHTH ADDITION	1718 COLORADO AVE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931304140000	0.086152	GREAT FALLS EIGHTH ADDITION, S31, T21 N, R04 E, BLOCK 621, Lot 003	GREAT FALLS EIGHTH ADDITION			VAC_U - Vacant Land - Urban
2313931309290000	0.172595	GREAT FALLS NINTH ADDITION, S31, T21 N, R04 E, BLOCK 627, Lot 004, LTS 4-5	GREAT FALLS NINTH ADDITION	1910 MONTANA AVE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931309320000	0.193377	GREAT FALLS NINTH ADDITION, S31, T21 N, R04 E, BLOCK 627, Lot 001, LTS 1-2	GREAT FALLS NINTH ADDITION	1900 MONTANA AVE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931310060000	0.868696	S31, T21 N, R04 E, MKS 24A, 25A, 26A		1621 MONTANA AVE	BLACK EAGLE, MT 59414	IMP_R - Improved Property - Rural
2313931311230000	0.12918	GREAT FALLS SEVENTEENTH ADDITION, S31, T21 N, R04 E, BLOCK 001, Lot 005	GREAT FALLS SEVENTEENTH ADDITION	1820 CHICAGO AVE	BLACK EAGLE, MT 59414	VAC_U - Vacant Land - Urban
2313931319420000	0.143468	LITTLE CHICAGO ADDITION, S31, T21 N, R04 E, BLOCK 002, Lot 040, LTS 40-41	LITTLE CHICAGO ADDITION	613 22ND ST	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931321120000	12.86569	COPPER BASIN SUBDIVISION, S31, T21 N, R04 E, Lot 22, PL 41-2012	COPPER BASIN SUBDIVISION	401 21ST ST	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931309220000	0.129245	GREAT FALLS NINTH ADDITION, S31, T21 N, R04 E, BLOCK 627, Lot 011, LT 11 AND W2 LT 12	GREAT FALLS NINTH ADDITION	1920 MONTANA AVE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931318010000	0.287024	LITTLE CHICAGO ADDITION, S31, T21 N, R04 E, BLOCK 004, Lot 045, LTS 45-48	LITTLE CHICAGO ADDITION	601 21ST ST	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931301010000	0.118852	GREAT FALLS EIGHTH ADDITION, S31, T21 N, R04 E, BLOCK 624, Lot 001	GREAT FALLS EIGHTH ADDITION	1501 SMELTER AVE NE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931308220000	0.172543	GREAT FALLS NINTH ADDITION, S31, T21 N, R04 E, BLOCK 626, Lot 008, ALL OF LOTS 8 & 9	GREAT FALLS NINTH ADDITION	1716 MONTANA AVE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931313080000	0.200908	S31, T21 N, R04 E, IN SW/4 W10' MK 20C		1910 CHICAGO AVE	BLACK EAGLE, MT 59414	IMP_R - Improved Property - Rural
2313836403060000	0.393314	S36, T21 N, R03 E, IN SESE MKS X3 AND X4		1321 SMELTER AVE NE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931311060000	0.129207	GREAT FALLS SEVENTEENTH ADDITION, S31, T21 N, R04 E, BLOCK 002, Lot 010	GREAT FALLS SEVENTEENTH ADDITION	1715 MONTANA AVE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931311280000	0.448205	S31, T21 N, R04 E, MK 28B		441 17TH ST NE	BLACK EAGLE, MT 59414	IMP_R - Improved Property - Rural
2313931318300000	0.215272	LITTLE CHICAGO ADDITION, S31, T21 N, R04 E, BLOCK 004, Lot 027, LTS 27-29	LITTLE CHICAGO ADDITION	641 21ST ST	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931321090000	1.399476	WIREMILL ROAD ADDITION, S31, T21 N, R04 E, Lot 006	WIREMILL ROAD ADDITION	2300 WIRE MILL RD	BLACK EAGLE, MT 59414	IMP_R - Improved Property - Rural
2313931321170000	0.344345	S31, T21 N, R04 E, MK 20FF		527 21ST ST	BLACK EAGLE, MT 59414	EP - Exempt Property
2301606210090000	0.10545	GREAT FALLS SEVENTH ADDITION, S06, T20 N, R04 E, BLOCK 614, Lot 001	GREAT FALLS SEVENTH ADDITION	1500 SMELTER AVE NE	BLACK EAGLE, MT 59414	APT_U - Apartment Urban
2301606210100000	0.211476	GREAT FALLS SEVENTH ADDITION, S06, T20 N, R04 E, BLOCK 614, Lot 002, LTS 2 & 3	GREAT FALLS SEVENTH ADDITION	125 15TH ST NE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931302150000	0.445295	GREAT FALLS EIGHTH ADDITION, S31, T21 N, R04 E, BLOCK 623, Lot 016, LTS 16-20	GREAT FALLS EIGHTH ADDITION	1825 SMELTER AVE NE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931304120000	0.172302	GREAT FALLS EIGHTH ADDITION, S31, T21 N, R04 E, BLOCK 621, Lot 005, LOTS 5-6	GREAT FALLS EIGHTH ADDITION			VAC_U - Vacant Land - Urban
2313931304130000	0.086169	GREAT FALLS EIGHTH ADDITION, S31, T21 N, R04 E, BLOCK 621, Lot 004	GREAT FALLS EIGHTH ADDITION			EP - Exempt Property

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PARCELID	Acres	LegalDescriptionShort	Subdivision	AddressLine1	CityStateZip	PropType
2313931309250000	0.129338	GREAT FALLS NINTH ADDITION, S31, T21 N, R04 E, BLOCK 627, Lot 007, E 15 FT LT 7 AND LT 8	GREAT FALLS NINTH ADDITION	1914 MONTANA AVE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931311050000	0.258372	GREAT FALLS SEVENTEENTH ADDITION, S31, T21 N, R04 E, BLOCK 002, Lot 011, LTS 11-12	GREAT FALLS SEVENTEENTH ADDITION	1717 MONTANA AVE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931312030000	0.172223	S31, T21 N, R04 E, MK 20S		1909 MONTANA AVE	BLACK EAGLE, MT 59414	IMP_R - Improved Property - Rural
2313931319330000	0.114779	LITTLE CHICAGO ADDITION, S31, T21 N, R04 E, BLOCK 002, Lot 032, LOT 32 AND N15' LOT 33	LITTLE CHICAGO ADDITION	633 22ND ST	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2301501113080000	0.113696	GREAT FALLS FOURTEENTH ADDITION, S01, T20 N, R03 E, BLOCK 628, Lot 017	GREAT FALLS FOURTEENTH ADDITION	124 13TH ST	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931101010000	0.456568	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 078, LTS 9-11, ALLEY RIGHT-OF-WAY	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931101030000	0.143632	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 078, Lot 007	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931109010000	0.100771	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 077, Lot 001	NORTH GREAT FALLS TOWNSITE	30TH AVE NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931109100000	0.430995	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 077, Lot 010A	NORTH GREAT FALLS TOWNSITE	3028 24TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931109130000	0.287457	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 077, Lot 012, LTS 12-13	NORTH GREAT FALLS TOWNSITE	24TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931119010000	0.574237	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 070, Lot 001, LTS 1-4	NORTH GREAT FALLS TOWNSITE	32ND AVE NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931120100000	0.574209	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 069, Lot 021, LTS 21-24	NORTH GREAT FALLS TOWNSITE	2601 32ND AVE NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931101020000	0.152003	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 078, Lot 008, ALLEY RIGHT-OF-WAY	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931101050000	0.236861	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 078, Lot 005, LTS 5-6	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931102130000	0.154495	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 073, Lot 010, LTS 10-11	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931110150000	0.287355	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 074, Lot 014, LTS 14-15	NORTH GREAT FALLS TOWNSITE	25TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931110160000	0.143622	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 074, Lot 016	NORTH GREAT FALLS TOWNSITE	32ND AVE NE	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313931101070000	0.143517	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 078, Lot 003	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931101120000	0.143486	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 078, Lot 012	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931109030000	0.310217	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 077, Lot 002, LTS 2-3	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931109090000	0.28718	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 077, Lot 007, LTS 7-8	NORTH GREAT FALLS TOWNSITE	24TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931109220000	0.574704	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 077, Lot 019, LTS 19-22	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931109240000	0.287176	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 077, Lot 023, LTS 23-24	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931111010000	2.413324	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 071, Lot 001, LTS 1-2, LTS 8-24	NORTH GREAT FALLS TOWNSITE	BLACK EAGLE RD	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931112160000	0.09603	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 068, Lot 016	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931117010000	0.696865	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 076, Lot 001, LTS 1-5	NORTH GREAT FALLS TOWNSITE	32ND AVE NE	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313931118010000	0.430712	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 075, Lot 001, LTS 1-3	NORTH GREAT FALLS TOWNSITE	2425 32ND AVE NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931109170000	0.43109	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 077, Lot 016, LTS 16-18	NORTH GREAT FALLS TOWNSITE	2300 32ND AVE NE	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313931110170000	0.143737	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 074, Lot 017	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931110200000	0.431143	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 074, Lot 018, LTS 18-20	NORTH GREAT FALLS TOWNSITE	24TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931118040000	0.270888	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 075, Lot 4 - 5	NORTH GREAT FALLS TOWNSITE	32ND AVE NE	GREAT FALLS, MT 59404	VAC_U - Vacant Land - Urban
2313931120060000	0.134643	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 069, Lot 020	NORTH GREAT FALLS TOWNSITE	26TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931101090000	0.236816	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 078, Lot 001 - 002	NORTH GREAT FALLS TOWNSITE	2300 30TH AVE NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931109040000	0.155215	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 077, Lot 004	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931109060000	0.256159	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 077, Lot 005, LTS 5-6	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313931110110000	0.431137	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 074, Lot 011, LOTS 11-13	NORTH GREAT FALLS TOWNSITE	25TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931119070000	0.273724	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 070, LTS 20-21	NORTH GREAT FALLS TOWNSITE	32ND AVE NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931110010000	1.970998	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 074, Lot 001, LTS 1-10, LTS 21-24	NORTH GREAT FALLS TOWNSITE	3000 BLACK EAGLE RD	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313931119050000	0.13221	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 070, Lot 005	NORTH GREAT FALLS TOWNSITE	26TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931119100000	0.430647	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 070, Lot 023, LOTS 22-24	NORTH GREAT FALLS TOWNSITE	25TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931120010000	0.350446	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 069, LOT 1-5 THOSE PORTIONS LYING NORTH WEST OF WIRE MILL ROAD	NORTH GREAT FALLS TOWNSITE	32ND AVE NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931112180000	0.091674	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 068, Lot 017, LTS 17-18	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
2313932202190000	20.6145	SAINT MICHAELS ADDITION, S32, T21 N, R04 E, Lot 1A-1, AM PL 2017-05	SAINT MICHAELS ADDITION	3109 RAINBOW DAM RD	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313932202190000	20.6145	SAINT MICHAELS ADDITION, S32, T21 N, R04 E, Lot 1A-1, AM PL 2017-05	SAINT MICHAELS ADDITION	3109 RAINBOW DAM RD	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
2313931116110000	1.493435	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 056, Lot 004, LTS 4,7,9,14,16-17,30-39 LTS 21-23 & 26-28	NORTH GREAT FALLS TOWNSITE	30TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural

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Table 3 Properties To Be Sampled

PARCELID	Acres	LegalDescriptionShort	Subdivision	AddressLine1	CityStateZip	PropType
2313931116110000	1.493435	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 056, Lot 004, LTS 4,7,9,14,16-17,30-39 LTS 21-23 & 26-28	NORTH GREAT FALLS TOWNSITE	30TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931116110000	1.493435	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 056, Lot 004, LTS 4,7,9,14,16-17,30-39 LTS 21-23 & 26-28	NORTH GREAT FALLS TOWNSITE	30TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931116110000	1.493435	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 056, Lot 004, LTS 4,7,9,14,16-17,30-39 LTS 21-23 & 26-28	NORTH GREAT FALLS TOWNSITE	30TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931116100000	0.34362	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 056, LTS 1-3, 5, 6, 8	NORTH GREAT FALLS TOWNSITE	31ST ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931116100000	0.34362	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 056, LTS 1-3, 5, 6, 8	NORTH GREAT FALLS TOWNSITE	31ST ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931124050000	1.098042	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 057, LTS 4-5,7-10,39-40,42-48	NORTH GREAT FALLS TOWNSITE	30TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313931124050000	1.098042	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 057, LTS 4-5,7-10,39-40,42-48	NORTH GREAT FALLS TOWNSITE	30TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
2313836402140000	0.516532	S36, T21 N, R03 E, 2946, PARCEL N/A, IN NESWSE MK 7-4		1029 MONTANA AVE	BLACK EAGLE, MT 59414	IMP_R - Improved Property - Rural
2313931315010000	1.006711	RIVERVIEW INDUSTRIAL PARK ADDN, S31, T21 N, R04 E, BLOCK 002, Lot 009, AM PL 32-98	RIVERVIEW INDUSTRIAL PARK ADDN	2500 17TH ST NE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313836402120000	0.258374	S36, T21 N, R03 E, IN SE4 MK 7C		1037 MONTANA AVE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313931321050000	0.549325	SANDERS MINOR SUBDIVISION, S31, T21 N, R04 E, Lot 001	SANDERS MINOR SUBDIVISION	2101 WIRE MILL RD	BLACK EAGLE, MT 59414	IMP_R - Improved Property - Rural
2313931321230000	1.497631	S31, T21 N, R04 E, 4130, PARCEL 000, TR 1, COS #4130 IN NE4SW4 MK 3D1		2125 WIRE MILL RD	BLACK EAGLE, MT 59414	IMP_R - Improved Property - Rural
2313931314090000	0.499729	RIVERVIEW INDUSTRIAL PARK ADDN, S31, T210N, R040E, BLOCK 001, Lot 009	RIVERVIEW INDUSTRIAL PARK ADDN	2704 16TH ST NE	BLACK EAGLE, MT 59414	IMP_U - Improved Property - Urban
2313836402190000	0.547029	S36, T21 N, R03 E, C.O.S. 2945, A TRACT IN NWSESE		1027 MONTANA AVE	BLACK EAGLE, MT 59414	IMP_R - Improved Property - Rural
2313836402200000	1.552001	S36, T21 N, R03 E, 3093 & 4172, PARCEL 000, TR 1, COS #4172 IN S2SE MK 7S		1031 MONTANA AVE	BLACK EAGLE, MT 59414	IMP_R - Improved Property - Rural
2313931321030000	1.868357	SANDERS MINOR SUBDIVISION, S31, T21 N, R04 E, Lot 002A, PL 40-2013	SANDERS MINOR SUBDIVISION	2025 WIRE MILL RD	BLACK EAGLE, MT 59414	IMP_R - Improved Property - Rural
2313929101030000	41.35151	S29, T21 N, R04 E, TR 1, COS #3635, IN SWSE OF SEC 29 & IN NWNE OF SEC 32, MK 12				VAC_R - Vacant Land - Rural
02313931113060000	0.256	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 065, Lot 005, LTS 5-6	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
02313931113130000	1.006	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 065, Lot 007, LTS 7-13	NORTH GREAT FALLS TOWNSITE	28TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
02313931116110000	1.493	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 056, Lot 004, LTS 4,7,9,14,16-17,30-39 LTS 21-23 & 26-28	NORTH GREAT FALLS TOWNSITE	30TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
02313931113010000	0.256	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 065, Lot 001, LTS 1-2	NORTH GREAT FALLS TOWNSITE			VAC_R - Vacant Land - Rural
02313931113200000	0.287	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 065, Lot 019, LOTS 19-20	NORTH GREAT FALLS TOWNSITE	27TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
02313931124050000	1.098	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 057, LTS 4-5,7-10,39-40,42-48	NORTH GREAT FALLS TOWNSITE	30TH ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
02313931116100000	0.344	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 056, LTS 1-3, 5, 6, 8	NORTH GREAT FALLS TOWNSITE	31ST ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
02313931113220000	0.574	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 065, Lot 21A	NORTH GREAT FALLS TOWNSITE	3090 28TH ST NE	GREAT FALLS, MT 59404	IMP_R - Improved Property - Rural
02313931116270000	0.144	NORTH GREAT FALLS TOWNSITE, S31, T21 N, R04 E, BLOCK 056, Lot 019, LTS 19-20	NORTH GREAT FALLS TOWNSITE	31ST ST NE	GREAT FALLS, MT 59404	VAC_R - Vacant Land - Rural
02313931317060000	2.077	S31, T21 N, R04 E, MK 2C				VAC_R - Vacant Land - Rural

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Table 4	
Residential Yard Considerations for Community Soils Areas in OU1	
Potential Yard Obstacles*	Potential Action to Be Taken
Fences	Remove as necessary in order to access property. Replace once work is completed.
Drain Fields/septic systems	Stake location using property owners' Information if possible. Do not disturb from excavation activities.
Trees, shrubs, hedges, etc.	Excavate to design depth from surrounding area to plant drip line; taper excavation to zero depth at plant. Hand excavate in rooting areas. Apply cover soil over exposed roots and re-wet as soon as possible.
Fences, foundations, sidewalks, driveways	Taper excavation from the obstacle to design depth as shown on the Standard Drawings (Appendix G).
Swimming pools, statues, retaining walls, etc.	Do not disturb.
Buried utilities	Arrange utility locate for each property. Hand excavate in area of utilities. Do not disturb utilities: repair all damaged utilities as a result of the work.
Water wells	Do not disturb water wells.
Gardens	Do not install sod in gardens which have been backfilled with clean cover soil.
Concrete driveways, sidewalks, etc.	Do not disturb. Taper excavation away from areas of concrete.
Gravel driveways and walkways	Remove aggregate; replace with clean aggregate (6-inch depth) backfill.
Old cars, dog kennels. Wood piles, other semi-permanent obstacles	Landowner to relocate; otherwise do not disturb.
Swing sets, sand boxes, other play areas	Temporarily relocate if feasible: otherwise, do not disturb.
Sprinkler systems, property owner utilities or other permanent obstacles	Stake locations using property owners' information if possible; hand excavate in areas of those utilities and sprinkler systems. Repair all damages as a result of the work.

* All yard obstacles will be photo documented prior to conducting work

Woodard & Curran

FIGURES

Figure 1: ACM Smelter & Refinery Site Location

Figure 2: Land Use Classification

Figure 3: Residential Properties Requiring RA

Figure 4: Residential RA Decision Process

Figure 5: Non-Residential Properties Requiring RA

Figure 6: Non-Residential RA Decision Process

Figure 7: Property Sampling Status

Figure 8: Project Organization Chart

Figure 9: Preliminary Remedial Action Schedule

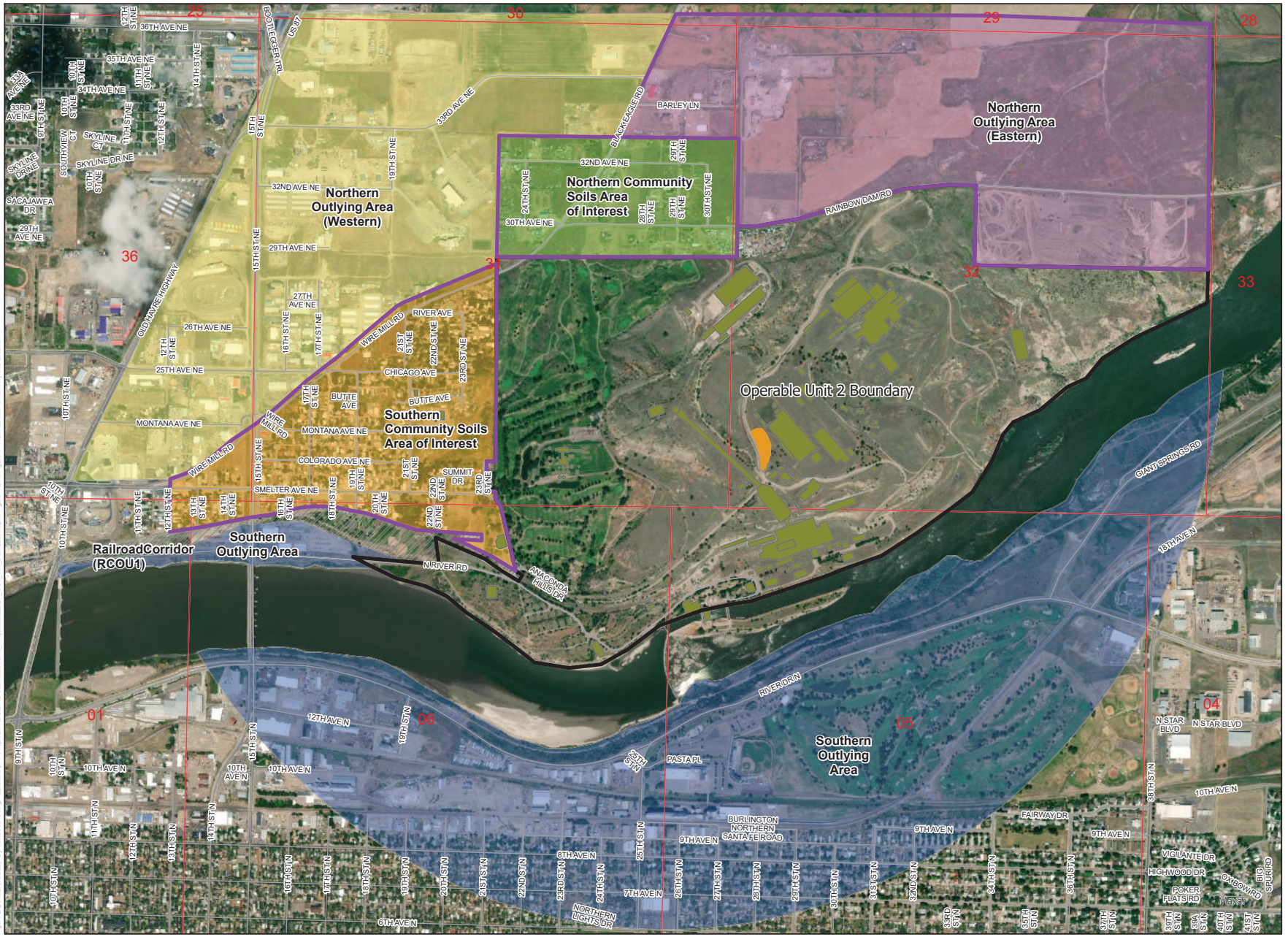


Figure 1

ACM Smelter & Refinery Site Location
Community Soils Operable Unit
Black Eagle and Great Falls, Montana

- Cummunity Soils Operable Unit 1
- Operable Unit 2 Former Facility Area
- Proposed Consolidation Area
- Former Facilities

Unit

- Northern Community Soils Area of Interest
- Northern Outlying Area (Western)
- Northern Outlying Area (Eastern)
- Railroad Corridor
- Southern Community Soils Area of Interest
- Southern Outlying Area

N

0 1000 Feet

Woodard & Curran
Atlantic Richfield Company

Project #: 0231336.05
Map Created: March 2023

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Figure 3
Residential Properties Requiring Remedial Action
Community Soils Operable Unit 1
Black Eagle and Great Falls, Montana

Community Soils Operable Unit 1
Properties Requiring Remedial Action (Based upon currently available data)
Parcels

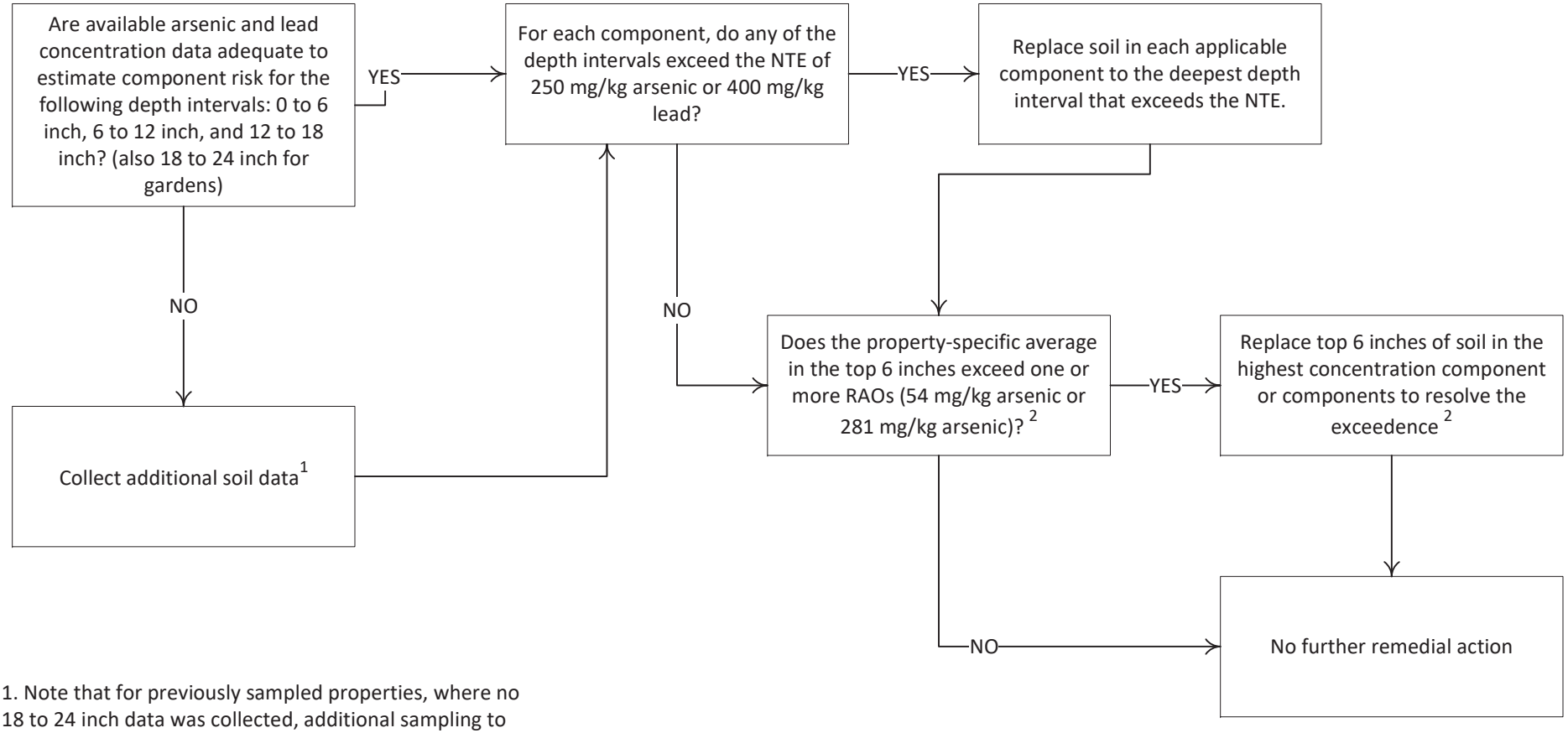
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0 125 250 Feet

Woodard & Curran
Atlantic Richfield Company

Project #: 0231336.05
Map Created: March 2023

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Figure 4 Residential Remedial Action Decision Process



1. Note that for previously sampled properties, where no 18 to 24 inch data was collected, additional sampling to collect this deeper interval will not take place. The need for 18 to 24 inch RA will be based upon the 12 to 18 inch interval for those previously sampled properties.

2. As calculated from available data including replacement soil concentrations.

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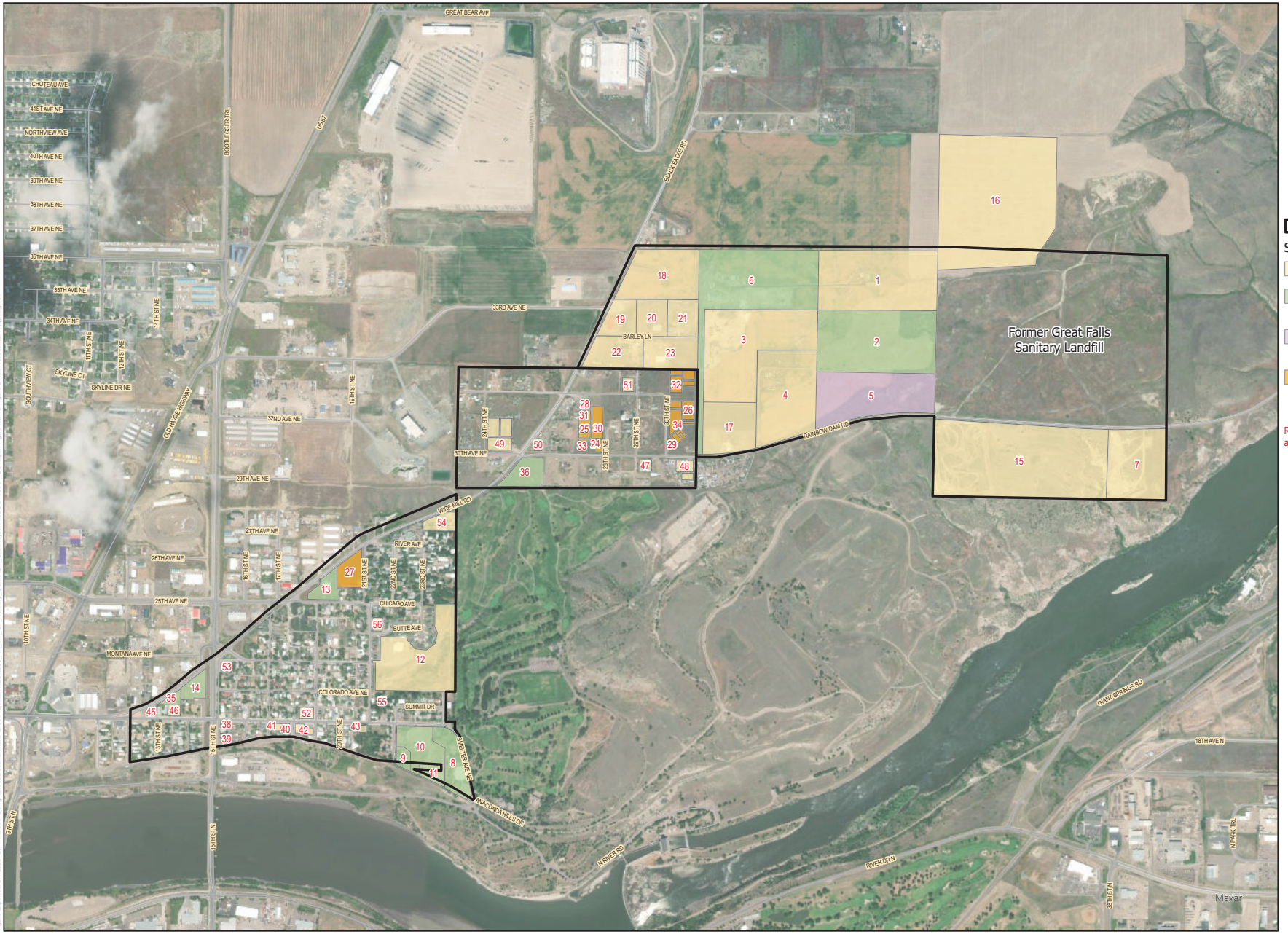


Figure 5

Non-Residential Properties Requiring Remedial Action
Community Soils Operable Unit 1
Great Falls and
Black Eagle, Montana

Community Soils Operable Unit 1

Status

- Data Needed
- No Remedial Action or Institutional Control's
- Remedial Action Needed to Meet Residential Remedial Action Objectives
- Additional Data Needed for Vacant Lot

Refer to Table 2 of the RAWP/FDR for numbering and evaluation of available property data.

N

0 1000 Feet

Woodard & Curran
Atlantic Richfield Company

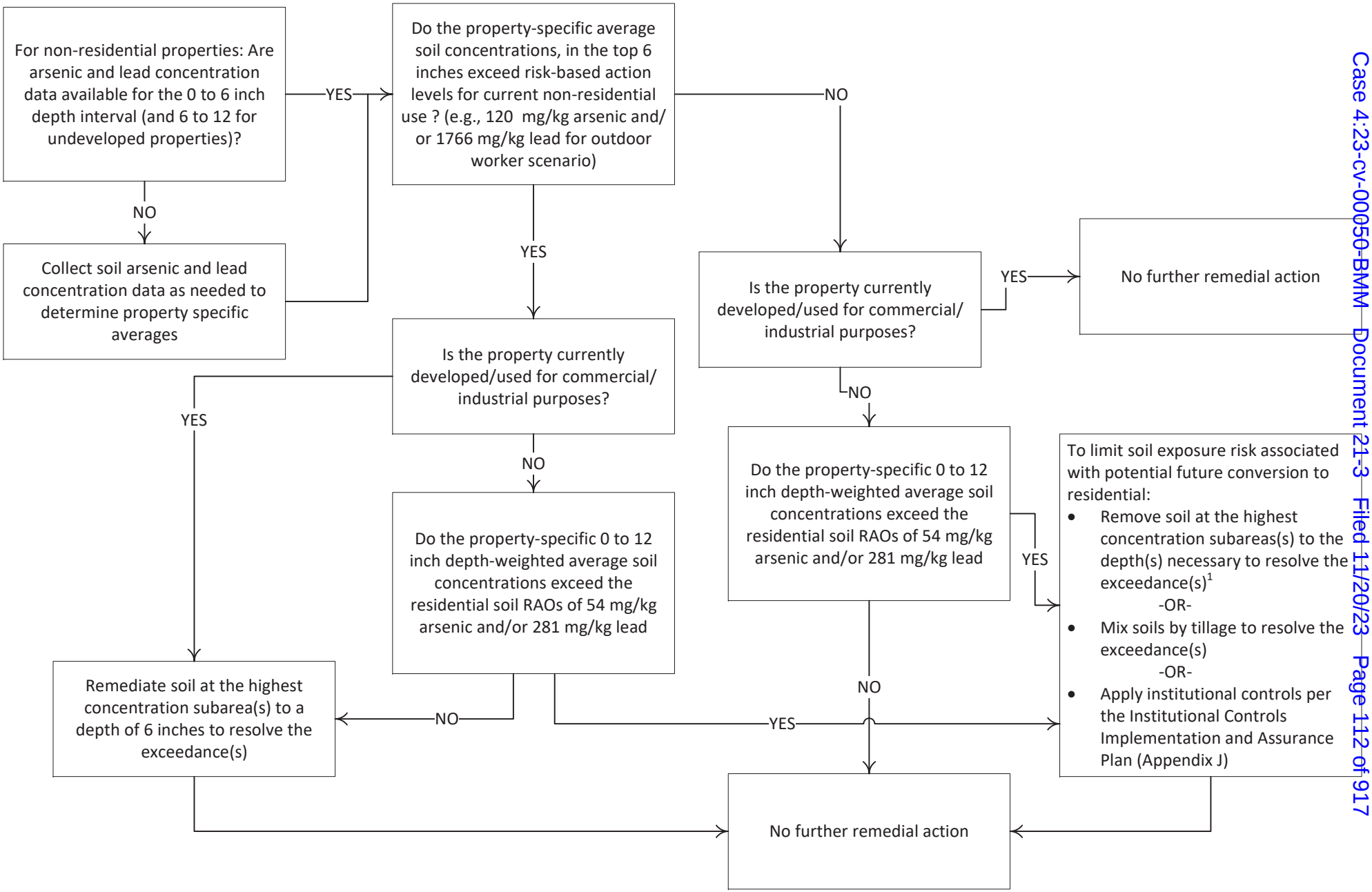
Project #: 0231336.05
Map Created: March 2023

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Figure Exported: 5/1/2023 By: mmcleod Using: \\woodardcurran.net\shared\Projects\TREC\3030_AR_MT_GF_Refinery_O&M\ACM_GIS\Project Files\OU1\1CMP_OU1.aprx Figure Name: Figure 5 Non Residential Requiring RA

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Figure 6 Non-Residential Remedial Action Decision Process



1. Note that for a property which is not commercially developed but could feasibly be converted to residential: If the top 6 inches exceed risk based action levels for its current use, the top 6 inches will be remediated (removal or tillage) for its current use regardless of what is done to address a residential RAO exceedance in the top 12 inches (soil removal, tillage or ICs).

04.28.2023

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Figure 7
Property Sampling Status
Community Soils Operable Unit 1
Great Falls, Montana

Community Soils Operable Unit 1

Sampling Status
Sampling Complete
Sampling or Additional Action Needed

N
0 200 400
Feet

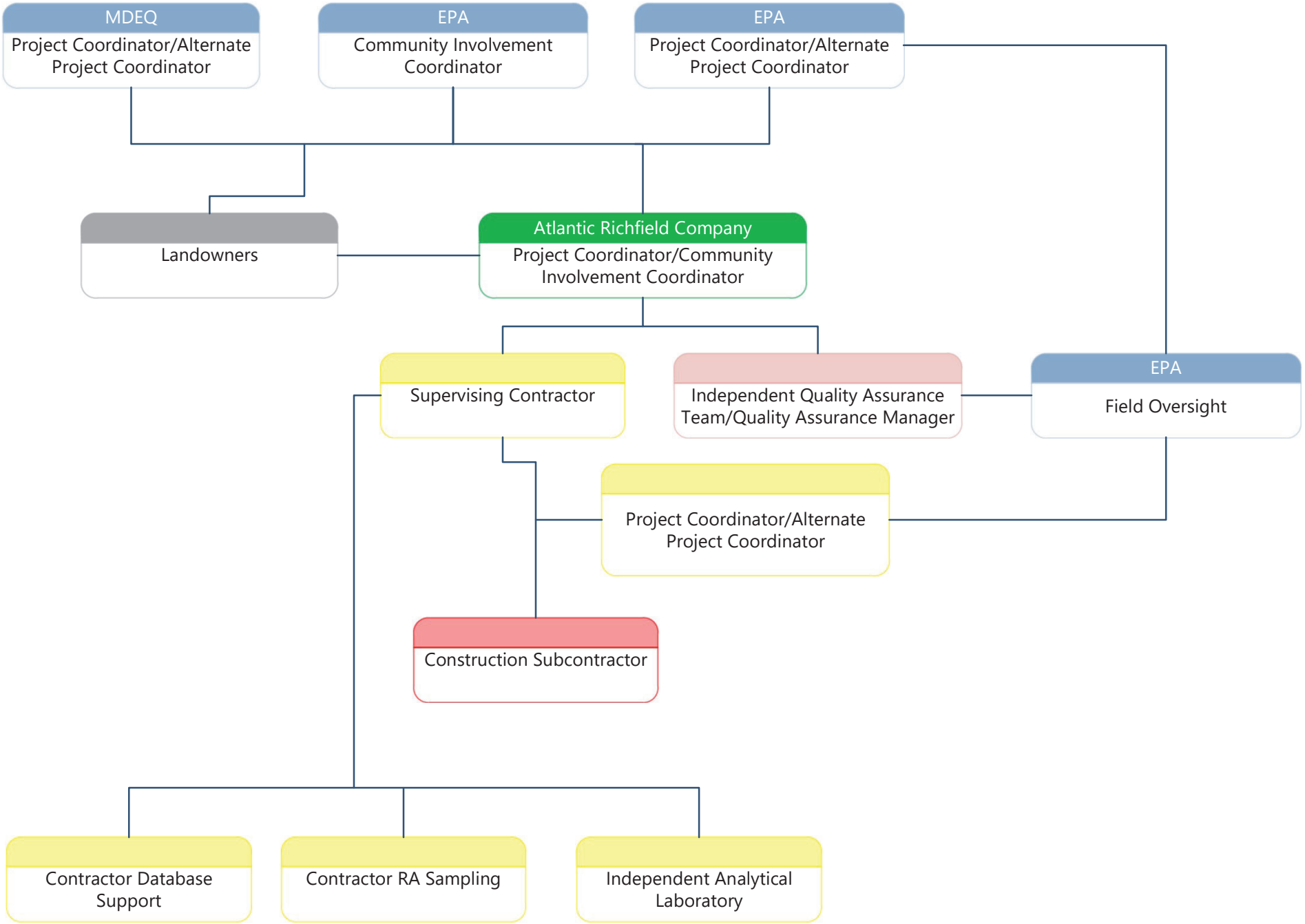
Woodard & Curran
Atlantic Richfield Company

Project #: 0231336.05
Map Created: March 2023

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Former Great Falls Sanitary Landfill
Missouri River
Missouri River
Missouri River

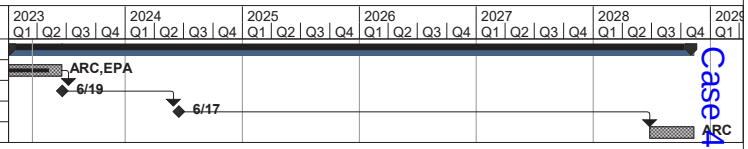
Figure 8. Project Organization Chart



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Figure 9: CSOU1 Preliminary Remedial Action Schedule

ID	Task Name	Start	Finish	Duration	Resource Initials	Predecessors
1	**CSOU1 - CSOU1 Preliminary Remedial Action Schedule**	**Fri 1/6/23**	**Wed 11/1/28**	**1519 days**		
2	Draft CSOU1 Community Soils RAWP/FDR and Appendices	Mon 1/2/23	Fri 6/16/23	120 days	ARC,EPA	
3	Begin Work	Mon 6/19/23	Fri 6/14/24	260 days	ARC	2
4	Begin Construction	Mon 6/17/24	Fri 6/23/28	1050 days	ARC	3
5	Conclude Construction	Mon 6/26/28	Fri 11/10/28	100 days	ARC	4



Project: Great Falls Refinery
Date: Fri 3/17/23

Task		Project Summary		Inactive Task		Duration-only		Finish-only	
Split		External Tasks		Inactive Milestone		Manual Summary Rollup		Progress	
Milestone		External Milestone		Inactive Summary		Manual Summary		Deadline	
Summary		Inactive Task		Manual Task		Start-only			

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APPENDIX A: MAP OF CSOU1 BOUNDARY

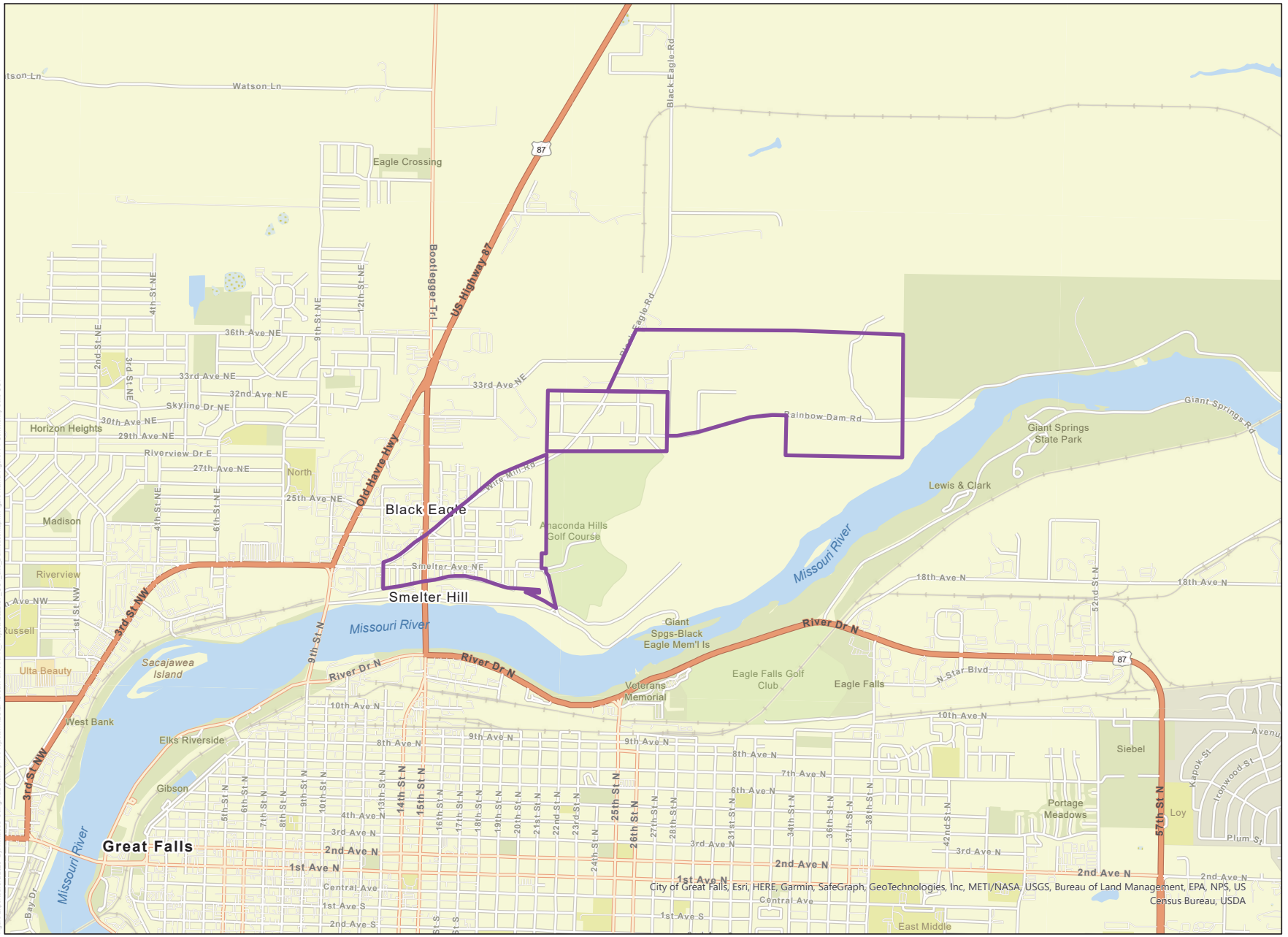


Figure A-1

Community Soils Operable Unit 1
Black Eagle and Great Falls, Montana

Cummunity Soils Operable Unit 1

N

0 1000 2000 Feet

Woodard & Curran
Atlantic Richfield Company

Project #: 0231336.05
Map Created: March 2023

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APPENDIX B:

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APPENDIX C: QUALITY ASSURANCE PROJECT PLAN

ACM SMELTER & REFINERY SITE OU1 COMMUNITY SOILS

Final

Appendix C

Quality Assurance Project Plan

Prepared for:

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0231336

Atlantic Richfield Company

July 2023

Woodard & Curran

TITLE AND APPROVAL PAGE

Appendix C: ACM Smelter & Refinery Site OU1 Community Soils Quality Assurance Project Plan

Approved: _____ Date: _____

Charles Coleman, Site Project Manager, EPA, Region 8

Approved: _____ Date: _____

Richard Sloan, Project Officer, Montana DEQ

Approved: _____ Date: _____

Luke Pokorny, Project Manager
Atlantic Richfield Company

Approved: _____ Date: _____

David Gratson, Quality Assurance Manager Atlantic Richfield Company

Approved: _____ Date: _____

Doug Spicuzza, Contractor Project Coordinator
Woodard & Curran

Approved: _____ Date: _____

Janna Aune, Contractor Quality Assurance Officer
Woodard & Curran

Plan is effective on date of approval.

Woodard & Curran

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REVISION SUMMARY

Revision No.	Author	Version	Description	Date
Rev 0	Woodard & Curran	Draft Final	Issued for Agency Review	March 17, 2023
Rev 1	Woodard & Curran	Revised Draft Final	Issued for Agency Review and Approval	May 8, 2023
Rev 1	Woodard & Curran	Final	Issued for Agency Approval	June 6, 2023
Rev 2	Woodard & Curran	Final	Final Edit, Issued for Agency Approval	July 13, 2023

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LIST OF ACRONYMS

ACM	Anaconda Copper Mining Company
ARC	Atlantic Richfield Company
bgs	below ground surface
CAR	Corrective Action Report
CAS	Chemical Abstracts Service
CLP	Contract Laboratory Program
COCs	Contaminants of Concern
COC	Chain-of-Custody
CPC	Contractor Project Coordinator
CQAO	Contractor Quality Assurance Officer
CSAOI	Community Soils Areas of Interest
CSOU1	Community Soils
DQA	Data Quality Assessment
DQO	Data Quality Objective
DSR	Data Summary Report
DWA	depth weighted average
EDD	Electronic Data Deliverable
EPA	U. S. Environmental Protection Agency
FD	Field Duplicate
FS	Feasibility Study
FSP	Field Sampling Plan
FTL	Field Team Leader
GIS	Geographic Information System
GPS	Global Positioning System
HASP	Health and Safety Plan
ICB/CCB	Initial and Continuing Calibration Blanks
ICP-MS	Inductively Coupled Plasma Spectrometry
ICV/CCV	Initial and Continuing Calibration Verification
ID	Identification
IS	Internal Standard
ISWP	Individual Site Work Plan
LaMP	Laboratory Management Program
LCS	Laboratory control spike
LCSD	Laboratory control spike duplicate
LD	Laboratory duplicate
MDEQ	Montana Department of Environmental Quality
MDL	Method Detection Limit
mg/kg	milligrams per kilogram
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NTE	Not to Exceed
OU1	Operable Unit 1

Woodard & Curran

LIST OF ACRONYMS (cont.)

PC	Project Coordinator
PDS	Post Digestion Spike
PQLG	Project Quantitation Limit Goals
QA	Quality Assurance
QAM	Quality Assurance Manager
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
QC	Quality Control
RA	Remedial Action
RAO	Remedial Action Objectives
RAWP/FDR	Remedial Action Work Plan/Final Design Report
RD/RA	Remedial Design/Remedial Action
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RL	Reporting Limit
RPD	Relative Percent Difference
ROD	Record of Decision
SDG	Sample Delivery Group
sf	square feet
SOP	Standard Operating Procedure
SOW	Statement of Work

1. INTRODUCTION

The purpose of this Quality Assurance Project Plan (QAPP) is to provide guidance for residential and non-residential property sampling and analysis within Operable Unit 1 (OU1) Community Soils (CSOU1) of the Anaconda Copper Mining Company (ACM) Smelter and Refinery Superfund Site (ACM Site) in and near Black Eagle, Cascade County, Montana, and to describe the Quality Assurance/Quality Control (QA/QC) policies and procedures to be used during data collection and analyses. This plan is Appendix C of the Remedial Action Work Plan/Final Design Report (RAWP/FDR) for CSOU1, developed by Atlantic Richfield Company (ARC) to describe the scope of the remedy, the basis of the design, and the technical approach for implementation of the Remedial Action (RA).

In 2021, the U.S. Environmental Protection Agency (EPA) and the Montana Department of Environmental Quality (MDEQ) (collectively, the Agencies) issued the OU1 Record of Decision (ROD) (EPA, 2021) which presents the selected remedy for the ACM Smelter and Refinery Community Soils Operable Unit National Priorities Site. ARC is conducting the Remedial Design/Remedial Action (RD/RA) for CSOU1 pursuant to and in accordance with the Consent Decree for the Community Soils Portion of OU1 of the ACM Site and associated Statement of Work (SOW) (EPA, 2023). The RD/RA for CSOU1 addresses arsenic and lead contamination in soils in residential and non-residential areas.

This QAPP was developed in accordance with section 7.7 (b) of that SOW and the most recent version of *Quality Management Systems for Environmental Information and Technology Programs – Requirements with Guidance for Use* (ANSI, 2014), and *Guidance for Quality Assurance Project Plans* (EPA, 2001). The Field Sampling Plan (FSP) portion of the QAPP was developed in accordance with *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (EPA, 1988).

This QAPP includes the following four key elements:

- Project management and objectives;
- Measurement and data acquisition;
- Assessment and oversight; and
- Data review and reporting.

The Sections below provide the project elements and include the appropriate content needed for planning, sampling, and analysis within CSOU1.

2. PROJECT MANAGEMENT

This Section addresses project administrative functions as well as project background, objectives, and documentation requirements for sampling and analyses activities within CSOU1.

2.1 Project Organization and Responsibilities

An organizational chart showing the overall organization of the ARC Project Team related to this QAPP is provided as Figure C-1. Responsibilities of key individuals comprising the Project Team and their detailed responsibilities are listed below.

ARC Project Coordinator (ARC PC)

The ARC PC monitors the performance of the contractor(s), consults with the Contractor Project Coordinator (CPC) and ARC Quality Assurance Manager (ARC QAM) and Contractor Quality Assurance Officer (CQAO) on deficiencies, and aids in finalizing resolution actions.

ARC Quality Assurance Manager (ARC QAM)

The ARC QAM interfaces with the ARC PC for company policies regarding quality and has the authority and responsibility to approve QA documents specific to the project including this QAPP. The QAM functions independently from the project team generating the data.

Contractor Project Coordinator (CPC)/Alternate Project Coordinator

The CPC is responsible for scheduling all sampling work to be completed and ensures that the work is performed in accordance with the requirements contained herein. The CPC is also responsible for consulting with the CQAO regarding any project deficiencies and resolutions.

Contractor Quality Assurance Officer (CQAO)

The CQAO is responsible for verifying effective implementation of QAPP requirements and procedures including reviewing field and laboratory data and evaluating data quality. The CQAO may also consult with the ARC QAM and ARC PC related to project deficiencies and resolutions.

Field Team Leader (FTL)

The FTL is responsible for technical aspects of the project and provides “on-the-ground” overview of project implementation by observing site activities to ensure compliance with technical project requirements, and the Health and Safety Plan (HASP). The FTL ensures that the QAPP has been reviewed by all members of the field team and is properly followed during field activities. The FTL will: conduct daily safety meetings; assist in field activities; document activities in the field logbook; manage field activities and equipment; make decisions in the field; identify potential quality or safety issues; and report any quality issues to the CQAO and CPC.

Health and Safety Manager

The Health and Safety Manager is responsible for developing and reviewing the HASP with all members of the field team. The Health and Safety Manager will ensure that work crews comply with all site health and safety requirements and will revise the HASP, if necessary.

Contract Laboratory

ARC maintains a Laboratory Management Program (LaMP) that ensures analytical testing service needs are consistently met. The LaMP consists of a network of approved contract laboratories that supply analytical testing services for ARC environmental and remediation programs. The contract laboratory's responsibility is to ensure its QA personnel are familiar with the approved QAPP and are performing the analytical and QC work as specified per laboratory methods and this QAPP. Laboratory QA Personnel are responsible for reviewing final analytical reports produced by the laboratory, coordinating the laboratory analyses schedule, and supervising in-house chain of custody procedures.

2.2 Problem Definition and Background

The CSOU1 area of the ACM Site is in northwest Montana in and around the city of Great Falls. Specifically, it is in the community of Black Eagle located on the north side of Great Falls and in outlying areas. Smelting and refining activities were conducted for nearly 100 years at the Former Facility, resulting in contamination of soils, surface water and groundwater. This contamination was spread primarily through airborne emissions and waste disposal practices from smelting and refining operations.

Due to data gaps within the CSOU1 area, an FSP is needed. The data gaps are outlined in Section 3.2.3 and 3.2.4 of the RAWP/FDR. This QAPP and FSP has been developed in response to the OU1 ROD (EPA, 2021) and section 7.7(b) of the SOW (EPA, 2023) and will be applicable to all future CSOU1 sampling activities. This plan will be referred to going forward as the CSOU1 QAPP.

This QAPP details sampling and analysis procedures for soil lead and arsenic concentration determination on a yard component-specific (e.g., front yard, back yard, garden, etc.) or subarea basis. The procedures are applicable to: residential yards within CSOU1 that have not been previously sampled, non-residential properties that have not been previously sampled, or where other data gaps continue to exist (See Section 2.4.1.4). The sampling status of both residential and non-residential properties within CSOU1 is shown in Figure 7 of the RAWP/FDR.

2.3 Project Description and Schedule

The purpose of this QAPP is to collect arsenic and lead soil data in residential yards and non-residential properties within CSOU1 where data were not previously collected or where other data gaps exist. This investigation is supplemental to the prior OU1 sampling investigation presented in the OU1 Remedial Investigation (RI) Report (Formation, 2015) and OU1 Feasibility Study (FS) Report (Pioneer and Formation, 2017) that focused on concentrations of arsenic and lead (and other constituents) in residential yards, attic dust, and commercial/industrial properties and unpaved parking lots. Not all yards or properties within CSOU1 were sampled at that time and those outstanding will be addressed under this plan (see Figure 7 of the RAWP/FDR) where access can be obtained. As stated in the OU1 ROD (EPA, 2021), the estimated risk from exposure to arsenic and lead in attic dust did not exceed levels of potential concern; Therefore, attic dust is not a medium of concern and further attic dust sampling is not planned under this QAPP. Additional RA may be identified within CSOU1 based on the results of soil sampling implemented under this QAPP.

The objectives of the QAPP are as follows:

- Provide a sampling and analysis program for CSOU1 and ensure compliance with performance standards; and
- Provide data to determine any additional scope for CSOU1 RA.

Implementation of this QAPP will begin with CSOU1 sampling activities in the spring of 2023 and is anticipated to continue throughout 2023 until sampling is completed.

2.4 Quality Objectives and Criteria

Development of Data Quality Objectives (DQOs) for this QAPP has been completed in accordance with the EPA's *Guidance on Systematic Planning Using the Data Quality Objectives Process* (EPA, 2006). The DQOs are statements that define the type, quality, quantity, purpose, and use of data to be collected. The EPA has developed a seven-step process for establishing DQOs to help ensure that data collected during a field sampling program are adequate to support reliable site-specific decision making (EPA, 2001) (EPA, 2006). The following Subsections outline and establish the QAPP DQOs.

2.4.1 Data Quality Objectives

The DQO process specifies project decisions, the data quality required to support those decisions, specific data types needed, data collection requirements, and analytical techniques necessary to generate the specified data quality. The process also ensures that the resources required to generate the data are justified. The DQO process consists of seven steps of which the output from each step influences the choices that will be made later in the process. These steps include:

- Step 1: State the Problem;
- Step 2: Identify the Goal(s) of the Study;
- Step 3: Identify Information Inputs;
- Step 4: Define the Study Boundaries;
- Step 5: Develop the Analytical Approach;
- Step 6: Specify Performance or Acceptance Criteria; and
- Step 7: Develop the Detailed Plan for Obtaining the Data.

A brief discussion of these steps and their application to the sampling identified in this QAPP are provided in the following Subsections.

2.4.1.1 Step 1: State the Problem

The purpose of this step is to describe the problem to be studied so that the focus of the investigation will not be ambiguous.

Past sampling efforts have demonstrated that elevated concentrations of metals/metalloids are present in attic dust, residential yards, and unpaved alleys within CSOU1. From a potential risk to human health standpoint, arsenic and lead are considered the Contaminants of Concern (COCs) within these areas.

Sources of metals contamination include smelter emissions, use of imported backfill materials, historical use of lead arsenate and arsenical pesticides, batteries, and leaded gasoline and/or lead-based paint.

As specified in the ROD, the following current residential properties will be subject to RA under the CSOU1 RAWP/FDR:

1. Residential yards individual yard components (front yard, back yard, garden, etc.) with exceedances of the residential soil not to exceed (NTE) action levels for arsenic (250 milligrams per kilogram (mg/kg)) and lead (400 mg/kg) at targeted depth intervals; and/or

2. Residential yards with exceedances of residual-risk-based average concentrations for arsenic (54 mg/kg) and lead (281 mg/kg) in the top 6 inches of soil.

Current non-residential properties will be subject to RA under the CSOU1 RAWP/FDR where:

1. Property-specific average soil concentration in the top 6 inches is above risk-based action levels for current non-residential use (e.g., 120 mg/kg arsenic and 1766 mg/kg lead for outdoor worker or 200 mg/kg arsenic and 3087 mg/kg lead for the ATV/dirt bike rider); and/or

2. The 0 to 12 inch depth-weighted property average arsenic or lead soil concentrations exceed the residential Remedial Action Objectives (RAO) of 54 mg/kg arsenic or 281 mg/kg lead (for properties that are not currently developed/used for commercial or industrial purposes). The purpose of this additional requirement is to address potential change in land use to residential for non-residential properties with no current development (i.e., to allow for future conversion to residential/unlimited use). Alternatively, institutional controls (ICs) may be placed on the property, including but not limited to, restricting future residential use or providing for additional remediation at the time of residential redevelopment.

Sampling of many residential yards, non-residential properties, and unpaved roads and alleys within CSOU1 was conducted between 2011 and 2013. The RI sampling program was conducted to determine the nature and extent of contamination in soil for development of remedial alternatives and a list of properties requiring RA in the FS (Formation, 2015) (Pioneer and Formation, 2017). Properties to which landowner access was granted were sampled. Properties where the landowner could not be reached or did not grant access were not sampled.

These studies have demonstrated the presence of arsenic and/or lead concentrations above the cleanup levels established in the ROD and the potential for additional exceedances in unsampled areas. Sampling is required for: properties that were not sampled during RI data collection due to access issues, and previously sampled properties where additional samples may be required (see Section 2.4.1.4). The sampling status of both residential and non-residential properties within CSOU1 is shown on Figure 7 of the CSOU1 RAWP/FDR.

2.4.1.2 Step 2: Identify the Goal

This step identifies the goal of the study, what questions the study will attempt to resolve, and what actions may result. The goal of the study is to determine which additional residential and non-residential properties require RA. The key questions may be stated as follows:

Residential Properties

For residential yards to be sampled, does the arsenic concentration for an individual yard component (front yard, back yard, etc.) exceed the 250 mg/kg soil NTE action level at the 0 to 6 inch, 6 to 12 inch, and/or 12 to 18 inch depth intervals?

For residential gardens to be sampled, does the garden component arsenic concentration exceed the 250 mg/kg soil NTE action level at the 0 to 6 inch, 6 to 12 inch, 12 to 18 inch and/or 18 to 24 inch depth intervals for gardens?

For residential yards to be sampled, does the lead concentration for an individual yard component exceed the 400 mg/kg soil NTE action level at the 0 to 6 inch, 6 to 12 inch, and/or 12 to 18 inch depth intervals?

For residential gardens to be sampled, does the garden component lead concentration exceed the 400 mg/kg soil NTE action level at the 0 to 6 inch, 6 to 12 inch, 12 to 18 inch and/or 18 to 24 inch depth intervals for gardens?

Does the residential property-specific average surface soil risk for 0 to 6 inches for an individual yard component exceed one or more RAOs that are: arsenic at 54 mg/kg or lead at 281 ppm?

Once these questions are answered, Individual Site Work Plans (ISWPs) will be developed for residential properties where RA will be implemented.

Non-Residential Properties

For non-residential properties, does the property-specific average soil concentration, in the top 6 inches, exceed risk-based action levels for its current use (e.g., outdoor worker of 120 mg/kg arsenic or 1766 mg/kg lead or ATV/dirt bike rider of 200 mg/kg arsenic or 3087 mg/kg lead)?

In addition, for those non-residential properties that are not currently developed/used for commercial or industrial purposes (i.e. undeveloped, vacant lot), does the property-specific 0 to 12 inch depth-weighted-average soil concentrations exceed the residential RAOs of 54 mg/kg for arsenic or 281 mg/kg for lead?

Once these questions are answered, Individual Site Work Plans (ISWPs) will be developed for non-residential properties where RA will be implemented. Alternatively, ICs may be implemented.

2.4.1.3 Step 3: Identify Information Inputs

The purpose of this step is to identify the information that will be required to resolve the goal and questions and determine if new data collection is necessary.

The following data and information are required to satisfy or resolve the decision statements:

- Arsenic and lead analytical results applicable to soil samples collected within each residential and non-residential property;
- Dimensions of residential yards and individual yard components (i.e., front yard, back yard, garden, earthen driveway, etc.);
- Composite arsenic concentrations within each residential yard component at each target depth interval;

- Composite lead concentrations within each residential yard component at each target depth interval;
- Dimensions of non-residential properties;
- Composite arsenic concentrations within each non-residential property at each target depth interval;
- Composite lead concentrations within each non-residential property at each target depth interval;
- Residential NTE action level concentrations of 250 mg/kg for arsenic and 400 mg/kg for lead;
- Residential RAO concentrations of 54 mg/kg for arsenic and 281 mg/kg for lead; and
- Non-residential risk-based action level concentrations: for an outdoor worker of 120 mg/kg arsenic and 1766 mg/kg lead; for a utility worker and for an ATV/dirt bike rider of 200 mg/kg arsenic and 3087 mg/kg lead.

2.4.1.4 Step 4: Define the Study Boundaries

The purpose of this step is to define the spatial and temporal boundaries of the problem.

The study area will include residential and non-residential properties, including properties used for commercial purposes, contained within CSOU1. Sampling is required for: properties that were not sampled during RI data collection due to access issues, and previously sampled properties where additional samples are needed. Two previously sampled residential properties are missing data from one or more component depth interval, each and require supplemental sampling. In addition, ARC has identified ten current residential properties in the western portion of the NOA that will also be sampled in accordance with this QAPP. Figure 7 of the RAWP/FDR identifies the sampling status of the properties within CSOU1 and also include the ten in the western NOA. Properties identified as "Sampling Required" will be sampled if landowner agreements are received.

2.4.1.5 Step 5: Develop the Analytical Approach

The purpose of this step is to define the parameters of interest and integrate any previous DQO inputs into a single statement that describes a logical basis for choosing among alternative actions.

Residential Properties

Landowners, of residences within CSOU1 that have not been sampled since 2011 (see Figure 7 of the RAWP/FDR) will be contacted to request access to their property for soil sampling to be completed consistent with this QAPP. Composite soil samples will be systematically collected from those properties if landowner agreements are received. Section 3.2.1 provides additional details of the residential sampling plan.

1. If an individual yard component (front yard, back yard, earthen driveway, etc.) and depth interval (0 to 6 inch, 6 to 12 inch, and 12 to 18 inch depth) is ≤ 250 mg/kg NTE action level for arsenic, then that component is not subject to RA at that depth interval; however, other individual components within the yard may still be subject to RA for lead.

2. If an individual yard component and depth interval is > 250 mg/kg NTE action level for arsenic, then that component is subject to RA for arsenic at the affected depth interval.

Each of the samples described above for arsenic analysis (component and depth interval) will also be analyzed for lead.

- If an individual yard component and depth interval is ≤ 400 mg/kg NTE action level for lead, then that component is not subject to RA at that depth interval; however, individual components within the yard may still be subject to RA for arsenic.
- If an individual yard component and depth interval is > 400 mg/kg NTE action level for lead, then that component is subject to RA for lead at the affected depth interval.

Residential property-specific average surface soil concentrations for 0 to 6 inches will be calculated. If the average exceeds one or more RAOs (arsenic 54 mg/kg or lead 281 mg/kg), then soil in the yard component with the highest concentration (of arsenic and/or lead) will be replaced. Following replacement, the property-specific average will be re-calculated and replacement of soil in the highest concentration components will continue until the property-specific average no longer exceeds RAOs.

Where property sample data indicates that RA is required, specific removal requirements will be identified in an ISWP that will be developed for that residential property.

Note that any clean soil layers within residential yards located above layers subject to removal will also be removed and replaced. These soils will not be salvaged.

Non-residential Properties

Landowners, of non-residential property within the OU1 Community Soil area that has not been sampled since 2011 (see Figure 7 of the RAWP/FDR), will be contacted to request access to their property for soil sampling to be completed consistent with this QAPP. Composite soil samples will be systematically collected from those properties if landowner agreements are received.

Non-residential soil samples will be collected at the 0 to 6 inch and/or 6 to 12 inch depth intervals. These soil samples will be analyzed for arsenic and lead. Section 3.2.2 provides additional details of the non-residential sampling plan.

- For non-residential properties, if the property specific average soil concentration in the top 6 inches is above the applicable risk-based action levels for the current non-residential use (e.g., outdoor worker of 120 mg/kg arsenic or 1766 mg/kg lead; ATV/dirt bike rider of 200 mg/kg arsenic or 3087 mg/kg lead; utility worker of 7670 mg/kg arsenic or 1766 mg/kg lead), then RA will be undertaken to resolve the exceedance.
- For those non-residential properties which are not currently developed/used for commercial or industrial purposes (i.e. undeveloped, vacant lots): If the 0 to 12 inch depth weighted average (DWA) is > the 54 mg/kg arsenic RAO or > the 281 mg/kg lead RAO, then additional RA will be undertaken in order to achieve unlimited use for the property. Alternatively, ICs may be placed on the property.

Note that soil samples will not be collected from directly beneath tree canopies. If the subarea surrounding the tree is subject to RA, soil excavation under the tree canopy will not be completed to avoid potential permanent damage to the tree(s).

2.4.1.6 Specify Performance or Acceptance Criteria

Measurement performance criteria are established by defining acceptance criteria and quantitative or qualitative goals (e.g., control limits) for precision, accuracy, representativeness, comparability and completeness of measurement data. The definitions of precision, accuracy, representativeness, comparability, and completeness are provided below along with the acceptance criteria for data collected. Equations for calculation of precision, accuracy, and completeness are provided in Table C-1. Table C-2 defines the measurement performance criteria that are further described below.

Precision

For this QAPP, precision will be determined by the analyses of field duplicates, laboratory (analytical) duplicates, and evaluation of relative percent difference (RPD) for these various paired measurements. Field duplicates will represent the sampling precision whereas laboratory duplicates or replicates represent the precision of laboratory instruments. Analytical precision may be evaluated using duplicate analyses of laboratory prepared samples such as matrix spike (MS) and matrix spike duplicate (MSD) samples, laboratory control spike (LCS) and laboratory control spike duplicate (LCSD) samples, or laboratory duplicate (LD) samples.

The formula for RPD is presented in Table C-1. RPD goals for measures of field and laboratory precision are provided in Table C-2. The RPD field precision goal for soil field duplicates will be 35 percent for sample pairs with both sample results being greater than 5 times the reporting limit (RL). For soil field duplicate pairs with one or both sample results being less than five times the RL, a difference of less than or equal to two times the RL (difference ≤ 2xRL) will be used as the precision goal.

During data validation, data within that sample delivery group (SDG) may be qualified or flagged for various reasons, including when the RPD for a duplicate sample pair is greater than 35 percent.

Accuracy/Bias

Accuracy is the degree of difference between the measured or calculated value and the true value. It is a measure of the bias or systematic error of the entire data collection process. Potential sources of systematic errors include:

- Sample collection methods;
- Physical or chemical instability of the samples;
- Interference effects during sample analysis;
- Calibration of the measurement system; and
- Contamination.

Laboratory blanks including initial and continuing calibration verification samples (ICV and CCVs) and initial and continuing calibration blanks (ICB and CCBs) will be used to verify that the sample concentrations are accurately measured by the analytical instrument throughout the analytical run. Laboratory spikes and control sample (LCS, MS, post spike digestion (PDS), and internal standard (IS)) recoveries are also used to verify accuracy. Accuracy goals for various laboratory QC samples are identified in Table C-2.

Representativeness

Data representativeness is defined as the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point or environmental conditions. Representativeness is a qualitative parameter that is most concerned with the proper design of the sampling program. Representativeness will be achieved through judicious selection of sampling locations and methods. This QAPP has been designed to provide samples that are representative of the medium being sampled as well as a sufficient number of samples to meet the project DQOs and to satisfy the project RA design elements.

Comparability

Data comparability is defined as the measure of the confidence with which one data set can be compared to another. Comparability is a qualitative parameter but must be considered in the design of the sampling plan and selection of analytical methods, QC protocols and data reporting requirements. Comparability shall be ensured by analyzing samples obtained in accordance with appropriate Standard Operating Procedures (SOPs) and this QAPP. Arsenic and lead analyses will be completed by an EPA approved method, EPA 6020B, and is the same as was used for previous data collected for the RI (Formation, 2015). Arsenic and lead soil data will be reported in units of mg/kg, consistent with previously collected data.

Completeness

Completeness refers to the amount of usable data produced during a sampling and analysis program. The procedures established in this QAPP are designed to ensure, to the extent possible, those data will be valid and usable. To achieve this objective, every effort will be made to collect each required sample and in accordance with SOPs so that data are not rejected and so that adequate samples are collected such that remedial decisions can be made. The completeness goal for this project is 95 percent.

Sensitivity

Sensitivity refers to the capability to quantify an analyte at a given concentration and is associated with the instrument and method detection limits. Method detection limits (MDLs) must be adequate to determine if a sample is less than or exceeds cleanup levels. Project Quantitation Limit Goals (PQLGs) and MDLs are provided in Table C-3.

2.4.1.7 Step 7: Develop the Detailed Plan for Obtaining the Data

The data collection scheme is designed to ensure that the data will be of sufficient quality and quantity to determine the concentrations of arsenic and lead at each depth interval in each component (residential) or property/subarea (non-residential) to define where RA is required. The sampling will be completed in accordance with the recommendations provided in the EPA's *Superfund Lead-Contaminated Residential Sites Handbook* (EPA, 2003). The sampling plan and design are presented in Section 3.2.

2.5 Special Training

The FTL will be responsible for ensuring, that prior to fieldwork, all personnel have reviewed and understand this QAPP, sample collection SOPs, are qualified to perform assigned tasks; and that all personnel have reviewed and understand the HASP, including site-specific hazards and the control measures that have been put in place to mitigate these hazards. More specifically, the HASP review and training will cover safety

aspects of the CSOU1 including: site personnel responsibilities and contact information, additional site-specific safety requirements and procedures, and the emergency response plan.

One hard copy of the current approved version of this QAPP will be maintained for reference in the field vehicle. All field team personnel will also have access to PDF format files of the complete QAPP.

Laboratories providing analytical services will have a documented QC program that complies with EPA *Requirements for Quality Assurance Project Plans* (QA/R-5) (EPA, 2001) and ARC's LaMP.

2.6 Document and Data Management Procedures

This Section describes procedures for documentation management and record keeping for this QAPP from initial record generation through final data formatting and storage. Hardcopies and scans of those hardcopies will initially be stored by Woodard & Curran in project specific hardcopy and electronic file storage on a secure server with multi-cloud solutions for data redundancy and to protect against data loss. Laboratory data are stored in both ARC's EQuIS database and Woodard & Curran's SQL database [collectively referred to as project database(s)]. Hardcopies will be scanned and transferred to ARC upon project completion to permanent long-term storage designated by ARC.

These records, either electronic or hard copy in form, shall include:

- Project work plans with approved modifications, updates, and addenda;
- Individual property maps (hard copy or scanned field drawings and electronic files);
- Project QAPPs, including this QAPP, with approved modifications, updates, addenda, and corrective actions or requests for change;
- Questionnaires and landowner agreements from property owners;
- Field documentation (logbooks and field data sheets);
- Chain of custody (COC) records;
- Laboratory documentation (results received from the laboratory will be documented both in pdf report form and in an electronic data deliverable format (EDD); and
- Data Summary Reports (DSRs).

Before field and laboratory data are incorporated into the project database(s), the data and supporting documentation will be subject to appropriate review to ensure the accuracy and completeness of original data records. Field data that have been reviewed in a hard copy format will be entered into electronic data files for upload to the project database(s). All manual data entry into an electronic format will be reviewed by a separate party (another field team member or project scientist) before such data are incorporated into the database(s). Laboratory EDDs and related data packages will be reviewed as part of the internal data review process and compared for consistency with hardcopy/pdf format. Following these review steps, field and laboratory electronic data files will be imported to the project database(s).

Standardized data import formats and procedures will be used to upload both field and laboratory data into the project database(s). Standardized parameter names, numerical formats, and units of measure may be applied to the original information to facilitate comparability across all datasets and within the database(s).

2.6.1 Landowner Agreements

ARC will request that all private property owners sign landowner agreements providing access for all RA-related activities, including sampling. The FTL will manage requests for sampling, track the status of landowner agreements, and maintain copies of completed agreements received from property owners. Hard copies and scans of hard copies will be stored as identified above in the project record files (Section 2.6).

2.6.2 Field Logbooks/Data Sheets

Documentation in field logbooks provides a description of site conditions during sampling activities and provides a permanent record of all field activities. A digital or bound field logbook and/or appropriate field data sheets (refer to Field SOPs in Attachment C1) will be used for field activities. When field logbooks are used, each logbook will have a unique document control number. If bound media is used, the information recorded in these logbooks/field data sheets will be written in ink. Whenever a sample is collected or a measurement is made, a detailed description of the sample location and any additional observations will be recorded. Resource-grade global positioning system (GPS) coordinates will be available for all surveyed residential yard maps.

Field logbooks and/or field data sheets will include the information listed below, at a minimum:

- A description of the field task;
- Time and date fieldwork started;
- Daily safety topics;
- Location and description of the work area, including sketches or prepared yard/lot maps, and references to digital photographs collected (see additional detail below);
- Names of field personnel;
- Name, address and phone number of any field contacts or site visitors (e.g., Agency representatives, auditors, etc.);
- Meteorological conditions at the beginning of fieldwork and any ensuing changes in the conditions;
- Details of the fieldwork performed, and the field data sheets used, noting deviations from the QAPP or applicable SOPs;
- All field measurements made;
- Field analysis results;
- Personnel; and
- Equipment decontamination procedures.

For any field sampling work the following entries will be made:

- Sample location and identification (ID) number;
- Sample collection method (grab or composite), if applicable;
- Sample type (e.g., field duplicate), if applicable;

- Date and time of sample collection;
- Notation of split samples taken by other parties (noting the type of sample, sample location, time/date, name of person, person's company and any other pertinent information);
- Sampling method, noting deviations from Field SOPs; and
- Sample preservation, if applicable.

If a bound media is used, changes in the field logbook or on the field data sheets will be recorded with a single strike mark through the changed entry, with the sampler's initials and the date recording the new entry. All entries must remain legible. Sufficient information should be recorded to allow the sampling event to be reconstructed without having to rely on the sampler's memory.

Completed field data sheets and logbooks will be scanned with the hard copy and electronic versions stored as described above in Section 2.6. No field logbooks will be destroyed even if they are illegible or contain inaccuracies that require a replacement document.

Field Photographs

Photographs shall be taken of sampling locations and field activities using a tablet. Photographs should include a scale in the picture when practical. Additional photographs documenting site conditions will be taken, as necessary. Documentation of all photographs taken during sampling activities will be recorded in the field logbook, electronic field form, or appropriate field data sheet(s) (refer to Field SOPs in Attachment C1), and will specifically include the following for each photograph taken:

- The photographer's name, date, time, and the general direction faced (e.g., N-NW);
- A brief description of the subject and the work portrayed in the picture; and
- Unique identification number of the photograph.

The digital files will be stored as described above in Section 2.6 along with scanned supporting documentation from the field logbooks.

2.6.3 Chain of Custody Records

After samples have been collected, they will be maintained under strict COC protocols in accordance with the Field SOPs provided in Attachment C1. A copy of each as transmitted COC form will be scanned and stored as described above in Section 2.6.

2.6.4 Analytical Laboratory Records

Results received from the laboratories will be documented both in pdf report format and in an electronic EDD in MS Excel or csv format. Laboratory documentation includes copies of the signed COC forms, laboratory confirmation login reports (including information on sample batching and analyses requested), data packages (including the laboratory report and EDD) and change requests or corrective action requests. Section 5.1.2 further details the project's laboratory reporting requirements. The deliverable ("data package" or "report") issued by the laboratories will include data necessary to complete validation of laboratory results in accordance with specifications included in Section 5.1.3.

Laboratory documents, pdf reports, and electronic files received from laboratories will be maintained as described above in Section 2.6.

Upon receipt of laboratory results and completion of the data review/validation process, all analytical data and validation data will be uploaded into the project database(s). The database(s) will enable summation and analysis of all sample data from residential and non-residential properties including previous data collected as part of the RI.

2.6.5 Landowner Notification

The sample results, applicable cleanup levels, and a letter explaining the results will be reported to individual landowners. The content of the letter will be determined in consultation with EPA.

2.6.6 ISWPs

Following landowner notification, sample results will be used to develop ISWPs for each residential or non-residential property where sample results exceed CSOU1 cleanup levels and RA is proposed. The ISWPs will provide: the property layout, along with arsenic and lead soil concentrations, depth and volume of yard components (residential) or subareas (non-residential) and corresponding surface areas subject to removal.

2.6.7 Data Summary Reports

All sampling data will be forwarded to the Agencies for review and approval in the form of an Annual DSR. This DSR will include figures displaying locations of residential and non-residential properties sampled, soil analytical results, data review/validation reports, and copies of field data and daily logbook entries. As described above in Section 2.6, all sampling data will reside in the project database(s).

2.6.8 Quality Records

Quality records are defined as completed, legible documents that furnish objective evidence of the quality of items or services, or activities affecting the quality or the completeness of data. These records will be placed by a field team member on the project server as described above in Section 2.6. The files will be organized and managed by the CQAO and Contractor Data team (or designees) and will include, at a minimum:

- This QAPP and any approved revisions or addenda;
- Approved versions of the HASP and any addenda;
- Copies of Field SOPs for field data collection, with updates, revisions or addenda to those SOPs;
- Copies of completed landowner agreements for the individual properties sampled;
- Field documentation forms;
- Copies of all field logbooks;
- Copies of all field data sheets;
- Copies of individual property maps, including any field drawings and field photographs;
- Copies of all sample chain of custody forms;

- Laboratory data packages (pdf report and electronic [EDD]);
- Documentation of field and/or laboratory audits and any corrective actions; and
- Draft and final delivered versions of all reports and supporting procedures such as statistical analyses, etc.

In addition, all project data will be maintained in the project database(s) and related One Map Geographic Information System (GIS) Database. The data will be maintained indefinitely.

3. MEASUREMENT AND DATA ACQUISITION

This Section addresses all aspects of project design and implementation for generating and acquiring data. Implementing these elements ensures that appropriate methods for sampling, sample handling, laboratory analyses, field and laboratory QC, instrument/equipment testing, inspection, maintenance, instrument/equipment calibration, data management and data security are used when implementing this QAPP.

3.1 Standard Operating Procedures for Sampling Activities

The OU1 Field SOPs are listed in Table C-4 and provided in Attachment C1 and describe the procedures for CSOU1 soil sample collection, handling, and shipment. Any deviations from the SOPs or this QAPP will be documented in field data sheets and/or field notes and described in the DSR.

3.2 Sampling Process and Design

This QAPP addresses all sample collection activities and was developed per the ROD for the ACM Site (*see also* section 7.7(b) of the SOW) (EPA, 2021) and in accordance with *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (EPA, 1988).

For residential and non-residential properties proposed for sampling, ARC will request that property owners grant access for RA related activities including sampling.

3.2.1 Residential Yards Sampling Plan

Residential yards located in the CSOU1, where sampling is required and access is granted by landowners, will be sampled according to the procedures outlined in this QAPP, which is based on both the *Superfund Lead-Contaminated Residential Sites Handbook* (EPA, 2003) and the Draft Final OU1 RAWP/FDR (ARC, 2023). To the extent practicable, the previously delineated and approved OU1 residential yard components within each yard will continue to be used under this project (see Section 3.2.1.1).

Figure C-3 presents the Residential Yard Remedial Action Decision Process and provides the sampling rationale. For residences that were not previously sampled under the RI, soil samples for each yard component will be collected from three depth intervals.

- First composite sample will consist of subsamples from the 0 to 6 inch depth interval.
- Second composite sample will consist of subsamples from the 6 to 12 inch depth interval
- A third composite sample will consist of subsamples from the 12 to 18 inch depth interval.
- An additional fourth composite sample will be collected for gardens, when present, for the 18 to 24 inch depth interval.

Because most residential yard/lot areas are expected to be covered with grass, the surface sample will be collected immediately beneath the vegetative mat (sod) or, in the absence of vegetation, 0 to 6 inches below ground surface (bgs). If a vegetative mat is present, it will be separated from the soil surface with a stainless-steel scoop, spade or equivalent. The removed vegetative mat will be shaken and scraped over the sample collection container to dislodge any mineral soil particles. All dislodged soil particles will be included in the composite sample.

In addition, when the sample location falls on a graveled driveway or similar surface (earthen driveway) and the surface material is coarse-grained and free of intermixed materials, the sample will be collected from the 0 to 6 inch soil layer immediately beneath the coarse materials. However, if the earthen driveway contains fine soil material on the surface, the sample will be collected from the surface (0 to 6 inch).

The decision to collect additional "opportunistic" samples will be made in the field by the sampling crew personnel and/or Agency personnel during the time of sampling.

The final number of residential properties sampled will depend on the number of landowner agreements secured by ARC within CSOU1.

3.2.1.1 Residential Yard/Lot Maps

A surveyed map was created for each individual residential property sampled during the original OU1 RI sampling effort and Figure C-2 provides an example. These maps identify how each property was divided into individual components (i.e., front yard, back yard, earthen driveway, etc.) and will continue to be used for this CSOU1 sampling effort where sampling is necessary. If a map does not exist because the property was not previously sampled or the existing map is inadequate, a new surveyed map will be created. Each map includes the following information:

- Surface area applicable to each individual yard component (e.g., front yard, back yard, earthen driveway, etc.);
- Surface area applicable to the "occupation" boundary of each residence (approximately corresponding with the property boundary);
- House location;
- Garage and shed location;
- Location of miscellaneous structures (e.g., patios, concrete pads, sidewalks, decks, etc.); and
- Any noticeably dissimilar soil material types or surface conditions (i.e., bare ground areas, locations of obvious imported fill materials, etc.).

All subsample locations will be plotted on the map by sampling crews in the field. Photographs will be taken of yard components as well as any unusual features, as deemed necessary by field personnel. All information will be recorded in the field logbook and/or field data sheets.

3.2.1.2 Sample Density, Location and Compositing

Composite soil samples will be collected from each individual residential yard component when sampling. All samples collected, as well as other relevant observations will be documented on the Residential Yard Sampling Field Data Sheet provided in Attachment C3 or digitally with the same information. Subsamples collected from each component for a given depth interval will be composited in the field into a single sample. Each composite sample will be submitted to the laboratory and analyzed for arsenic and lead.

Sample densities and locations within the yard components will be determined based on the size of the area to be represented. Either the property boundary or a smaller natural boundary within the yard will be used to establish the extent of the sample area. The yard area will be defined as a maximum of 125 feet from the exterior of the residence, unless a property boundary or natural barrier (i.e., fence, hedge, tree line,

abrupt change in grade, etc.) is encountered at a distance less than 125 feet. The 125-foot distance is considered a guideline and can be adjusted in the field by the FTL in agreement with Agency personnel, as appropriate.

One subsample per individual yard component will be collected unless the component is greater than 625 square feet (sf) (25 feet by 25 feet) in surface area. If the yard component exceeds 625 sf, additional subsamples will be collected to meet the sample collection density of one subsample for each 625 sf. When multiple subsamples are collected from a single yard component (e.g., >625 sf), they will be composited in the field into a single sample, submitted to the laboratory, and analyzed for arsenic and lead. A maximum of eight soil subsamples will be collected from any individual residential yard component regardless of the surface area of that component.

In accordance with the Field SOPs (Attachment C1), play areas, earthen driveways, and source areas (areas of visible smelter-related waste material), will have a minimum of two subsamples collected regardless of the surface area involved. The two subsamples will be composited in the field into one sample for each depth interval. In order to limit disturbance in small vegetable and flower gardens, those which are approximately 50 sf or less in area will have a single sample collected. Vegetable and flower gardens greater than 50 sf will have a minimum of two subsamples collected.

Discrete "drip zone" component samples will not be collected. Subsamples will be collected from within drip zones associated with a residence and the subsample will be included in the nearest component's composite sample. If the component's composite sample exceeds the arsenic and/or lead NTE action level(s), the drip zone will be removed and replaced along with the targeted component.

Soil subsamples will not be collected from yard components between neighboring/adjacent homes where the distance between the homes is less than 3 feet. Additionally, soil subsamples will not be collected from beneath a tree canopy. If the yard component surrounding the tree is subject to RA, soil excavation under the tree canopy will not be completed to avoid potential permanent damage to the tree(s).

If the Agency representative or property owner chooses to collect split samples, an adequate quantity of soil will be made available by the sampler at the time of sample collection. The Agency representative or property owner will be responsible for providing sample containers and coolers, etc.

3.2.1.3 Residential Yard Soil Sample Identification

An alphanumeric coding system will be used to uniquely identify each sample collected during this residential soil investigation. Sample identifiers will begin with an OU1 or regional property code (i.e., BE). This will be followed by the OU1 Database Resident ID (i.e., BE-001, BE-002) associated with a specific residential property (address and/or geocode specific). Following the OU1 Database Resident ID will be an alpha identifier for the yard component represented by the sample (i.e., FY for front yard or BY for back yard, etc.). A four-digit numeric code will follow, indicating the sample depth interval. The following is a list of the codes to be used in sample identification:

Site Property Code:	BE – CSAOIs
Resident ID:	001, 0001 – Database Resident ID (associated with a specific address or geocode)
Yard Component:	FY – Front Yard BY – Back Yard ED – Earthen Drive FG – Flower Garden VG – Vegetable/Fruit Garden PA – Play Area BA– Bare Area SA – Source Area RG – Rock Garden
Depth Intervals:	0006 0 to 6 inches bgs 0612 6 to 12 inches bgs 1218 12 to 18 inches bgs 1824 18 to 24 inches bgs
Quality Control/Quality Assurance	D – Field Duplicate

An example sample identification would be: BE-001-BY-0006. This indicates that the sample was collected at the residential property BE-001 (corresponding to a physical address and/or geocode) at the 0 to 6 inch depth interval in the back yard. Sample identifiers will be documented in field logbooks, on the Residential Property Sampling Field Data Sheet, and on the chain of custody forms, as required by the Field SOPs provided in Attachment C1.

3.2.2 Non-Residential Property Sampling Plan

Non-residential properties within CSOU1, where sampling is required and access is granted by landowners, will be sampled according to the procedures outlined in this QAPP which are based on the Draft Final OU1 RAWP/FDR (ARC, 2023).

Figure C-4 presents the Non-residential Property Remedial Action Decision Process and provides the sampling rationale. For non-residential properties not previously sampled under the RI, soil samples for each property subarea may be collected from two depth intervals.

- The first composite sample will consist of subsamples from the 0 to 6 inch depth interval, and
- If the property is not currently used for commercial or industrial purposes, a second composite sample will consist of subsamples from the 6 to 12 inch depth interval.

Non-residential soil sampling will be conducted to provide spatially representative samples for non-residential areas. The sampling will consist of five subsamples located within a grid that represents the soil conditions within the sampling grid.

Non-residential properties in the Northern Outlying Area (NOA) will be sampled using a grid design with spacing of 400 feet by 400 feet. One composite sample location will be collected at the center of the grid and this will be the sample location that is surveyed using a hand-held GPS unit. The other four composite samples will be collected approximately 100 to 150 feet from the center point in all four directions. A minimum of one composite sample per property will be collected.

For non-residential properties in the Northern and Southern Community Soils Area of Interest (CSAOIs), the same grid design will be followed, but the grid spacing will be 100 feet by 100 feet. One composite sample will be collected at the center of the grid and surveyed using a hand-held GPS unit. The other four composite samples will be collected approximately 25 to 35 feet from the center point in all four directions.

For some non-residential properties, depending on the amount of development, it may make sense to select subareas of varying materials such as unpaved parking lots, grass areas or bare areas rather than the grid sampling described above. Any properties that are not sampled in accordance with the grid methods will be identified in the DSR.

Sampling locations may be modified in the field as necessary to avoid buildings, existing improvements, fences, roadways, and property owner material storage. Sampling personnel will inspect and evaluate each property prior to sampling to address any potential safety or feasibility concerns. If necessary, the field soil sampling team may request the landowner to clean up the property or move any materials that pose safety concerns or interfere with soil sampling procedures.

The final number of non-residential properties sampled will depend on the number of landowner agreements secured by ARC within CSOU1.

Confirmation sampling will be performed for non-residential properties where tillage was conducted for the RA. Test pits will be located using a grid design with a spacing of 400 feet by 400 feet. Test pits will be excavated by mechanical and/or hand tools to collect soil samples at specific depth intervals (0 to 6 inch and 6 to 12 inch) depending upon the depth of tillage (6 inches or 12 inches). Composite soil samples will be collected at each depth interval from the test pit. A minimum of one composite sample per property will be collected for confirmation sampling.

3.2.2.1 Non-residential Property Maps

A new surveyed map will be created for each non-residential property to be sampled. Each map includes the following information:

- Surface area applicable to the "occupation" boundary of each non-residential property (approximately corresponding with the property/parcel boundary);
- Building location(s);
- Garage location(s);
- Location of miscellaneous structures (e.g., concrete pads, sidewalks, etc.); and
- Any noticeably dissimilar soil material types or surface conditions (i.e., bare ground areas, locations of obvious imported fill materials, etc.).

All subsample locations will be plotted on the map by sampling crews in the field. Photographs will be taken of property subareas as well as any unusual features, as deemed necessary by field personnel. All information will be recorded in the field logbook.

3.2.2.2 Sample Density, Location and Compositing

Composite soil samples will be collected from each individual non-residential property subarea when sampling the property. All samples collected, as well as other relevant observations will be documented on the Sampling Field Data Sheet provided in Attachment C3 or digitally with the same information. Subsamples collected from each subarea for a given depth interval will be composited in the field into a single sample. Each composite sample will be submitted to the laboratory and analyzed for arsenic and lead.

Sample densities and locations within the property will be determined based on the size of the area to be represented and the location of the non-residential (i.e., located in the CSAOIs or NOA) property. The property area will be defined by the property boundary. Maps created for this sampling effort will show property surface areas and subareas.

In the CSAOIs, one subsample per individual property subarea will be collected unless the subarea is greater than 10,000 sf (100 feet by 100 feet) in surface area. If the property exceeds 10,000 sf, additional subsamples will be collected to meet the sample collection density of one subsample for each 10,000 sf. When multiple subsamples are collected from a single subarea (e.g., >10,000 sf), they will be composited in the field, and a single sample and will be submitted to the laboratory and analyzed for arsenic and lead.

In the NOA, one subsample per subarea will be collected unless the subarea is greater than 160,000 sf (400 feet by 400 feet) in surface area. If the property exceeds 160,000 sf, additional subsamples will be collected to meet the sample collection density of one subsample for each 160,000 sf. When multiple subsamples are collected from a single subarea (e.g., >160,000 sf), they will be composited in the field and a single sample will be submitted to the laboratory and analyzed for arsenic and lead.

The decision to collect additional "opportunistic" samples will be made in the field by the sampling crew personnel and/or Agency personnel during the time of sampling.

3.2.2.3 Non-Residential Sample Identification

An alphanumeric coding system will be used to uniquely identify each non-residential soil sample collected during this investigation. Sample identifiers will begin with a non-residential property code (i.e., OA for Outlying Area samples, or BE for CSAOIs samples). This will be followed by the OU1 Database Resident ID (i.e., BE-1000, OA-1000) associated with a specific non-residential property (address and/or geocode specific). Following the property code will be an alpha identifier for the sample location and number represented by the sample (i.e., SL-01 for Sample Location #1). Following the sample location and number will be a four-digit numeric code indicating the sample depth interval. Below is a list of the codes to be used in sample identification:

Site Property Code:	OA- Northern Outlying Area BE – CSAOIs
Non-residential ID:	1000,1001,1002
Sample Location and Number:	SL-01
Depth Intervals:	0006 0 to 6 inches bgs 0612 6 to 12 inches bgs
Quality Control/Quality Assurance	D – Field Duplicate

An example sample identification would be: OA-1003-SL-01-0006. This indicates that the sample was collected at the non-residential property ID 1003 within the Northern Outlying Area at sample location #1 at the 0 to 6 inch depth interval. Sample identifiers will be documented in field logbooks, on the Non-residential Sampling Field Data Sheet provided in Attachment C3, and on the chain of custody forms, as required by the Field SOPs provided in Attachment C1.

3.3 Laboratory Methods

All soil samples collected for this investigation will be analyzed for arsenic and lead by EPA Method 6020B by Pace Analytical (1700 Elm Street SE, Minneapolis, MN 55414) or other approved laboratory, if necessary. The sample preparation and analytical methods to be used for this investigation are described in Sections 3.3.1 and 3.3.2, below. Table C-2 presents the laboratory minimum detection limit for arsenic and lead. Table C-3 presents the measurement performance criteria for the 6020B analytical method. Table C-5 presents the applicable container size, preservation and holding time for the 6020B analyses.

3.3.1 Soil Preparation Methods

Sample preparations and analyses will be in accordance with the EPA analytical method specifications as well as standard laboratory practices. The soil samples will be prepared for metals analyses by air drying and then sieving the sample to obtain the fine-grained fraction for analyses. Each as-received soil sample will be sieved to homogenize the sample and obtain fine-grained material for analyses. The sample will first be air dried at room temperature (<40 degrees Celsius) and then sieved using a No. 60 sieve to obtain the fine fraction, <250 micrometers or microns, for metals analyses. The remaining coarse fraction will be placed in a new sealable plastic bag labeled with the original sample number, date of sieving, and "Coarse Fraction" and then archived along with the remaining fine fraction for a minimum of six months for potential future use. The weight of the original dried sample, the weight of the coarse fraction, and the weight of the fine fraction will be measured and recorded by the laboratory for each soil sample prepared in this manner. The laboratory SOP for soil drying and sieving is provided in Attachment C2.

3.3.2 Soil Metals Analyses Methods

All soil samples will be analyzed for arsenic and lead. Sample preparations and analyses will be in accordance with the referenced EPA analytical method specifications as well as standard laboratory practices. The fine fraction of the sieved soil will be digested according to modified EPA Method 3050B and analyzed by EPA Method 6020B (inductively coupled plasma mass spectrometry [ICP-MS]). The laboratory SOPs for EPA Methods 3050B and 6020B are provided in Attachment C2.

3.4 Quality Control

Sample QC protocols will be consistent with the Field SOPs in Attachment C1 and will include one field duplicate (FD) collected for every 20 primary samples. All sampling equipment is anticipated to be "one time use"; therefore, no external contamination blank/cross-contamination blank samples will be submitted unless the equipment must be decontaminated and used between samples. The intent is that re-usable shovels may be used to dig a hole for sampling but disposable equipment will be used to collect the sample. Any deviation from the Field SOPs or this QAPP will be identified in the logbook and discussed in the Annual DSR.

3.4.1 Quality Control Samples

QC samples are used to identify any biases from field sampling, transportation and laboratory processes to determine sample accuracy and precision. Field QC samples will be shipped with field samples to the laboratory per the Field SOPs in Attachment C1. Brief descriptions of the various field and laboratory QC samples are provided below.

Field Duplicate Samples

FD samples will be collected at a frequency of one per 20 samples. One well mixed and homogenized sample will be divided in the field into two samples (a parent and the duplicate) and placed in different sample containers for separate analyses. The parent and duplicate will each have its own sample number and will be analyzed for identical parameters (arsenic and lead). The results of the parent and field duplicate will be compared to assess laboratory precision.

Laboratory Quality Control Samples

All analyses will be governed by the appropriate calibration procedures and frequencies that are specified in the laboratory's SOPs. The laboratory SOPs for the referenced EPA methods are included in Attachment C2.

Laboratory QC samples will be analyzed in addition to the calibration samples with each QC batch. Laboratory QC samples are introduced into the measurement process to evaluate laboratory performance and sample measurement bias. Control samples may be prepared from environmental samples or generated from standard materials in the laboratory. The appropriate type and frequency of laboratory QC samples associated with each method are specified in the laboratory SOPs (Attachment C2).

Laboratory blanks, laboratory control samples, analytical duplicates, serial dilutions, and pairs of MS/MSD samples will be analyzed in each laboratory QC batch with a minimum frequency of 1 each per 20 field samples. If less than 20 field samples are submitted, then one set of these QA/QC samples will still be run with the set of less than 20 samples. A second MS sample is not necessary for laboratory QC batches that already have one MS/MSD.

Laboratory Blanks

Method blanks will be used to monitor laboratory processes and performance. A method blank is a volume of deionized water or a specified weight of inert material for solid samples that is carried through the entire sample preparation and analyses procedures. The method blank volume or weight will be approximately equal to the sample volumes or sample weights being processed. Method blanks are used to monitor interference caused by constituents in solvents and reagents and on glassware and other sampling

equipment. Blank results outside of specified control limits will be re-run and/or flagged by the laboratory per the QC requirements of the analytical method.

Laboratory Control Samples (LCS)

An LCS, or a blank spike, is an aqueous or solid control sample of known composition that is analyzed using the same sample preparation, reagents, and analytical methods employed for the program samples. The LCS is obtained from an outside source or is prepared in the laboratory by spiking reagent water or a clean solid matrix from a stock solution that is different than that used for the calibration standards. The LCS is the primary indicator of process control used to demonstrate whether the sample preparation and analytical steps are in control, apart from sample matrix effects. If the LCS recovery falls outside the specified control limits, the samples will be re-run and/or flagged by the laboratory per the QC requirements of the analytical method.

Analytical Duplicates

Analytical duplicates are samples that are split in the laboratory at some step in the measurement process and then carried through the remaining steps of the process. Duplicate analyses provide information on the precision of the operations involved. Analytical duplicates are a pair of subsamples from a field sample that are taken through the entire preparation and analyses procedure; any difference between the results indicates the precision of the entire method in the given matrix. Analyses of analytical duplicates and MS duplicates monitor the precision of the analytical process. The frequency of analyses, precision goals, and corrective action information pertaining to analytical duplicates are provided in the laboratory SOPs (Attachment C2). If the analytical duplicate precision falls outside the specified control limits, the samples will be re-run and/or flagged by the laboratory per the QC requirements of the analytical method.

Serial Dilutions

Serial dilutions are performed in conjunction with EPA Method 6020 to determine whether or not significant physical or chemical interferences exist caused by sample matrix. A serial dilution is performed by analyzing a five-fold dilution of a field sample and calculating the percent difference between the original determination and the serial dilution result. Serial dilutions are only applicable for analyte concentrations that are greater than 50 times the MDL. The frequency of analyses, precision goals, and corrective action information pertaining to serial dilutions are provided in the laboratory SOPs in Attachment C2.

Matrix Spikes

Laboratory MS samples are used to evaluate potential sample matrix effects on the accurate quantitation of an analyte using the prescribed analytical method. MS/MSD are prepared by adding an analyte to a subsample of a field sample before sample preparation and analyses. A percent recovery is calculated from the concentrations of the analyte in the spiked and unspiked samples. If the percent recovery for the MS and MSD falls outside the control limits, the results are flagged by the laboratory that they are outside acceptance criteria along with the parent sample.

Post-digestion Spikes

Post-digestion spikes (PDS) must be performed for MS/MSD/SD failures and are used to assess the ability of a method to successfully recover target analytes from an actual sample matrix after the digestion process has been performed. The PDS are used with MS results to evaluate matrix interferences.

3.5 Instrument/Equipment Testing, Inspection and Maintenance

In order to ensure continual quality performance of any instruments or equipment, testing, inspection and maintenance will be performed and recorded as described in this Section.

3.5.1 Field Equipment

Field equipment (shovels, sharp shooters, etc.) will be cleaned and safely stored between each use.

3.5.2 Laboratory Equipment

Instruments used by the laboratories will be maintained in accordance with each laboratory's Quality Assurance Plan and analytical method requirements. All analytical measurement instruments and equipment used by the laboratory will be controlled by a formal calibration and preventive maintenance program.

The laboratories will keep maintenance records and make them available for review, if requested, during laboratory audits. Laboratory preventive maintenance will include routine equipment inspections and calibrations at the beginning of each day or each analytical batch, per the laboratory's SOPs and method requirements.

3.6 Inspection/Acceptance of Supplies and Consumables

All supplies and consumables received for the project (e.g., sampling equipment, supplies, etc.) will be checked for damage and other deficiencies that would affect their performance. The types of equipment that will be needed to complete sampling activities are described in the relevant SOPs. Inspections of field supplies will be performed by a field team member designated by the FTL.

The personnel at each laboratory will be responsible for performing inspections of laboratory supplies in accordance with their QA program.

4. ASSESSMENT AND OVERSIGHT

Assessment and oversight of data collection and reporting activities are designed to verify that sampling and analyses are performed in accordance with the procedures established in this QAPP. The audits of field and laboratory activities may include two independent parts: internal and external audits. Internal audits may be performed by ARC, their contractor or a contracted laboratory as necessary. External audits may be performed by the EPA or their contractor, as necessary.

Performance and systems audits of field and laboratory data collection and reporting procedures are described in this Section.

4.1 Corrective Actions

Corrective action is the process of identifying, recommending, and implementing measures to correct unacceptable procedures or out-of-QC performance which can affect data quality. Corrective action can occur during field activities, laboratory analyses and data assessment. These corrective actions will be documented by the CQAO on a Corrective Action Report (CAR). All CAR documentation and records will be managed in accordance with Section 2.6 and included in Annual DSRs. A typical CAR format is provided in Attachment C4.

Non-conforming equipment, items, activities, conditions and unusual incidents that could affect data quality and attainment of the project's quality objectives will be identified, controlled and reported in a timely manner. For the purpose of this QAPP, a non-conformance is defined as a malfunction, failure, deficiency or deviation that renders the quality of an item unacceptable or indeterminate in meeting the project's quality objectives.

4.1.1 Laboratory Corrective Action

Corrective action in the laboratory may occur prior to, during and after initial analyses. A number of conditions such as broken sample containers, preservation or holding-time issues and potentially high-concentration samples may be identified during sample log-in or just prior to analyses. Corrective actions by the laboratory to address these conditions will be taken in consultation with the CQAO and reported on a CAR. In the event that planned corrective actions are not in complete accordance with approved project planning documents, the EPA will be consulted and concurrence obtained before the change is implemented.

If during analyses of the samples, the associated laboratory QC results fall outside of the project's performance criteria, the laboratory should initiate corrective actions immediately. Following consultation with laboratory analysts and section leaders, it may be necessary for the CQAO to review or approve the laboratory's implementation of a corrective action. These conditions may include dilution of samples, additional sample extract cleanup, or automatic re-injection/re-analysis when certain QC criteria are not met, etc. If the laboratory cannot correct the situation that caused the non-conformance and an out-of-control situation continues to occur or is expected to occur, then the laboratory will immediately contact the CQAO and request instructions regarding how to proceed with sample analyses.

Completion of any corrective action should be evidenced by data once again falling within the project's performance criteria. If this is not the case and the error in laboratory procedures or sample collection and

handling procedures cannot be found, the results will be reviewed by the CQAO and CPC to assess whether re-analysis or re-sampling is required.

All corrective actions taken by the laboratory will be documented in writing by the Laboratory Project Manager and reported to the CPC and CQAO. In the event that planned corrective actions are not in complete accordance with approved project planning documents, the EPA will be consulted and concurrence obtained before the change is implemented. All corrective action documentation and records will be managed in accordance with Section 2.6 and included in Annual DSRs.

4.1.2 Corrective Action During Data Assessment

The CQAO may identify the need for corrective action during data assessment. Potential types of corrective action may include re-sampling by field personnel, re-analyses of samples by the laboratory or re-submitting data packages with corrected clerical errors. The appropriate and feasible corrective actions are dependent upon the ability to mobilize the field personnel and whether the data to be collected is necessary to meet the required QA objectives (e.g., the holding time for samples is not exceeded, etc.). In the event that planned corrective actions are not in complete accordance with approved project planning documents, the EPA will be consulted and concurrence obtained before the change is implemented.

5. DATA REVIEW AND REPORTING

The process to be used for reviewing and verifying field data, laboratory data reduction and reporting process for analytical data, validation of laboratory analytical data, and reporting are described in the following Subsections. The process is used to confirm that the data obtained meet the project objectives and to estimate the effect of any deviations on data usability.

5.1.1 Field Data Review

Raw field data will be entered in field logbooks and/or field data sheets, which will be reviewed for accuracy and completeness by the CQAO (or designee) before those records are considered final. The overall quality of the field data from any given sampling round will be further evaluated during the process of data reduction and reporting. The field data will be reviewed by the CQAO in accordance with Level A/B criteria that apply to sample collection and documentation records. The Level A/B Screening Checklist is provided in Attachment C5.

Field data reduction procedures will be minimal in scope compared to those implemented in the laboratory setting. Field data review will include field team personnel reviewing logbooks, data sheets and maps for errors or omissions. If errors are made, results will be legibly crossed out, initialed and dated by the field team personnel, and corrected in a space adjacent to the original (erroneous) entry. Field measurement data will be entered into electronic files for import to the project database(s). All data entries will be reviewed for accuracy and completeness by a separate field team member before the electronic file is provided to the CQAO and then on to the database manager for import.

Additionally, field data precision and accuracy associated with field duplicate samples will be assessed by an independent qualified data validator as described in Section 5.1.3.

5.1.2 Laboratory Reporting and Data Review

Upon receipt, the laboratory will document sample receipt including proper containers, temperatures and preservation at the time samples are logged in/received. The sample receipt records (a required data package deliverable), as well as the COC documentation, will also be assessed during data review.

The laboratory will prepare level IV hard copy/pdf data packages and EDD format for transmittal of results and associated QC information to ARC and the Contractor Database Manager. The data packages will be prepared in general accordance with the *EPA Contract Laboratory Program (CLP) Statement of Work for Inorganic Superfund Methods* (EPA, 2016) and at a minimum will include the case narrative, sample results, units and QC sample results.

Laboratory data reduction procedures will be according to each laboratory's Quality Management Plan. At a minimum, paper records will be maintained by the analysts to document sample identification number and the sample tag number with sample results and other details, such as the analytical method used (e.g., method SOP #), name of analyst, the date of analysis, matrix sampled, reagent concentrations, instrument settings and the raw data. These records will be signed and dated by the analyst. Secondary review of these records by the Laboratory Supervisor (or designee) will take place prior to data reporting to ARC. The laboratory is responsible for assigning appropriate flags/qualifiers in accordance with the analytical method and internal laboratory SOPs.

5.1.3 Data Verification and Validation Methods

An independent qualified data validator will review and validate laboratory data utilizing the ARC Validation Checklist provided in Attachment C6-1. Validation qualifiers will be applied per Attachment C6-2 which has been developed by ARC's QAM and is based upon EPA's 2020 *National Functional Guidelines for Inorganic Superfund Methods Data Review* (EPA, 2020). Validation reason codes to be included in electronic files when applying qualifiers are provided in Attachment C6-3.

5.1.3.1 Laboratory Quality Control Data

The validator will provide a secondary level of review (subsequent to the laboratory) of the following information associated with each laboratory SDG:

- Compliance with the QAPP;
- Holding times (maximum of 6 months for arsenic and lead in soil prior to extraction);
- Instrument calibration verification;
- Laboratory blank analysis;
- Detection limits;
- Laboratory duplicates;
- Serial dilutions;
- MS/MSD percent recoveries and relative percent differences;
- Post-digestion spikes, if applicable;
- Surrogate percent recoveries; and
- Data qualifiers assigned by the laboratory.

5.1.3.2 Field Quality Control Data

The results of sample handling (holding time, temperature, COC) and field QC sample (field duplicate) analyses associated with each laboratory data package will be reviewed by the data validation contractor for implications of data quality for the data package. If a problem is identified through the review of field QC data, all related field samples will be identified. If appropriate and possible, corrective actions will be instituted and documented on a CAR. In the event that planned corrective actions are not in complete accordance with approved project planning documents, the EPA will be consulted and concurrence will be obtained before the change is implemented. If data are compromised due to a problem identified via field QC sample review, appropriate data qualifications will be used to provide information for future data users. These qualifiers will be included with tabulated data presented in DSRs and maintained with data stored in databases for future users.

5.1.3.3 Data Qualifiers

Qualifiers that may be applied to the data during validation include the following:

- U: The analyte was analyzed for but was not detected above the reporting limit.

- J, J+, J-: The analyte was positively identified; the associated numerical value is an estimate of the concentration of the analyte in the sample; the + and – indicate that a value may be estimated high or low.
- UJ: The analyte was not detected above the sample reporting limit. However, the reporting limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R: The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

5.1.4 Reconciliation with User Requirements

Data Quality Assessment (DQA) will be performed to determine whether the DQOs have been satisfied. The DQA consists of five steps that relate the quality of the results to the intended use of the data:

- Step 1: Review DQOs and sampling design.
- Step 2: Conduct preliminary data review and validation.
- Step 3: Apply Statistical test(s) to the data set (scatter plots and basic statistics to identify potential outliers).
- Step 4: Verify assumptions.
- Step 5: Draw conclusions about the quality of the data (data report will not include interpretation of results but will state conclusions regarding the quality of the results).

If, as a result of the DQA process, it is determined that data do not satisfy all DQOs, then corrective action(s) should be recommended and documented in the data reporting. Corrective actions include, but are not limited to, revision of the DQOs, based on the results of the investigation, or collection of more information or data. It may be determined that corrective actions are not required, or the decision process may continue with the existing data, with recognition of the limitations of the data.

5.1.5 Reporting

ARC will prepare Annual DSRs summarizing the sampling activities implemented during a calendar year as described in this QAPP. Each DSR will include specific field activities performed, documentation of field data collection, field QC procedures, deviations from the QAPP, and field and laboratory data. The report will also contain a discussion of a data quality assessment and will include the results of any associated field and laboratory audits and a summary of any corrective actions.

The CPC and CQAO are responsible for preparing the DSR(s). The report will be submitted in draft form to the EPA for review. Upon receipt of comments, the draft report will be revised to address the comments and re-submitted to the EPA for final approval.

6. REFERENCES

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TABLES

Table C-1: Precision, Accuracy and Completeness Calculation Equations

Table C-2: Measurement Performance Criteria

Table C-3: Project Quantitation Limit Goals and Laboratory Detection/Quantitation Limits

Table C-4: Field Sampling SOP References

Table C-5: Sample Containers, Preservation, and Hold Time

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Table C-1: Precision, Accuracy and Completeness Calculation Equations

Characteristic	Formula	Symbols
Precision (as relative percent difference, RPD)	$RPD = \frac{(x_i - x_j)}{\left(\frac{x_i + x_j}{2}\right)} \times 100$	x_i, x_j:replicate values of x
Accuracy (as percent recovery, R, for samples without a bacLJ round level of the analyte, such as reference materials, laboratory control samples and performance evaluation samples)	$R = \frac{x}{t} \times 100$	x: sample value t: true or assumed value
Accuracy (as percent recovery, R, for samples with a bacLJ round level of the analyte, such as matrix spiLes)	$R = \frac{SSR - SR}{SA} \times 100$	SSR: spiLed sample result SR: sample result SA: spiLe added
Accuracy (as percent difference, D, for samples > 50X the MDQ which have underJ one at least a five-fold dilution, with the result, S, corrected for the dilution)	$D = \frac{\lvert I - S \rvert}{I} \times 100$	I: initial sample result S: serial dilution result
Completeness (as a percentaJ e, C)	$C = \frac{n}{N} \times 100$	n: number of valid data points produced N: total number of samples taLen

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Table C-2: Measurement Performance Criteria

Analytical Methods	Laboratory SOP	QC Sample	Data Quality Indicators	Measurement Performance Criteria
gPA Methods: 6020B	gNV-S8 P-MIN4-0043-Rev.02	Field Duplicate	Precision[1]	≤ 35% RPD
		Matrix SpiLe Duplicate	Precision[1]	≤ 35% RPD
		Qaboratory BlanLs	Accuracy	< ½ RO
		Qaboratory Control Sample	Accuracy	E0-120% R
		Matrix SpiLe Sample	Accuracy	75-125% R
		Post DiJ estion SpiLe	Accuracy	75-125% R
		Internal Standard	Accuracy	70-130% R
		Serial Dilution (SD) Sample	Accuracy	20% difference (D)

[1] Precision: RPD criteria applicable if sample and duplicate concentrations are >5 times the RQ If sample or duplicate concentrations are < the RQ a delta of ≤ 2 times the ROis acceptable.

Table C-3: Project Quantitation Limit Goals and Laboratory Detection/Quantitation Limits

Matrix	Inorganic Analyte	Chemical Abstracts Service (CAS) Number	Units	Comparison Value NTE/RAO	Project Quantitation Limit Goal (PQLG)	Method 6020B	
						Method Detection Limit (MDL)	Reporting Limit (RL)
Soil	Arsenic	7440-3E-2	mJ /LJ	250/54	0.5	0.109	0.5
Soil	Qead	7439-92-1	mJ /LJ	400/2E1	0.2	0.0294	0.2

Qaboratory instrument MDOmay vary sliJ htly over time
PQOG identified as the lower of: half of the lowest comparison value; or the reportinJ limit

Table C-4: Field Sampling SOP References

Reference Number *	Title, Revision Date and/or Number	Originating Organization
S8 P-GF-G-01	Field Documentation	z oodard W Curran
S8 P-GF-G-02	Sample PacLinJ and ShippinJ	z oodard W Curran
S8 P-GF-G-03	Sample Custody	z oodard W Curran
S8 P-GF-G-04	Field QC Samples	z oodard W Curran
S8 P-GF-SS-01	Soil Sample Collection	z oodard W Curran

*See Attachment C1 for Field S8 Ps

Table C-5: Sample Containers, Preservation, and Hold Time

Analyte	Matrix	Method	Containers Number, Size, Type	Preservation	Preparation Holding Time	Analytical Holding time
Total Arsenic, Total Oead	Soil	6020B	1 – 8 ne-quart sealable plastic baJ	None	1E0 days	1E0 days

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FIGURES

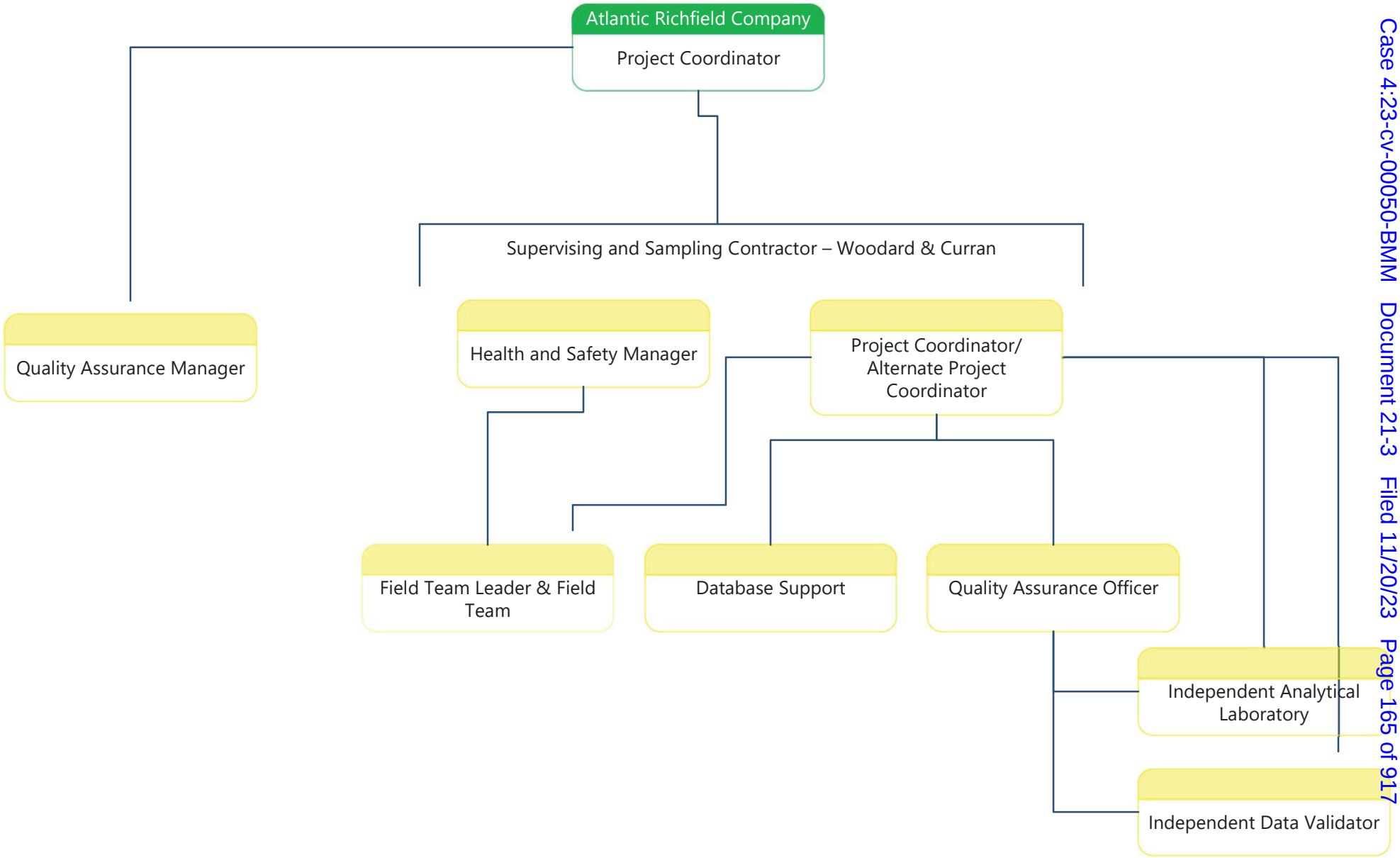
Figure C-1: Atlantic Richfield Company Project Team (Sampling)

Figure C-2: Example Residential Yard Sample Location Map

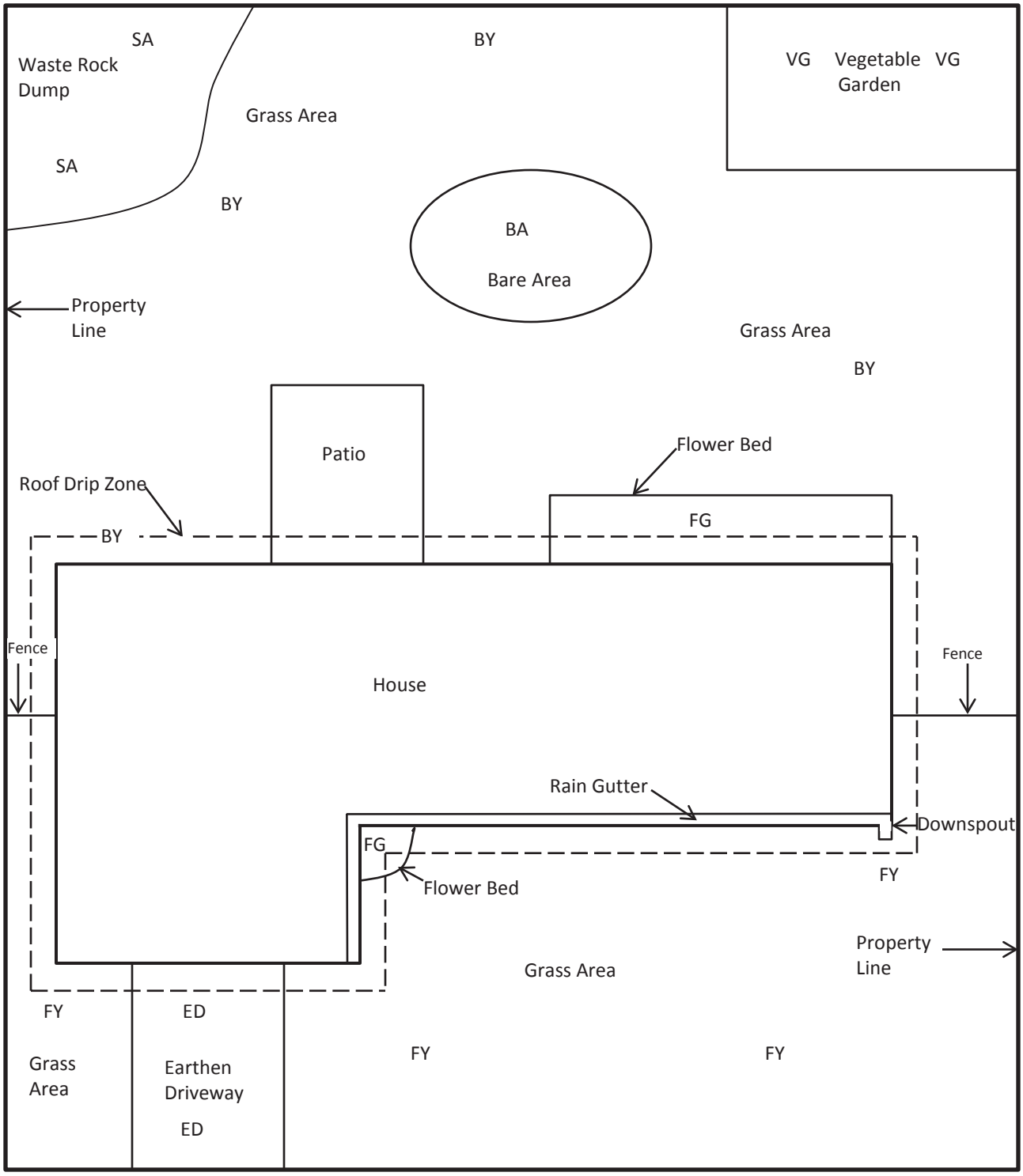
Figure C-3: Residential Yard Remedial Action Decision Flow Chart

Figure C-4: Non-Residential Sampling and Remedial Action Decision Flow Chart

Figure C-1. Atlantic Richfield Company Project Team (Sampling)



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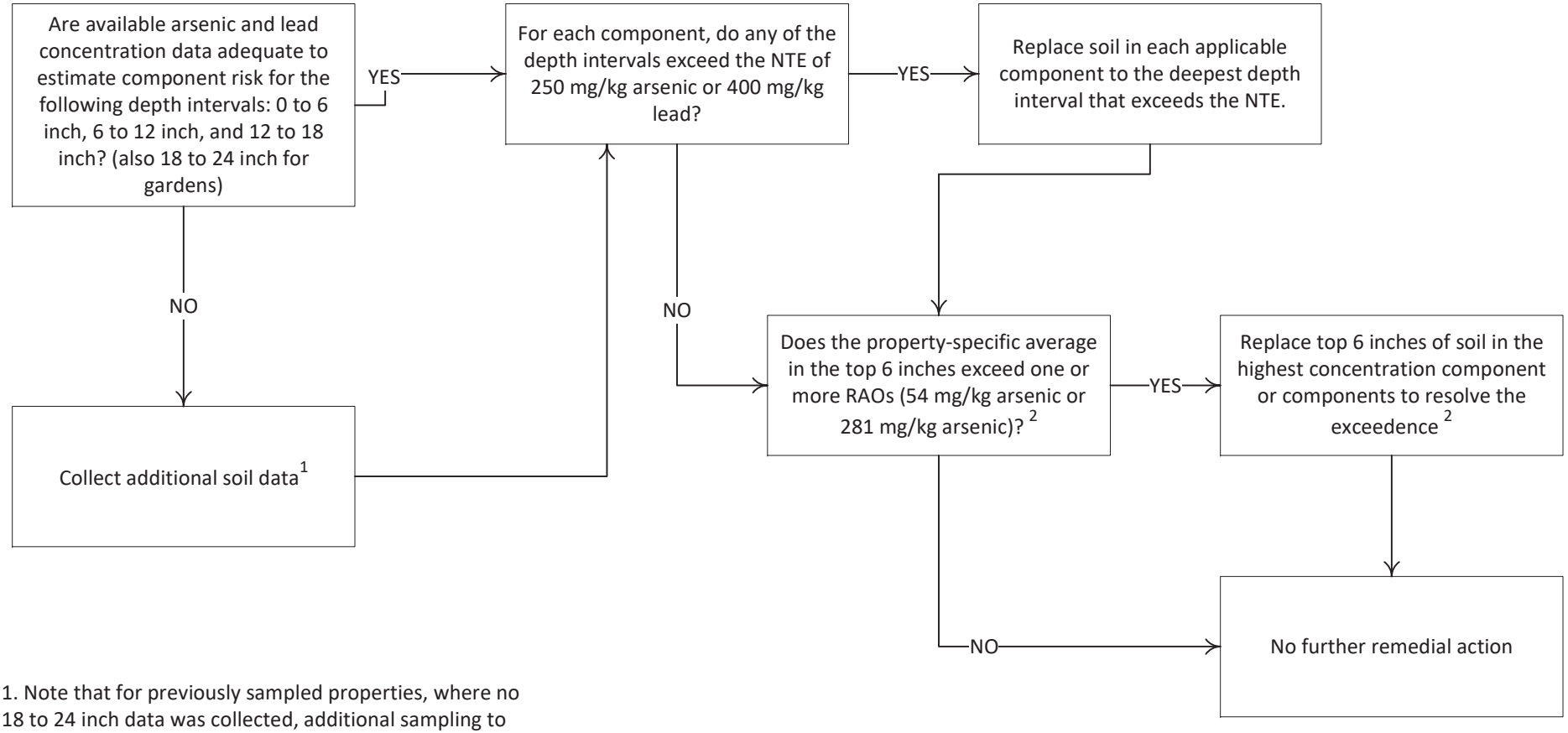


LEGEND

FY Front Yard Composite Subsample
BY Back Yard Composite Subsample
VG Vegetable Garden Area Composite Subsample
ED Earthen Driveway Composite Subsample (if present)
SA Source Area Composite Subsample (if present)
FG Flower Garden (if present)
RG Rock Garden (if present)
BA Bare Area

ATLANTIC RICHFIELD COMPANY ACM SMELTER AND REFINERY SITE		
FIGURE C-2 **TYPICAL YARD SAMPLING LAYOUT**		
PRJ: 0231336	DATE: February 21, 2023	
REV: 2	BY:	FOR:

Figure C-3 Residential Remedial Action Decision Process

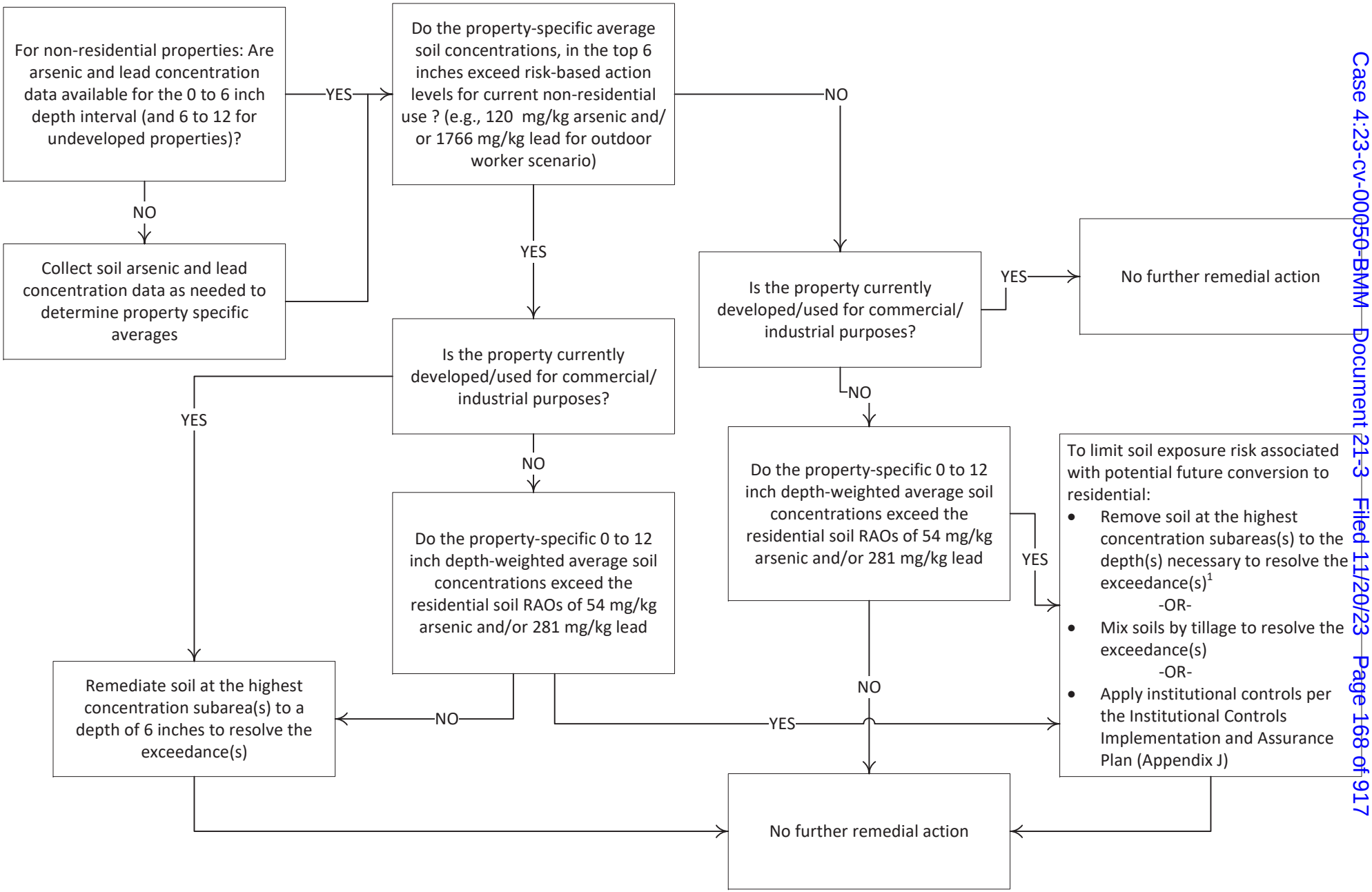


1. Note that for previously sampled properties, where no 18 to 24 inch data was collected, additional sampling to collect this deeper interval will not take place. The need for 18 to 24 inch RA will be based upon the 12 to 18 inch interval for those previously sampled properties.

2. As calculated from available data including replacement soil concentrations.

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Figure C-4 Non-Residential Remedial Action Decision Process



1. Note that for a property which is not commercially developed but could feasibly be converted to residential: If the top 6 inches exceed risk based action levels for its current use, the top 6 inches will be remediated (removal or tillage) for its current use regardless of what is done to address a residential RAO exceedance in the top 12 inches (soil removal, tillage or ICs).

04.28.2023

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ATTACHMENT C1: STANDARD OPERATING PROCEDURES

SOP – GF – G – 01

Field Documentation

Authorized for use: 02/21/23
Revision 2

Scope	This SOP addresses field documentation including notes in field books on field forms (including electronic forms) and photographs.
TRA(s) Referenced/ Reviewed	All field work TRAs
Stop Work Triggers	Lightning (30 second rule) Extreme wind Unsafe conditions Inadequate PPE or equipment Inability to access site safely
PPE Required	Hard Hat Safety Toe Boots Safety Glasses High Visibility Shirt or Vest Gloves (Leather, impervious) Long Pants & Long-Sleeve Shirt Snake Gaiters (Required when the high temp is expected to be above 50°F)
Other Referenced SOPs	
Required Tools	Field logbook Pen with indelible ink, black Electronic tablet, when applicable
Trained, Competent, & Authorized Personnel	Charlie Rogers Nico Harrison
PROCEDURES	
Field Logbook - General	A separate field logbook will be used for each field task (NBS investigation, storm water sampling, soil sampling, etc.). Each logbook shall have a unique document control number. The logbooks will be bound and have consecutively numbered pages. The information recorded in these logbooks shall be written in indelible ink. The author will initial and date entries at the end of each day, and a line shall be drawn through the remainder of the page. All corrections will consist of a single line-out deletion in indelible ink followed by the author's initials and the date. No bound field logbooks will be destroyed or thrown away even if they are illegible or contain inaccuracies that require a replacement document.
Required Logbook entries	1. The date shall be entered at the top of each page, 2. The purpose and description of the proposed field task, 3. Time and date fieldwork started, 4. Location and description of the work area, including sketches where helpful, any map and photograph references, and sketches of well construction details, soils, pits, etc., 5. Names of field personnel and subcontractors, 6. Name and affiliation of any field visitors, 7. Name, address, and phone number of any field contacts, 8. Meteorological conditions at the beginning of fieldwork and any ensuing changes in these conditions, 9. Documentation of tailgate safety meeting, 10. Documentation of any equipment calibrations, 11. Details of the fieldwork performed and field data sheets used (including document control numbers), with special attention to any deviations from the task-specific Quality Assurance Project Plan (QAPP) and/or Standard Operating Procedures (SOPs), 12. All field measurements made or reference to network location of field forms, and 13. Personnel and equipment decontamination procedures.

Required Logbook Entries for any Field Sampling	1. Sample location and sample identification, 2. Sample type (i.e., ground water) and sample aliquots collected, 3. Date and time of sample collection, 4. Split samples taken by other parties. Note the type of sample, sample location, time/date, name of person, person's company, any other pertinent information, 5. Sampling method, particularly any deviations from the SOP, 6. Any field analytical results (i.e. field soil pH) or measurements (ORP, SC, etc. for water sampling), 7. Sample preparation, including filtration and preservation, handling, packaging, labeling, shipping tracking number, the shipping agent, laboratory where the samples will be sent, and the address and contact number of the laboratory, and 8. Equipment decontamination process.
Supplemental Logbook Entries	Any unusual circumstances should be noted in the field book, and photographic evidence should be provided where practical.
Field Forms - General	Electronic field forms or notes can be used in lieu of field notebook entries for specific tasks: Electronic forms will include field logbooks elements as follows: 1. Electronic forms will automatically default to the current date (the date the form is being used) and each form will include a date, 2. Electronic forms will be developed for specific tasks, thus the task purpose will be implied, 3. Current time and date will autofill when selected, 4. Forms will include location with the option of selecting the location from a drop-down menu or typing a location in, 5. Forms will include names of field personnel with the option of selecting from a drop-down menu or typing names in, 6. Meteorological conditions at the beginning of fieldwork and any ensuing changes in these conditions (changes will be noted in the comments section), 7. Tailgate safety meetings will be documented on Field Authorization Forms, 8. Equipment calibrations will be documented on electronic field forms, 9. Any deviations from the task-specific Quality Assurance Project Plan (QAPP) or Standard Operating Procedures (SOPs) will be documented in the comments section and the field book used will be referenced if additional notes have been made in the field book, 10. All field measurements made, 11. Personnel and equipment decontamination procedures. For sample collection, forms will also include: 1. Sample location and number, 2. Sample type (i.e., ground water), and sample aliquots collected, 3. Date and time of sample collection, 4. Any field laboratory analytical results, and 5. Sample preparation, including filtration and preservation.
Field Photographs	Electronic field forms have photographic capabilities, and if field photos are taken, it is preferable to capture them in field forms. If it is not possible to capture a photo in a field form, a digital camera shall be used. Specifically, photographs should be taken of unexpected circumstances (for example, channel erosion caused by high flows). Photographs should include a scale in the picture when warranted and practical.
Required Documentation for Field Photographs	1. The photographer's name, date, time, and the general direction faced; 2. A brief description of the subject and the fieldwork portrayed in the picture; and 3. Sequential number of the photograph. If photos are captured within electronic field forms, the photographer's name, the date, and time will be implied since it's within the form. The photo will be associated with the field work inherent to the form. Thus it is not necessary to record these the photographer's name, the date and time of the photo, or a sequential number for the photo. However, once the photo is downloaded/uploaded, the photo will be named to include the photo date and either named or placed in a folder structure which implies the photo subject.
Field Documentation Storage	Field logbooks will be stored in a secure location accessible to the Quality Assurance Officer. Field logbooks will be scanned to the server on a quarterly basis.

SOP – GF – G – 02

Sample Packing and Shipping

Authorized for use: 2/24/23
Revision 1

SCOPE	This SOP addresses field documentation, including notes in field books, on field forms (including electronic forms), and photographs.
TRA(s) Referenced/ Reviewed	TRA1-001-Common Hazards, load/unload, tools, Power/Hand
STOP WORK TRIGGERS	Unsafe conditions Inadequate PPE or equipment
MSDS	Antimony Arsenic Cadmium Copper Lead Mercury Nickel Selenium Silver Zinc HNO_3 H_2SO_4
PPE REQUIRED	Safety Toe Boots Safety Glasses (when needed) Gloves (leather, impervious, when needed) Long Sleeve Shirt Long Trousers
OTHER REFERENCED SOPs	
REQUIRED TOOLS	Coolers Clear packing tape Duct tape Shipping labels Zip ties Cooler liner bags Bubble wrap Temperature blanks (when needed) Ice Document-sized plastic bags Chain of Custody seals
Trained, Competent and Authorized Employees in this SOP	Nico Harrison Charlie Rogers
PROCEDURES	
Packing Samples - General	Environmental samples are generally packed in coolers for shipping to the analytical laboratory. Coolers should be in good condition and should be clean and dry.
Preparing and Packing shipping container	1. If necessary, wipe the exterior of the sample container with a damp towel to remove excessive dirt. Ensure that the inside of the cooler is clean and dry, and if not wash the inside of the cooler with tap water, and then dry the inside of the cooler. 2. If the shipping container has a drain hole, cover the hole with duct tape on both the inside and outside of the cooler. Shipping companies will not deliver leaking packages. 3. Double check the time, date and Id numbers match sample aliquot and the COC. 4. For any sample which will undergo analysis for organics or mercury, shipping containers must be kept between 0 and 4 °C. Cube ice will be placed inside the cooler to maintain the temperature requirements. Each cooler will contain at least sixteen pounds of ice; more may be needed in warm months. To ensure that samples arrive at the laboratory within

	temperature, do not skimp on ice. Step 1: Put absorbent pad on bottom of cooler if included. Line long sides and bottom of cooler with bubble wrap. Open cooler liner bag so that it fills cooler. Step 2: Pour eight pounds of ice into cooler liner bag. Add temperature blank and make sure it is covered by ice. Step 3: Ensure sample bottle sets are in sealed plastic bags with as much air removed as possible. Place upright in cooler liner bag on top of ice. Pack tightly enough to ensure they stay upright during shipping. Do not pack more than eight aqueous sample sets per cooler. If shipping soil or sediment samples, make sure aliquots are double bagged before putting on ice. Step 4: Pour another eight pounds of ice into cooler liner bag on top of sample sets. Remove as much air as possible from liner bag, then twist shut and seal with zip tie. Use packing tape to secure end of zip tie to top of liner bag so it does not puncture plastic during shipping. Step 5: Place another layer of bubble wrap on top of sealed liner bag. 5. Complete the chain-of-custody (COC) form. Record the all FedEx tracking numbers on the COC. Place the completed COC in a resealable plastic bag on top of bubble wrap. If shipping multiple coolers on the same COC, each cooler must have a copy of the COC form. Once the shipping container is packed and COC has been added, tightly close the lid, , affix a signed and dated custody seal on the container in a manner that the seal will be broken if the container is opened (on the lip of the lid and down the side of the container), then use clear packing tape to tape across the top of the container and down each side, covering and securing the custody seal. With duct tape, tape across the top of the container , on the other side and laterally around the lid seam, making sure not to cover custody seal or shipping label location. Shipping labels must be placed on the shipping container. Self-adhesive shipping labels are supplied by the laboratory in most cases, but if they are not provided, print shipping labels emailed from the lab. 6. Each label will have a separate tracking number. For printed labels, place the labels in adhesive sleeves if provided by the shipper. Adhere or use clear packing tape to affix the label to the lid of each shipping container.
Documentation	1. Documentation that samples have been shipped must be recorded in the Project field book. Documentation shall include: a. Date of shipment, b. Shipment preparation (i.e. "*Shipped on ice*") c. Recipient's name, address, and phone number, d. Shipment method (i.e., *FedEx priority overnight), and* e. Tracking numbers. Example logbook entry: *HH:MM Shipped NN Samples collected MM/DD/YY – MM/DD/YY packed in N coolers on ice and under COC to:* *Pace Analytical Services* *1700 Elm St* *Minneapolis, MN 55414* *t/n 612-607-1700* Fed Ex Priority overnight tracking number(s): xxxxxxxxxxxxxxxx

SOP – GF – G – 03
STANDARD OPERATING PROCEDURES
SAMPLE CUSTODY

Authorized for use: 02/24/23
Revision 1

SCOPE	This SOP addresses the standard operating procedures for sample custody and chain-of-custody procedures.
TRA(s) Referenced/ Reviewed	R-L1-Common Hazards, Driving, load/unload, Great Falls
STOP WORK TRIGGERS	Unsafe conditions Inadequate PPE or equipment Inability to access the work area safely
MSDS	Antimony Arsenic Cadmium Copper Lead Mercury Nickel Selenium Silver Zinc HNO_3 H_2SO_4
PPE REQUIRED	Safety toe boots Safety glasses (when needed) Gloves (leather, impervious, when needed) Long sleeve shirt Long pants
OTHER INSTRUCTIONS/SOPs	SOP-GF-G-01 Field Documentation SOP-GF-G-02 Sample Packing and Shipping
REQUIRED TOOLS	Field logbook Pen with indelible ink, black Electronic tablet, when applicable Chain of custody
Trained, Competent and Authorized Employees in this SOP	Charlene Rogers Nicholas Harrison

PROCEDURES

SAMPLE LABEL	Each sample collected at the site shall be identified with a sample label. The following information shall be recorded on the label: 1. Project name, 2. Sample type (grab or composite, media sampled), 3. Sample identification, 4. Date and time sample was taken, 5. Requested analysis, 6. Preparation (preservative added, filtration, etc.) 7. Samplers' initials Field preparation
FIELD DOCUMENTATION	Sample collection will be documented in the field logbook and on electronic field forms, as applicable, at the time the sample is collected. The field logbook will provide sufficient information to correlate the sample identification with a physical sampling location. The sample collection date and time, sample analysis and preservative will also be documented in the field book and/or on the field form.

SAMPLE CUSTODY	Chain-of-custody records ensure that samples are traceable from the time of collection through analysis and archival. A sample is in a person's custody if any of the following criteria are met: 1. The sample is in the responsible person's physical possession. 2. The sample is in the responsible person's view after being in possession. 3. The sample has been secured by the responsible person so that no tampering can occur. 4. The sample has been locked up or secured by the responsible person in an area with restricted access. 5. The sample was in the person's possession, then was transferred to authorized personnel (i.e. shipper).
CHAIN-OF-CUSTODY	A chain-of-custody (COC) will be completed for each sample shipment/laboratory delivery. Each sample in the shipment shall be listed on the COC. The sampling entity is responsible for initiating and filling out the COC. Information included on the COC will include: 1. Project name and identification number; 2. Sampler's signature and affiliation; 3. Date and time of collection; 4. Sample identification number and matrix; 5. Analyses requested; 6. Preservative used; 7. Remarks such as any additional notes to laboratory personnel (e.g., filter in lab); 8. Signature of persons relinquishing custody, dates and times; and 9. Signature of persons accepting custody, dates and times. The sample identification, sample date, and sample time must exactly match what is entered on the sample label. The sampling personnel whose signature appears on the chain-of-custody is responsible for the custody of the samples from the time of sample collection until custody of the samples is transferred to a designated laboratory, a courier, or to another project employee for transporting the sample to the designated laboratory or shipping facility. Custody is transferred when both parties to the transfer complete the portion of the chain-of-custody under "Relinquished by" and "Received by". Signatures, printed names, company names, dates and times are required. Upon transfer of custody, the sampling personnel who relinquished the samples will retain the third sheet (pink copy) of handwritten COCs or an electronic copy of computerized forms. When the samples are shipped by a common carrier, a Bill of Lading (e.g., FedEx label with tracking number) supplied by the carrier will be used to document the sample custody, and its identification number will be entered on the chain-of-custody It is not necessary for courier personnel to sign the chain-of-custody. The chain-of-custody record also serves as the laboratory request form. As shown in the example COC at the end of this SOP, a space is included on the form to list the analyses requested for each set of samples.
REPORTING	1. Check all data that was documented in the field to make sure there is no human error has occurred on either set of documentation processes of the COC's. 2. Scan and upload the completed COC's to the applicable project folder on the server.

bp rm

Laboratory Management Program LaMP Chain of Custody Record

Page 1 of 6

BP Site Node Path: BP > USA > MT > SILVER BOW > Butte Priority **Req Due Date (mm/dd/yy):** _____ **Rush TAT:** Yes ____ No X

BP Facility No: BPSOU Ground Water Monitoring **Lab Work Order Number:** _____

Lab Name: MSE Laboratory Services	Facility Address:	Consultant/Contractor: TREC, Inc.
Lab Address 300 Technology Way, Butte MT 59701	City, State, ZIP Code:	Consultant/Contractor Project No: 9208-003
Lab PM: Sara Ward	Lead Regulatory Agency:	Address: 1800 W. Koch, Suite 6 Bozeman MT 59715
Lab Phone: 406-494-7334	California Global ID No.:	Consultant/Contractor PM: Scott Bradshaw
Lab Shipping Accnt:	Enfos Proposal No:	Phone: 406-586-8364 Email: sbradshaw@treccorp.com
Lab Bottle Order No:	Accounting Mode: Provision OOC-BU OOC-RM	Email EDD To: bpspudata@treccorp.com and to lab.enfosdoc@bp.com
Other Info:	Stage: Activity:	Invoice To: BP X Contractor ____
BP Project Manager (PM): Loren Burmeister		
BP PM Phor 406-723-1838		
BP PM Ema loren.burmeister@bp.com		

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	Matrix: Is this location a well?	No. Containers / Preservative: Total Number of Containers	Unpreserved	H2SO4	HNO3	HCl	Methanol	Requested Analyses: As(D), Cd(D), Cu(D), Pb(D), Hg(D), Zn(D)									Comments

Report Type & QC Level: Standard ____ Full Data Package Level III

Sampler's Name:	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: TREC INC	TREC					
Shipment Method: Hand-Delivery Ship Date:						
Shipment Tracking No:						

Special Instructions

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: _____ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

BP Remediation Management COC - Effective Date: starting August 16, 2011. Use for Remediation Management projects only BP LaMP COC Rev. 8, 24 June 2012

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SOP – GF – G - 04

FIELD QUALITY CONTROL SAMPLES

Authorized for use: 02/24/23
Revision 2

SCOPE	This SOP addresses the number and type of field quality control samples which must be collected for various environmental medias.
RTRA(s) Referenced/ Reviewed	R-L1-Common Hazards, Driving, Load/Unload R-L1-Surface Water Sampling R-L1-Groundwater Sampling R-L1-Soil Sampling
STOP WORK TRIGGERS	Lightning (30 second rule) Extreme wind Unsafe conditions Inadequate PPE or equipment Water depth greater than three feet Inability to access the work area safely Defective equipment Warning siren from Black Eagle Dam
SDS	Antimony Arsenic Cadmium Copper Lead Mercury Nickel Selenium Silver Zinc HNO_3 H_2SO_4 Liquinox
PPE REQUIRED	Hard hat Waders (if water bodies will be entered) If using boot foot waders, ankle support required. Safety glasses High visibility shirt or vest Gloves (leather, impervious, and shoulder length gloves (calving gloves)) Long-sleeve shirt Long trousers Snake Gaiters (seasonal-weather dependent)
OTHER INSTRUCTIONS/SOPs	SOP-GF-G-01 Field Documentation SOP-GF-G-02 Sample Packing and Shipping SOP-GF-03 Sample Custody SOP-GF-SS-01 Soil Sample Collection – Manual SOP-GF-SS-02 Streambed Sediment Collection SOP-GF-SW-01 Surface Water Sampling SOP-GF-GW-03 Groundwater Sampling
REQUIRED TOOLS	Tools as required by applicable sampling SOP
Trained, Competent and Authorized Employees in this SOP	Charlie Rogers Nico Harrison
PROCEDURES	
GENERAL	Field Quality Control (QC) is a part of the project Quality Assurance/Quality Control program and is described in detail in the Former Great Fall Refinery Site-Wide Quality Assurance Project Plan.This Standard Operating Procedure (SOP) describes the purpose, preparation, and collection frequency of field QC blanks, replicate and

	split samples, and reference materials samples for aqueous and solid matrices.
FIELD QC COLLECTION FREQUENCY	Field QC samples will be collected at the more frequent of 1 QC set per 20 natural samples or for each sampling event. A sampling event is defined by any of the following conditions: 1. The beginning of a new sampling round, 2. A significant change in either the sample type, matrix, or location, or 3. A change in any sample analysis parameter The number of field QC samples collected must be rounded up if the number of natural samples collected is not a multiple of 20. For example, if a frequency of 1 in 20 is indicated and 28 field samples are collected, then two field QC samples will be prepared.
TYPES OF FIELD QC SAMPLES	Types of field QC samples may vary for differing sampling situations. Quality Assurance Project Plans will specify the field QC sample requirements. **Trip Blank** A trip blank will be used to help identify cross contamination in a shipment of aqueous samples for analyzing volatile organic compounds (VOCs) only. Trip blanks will be prepared by the appropriate laboratory and in the appropriate containers using deionized (DI) water. Trip blanks will be transported unopened to and from the field with field samples. One trip blank will be prepared for and sent with each shipment of samples for analyzing VOCs. **Equipment Contamination Blank** Equipment contamination blanks (EB) will be used to help identify contamination from the sampling environment or from sampling equipment, such as a bailer, tubing, collection container, or filter. Equipment contamination blanks for field-filtered samples will be prepared by processing a representative amount of laboratory DI water through the decontaminated sample collection equipment and a new filter, into the appropriate sample container, with the necessary preservatives. Equipment contamination blanks for non-field filtered samples will be prepared by processing a representative amount of laboratory DI water through the decontaminated sample collection equipment, into the appropriate sample container, with the necessary preservatives. Equipment contamination blanks are required for all inorganic or organic constituents when equipment is re-used across sampling sites. If all equipment is dedicated, equipment contamination blanks may not be required. **Field Blank** Field blanks provide a measure a various cross-contamination sources, decontamination efficiency, and other potential errors that can be introduced from sources other than the sample. A field blank is prepared by the same protocols as a normal sample but is not exposed to any sampling equipment. A field blank is prepared in the field and consists of a representative amount of laboratory DI water and any necessary preservatives and filtering. A field blank is contained in a set of sample bottles randomly chosen from each lot of bottles received from the supplier. Field blanks are required for all inorganic or organic constituents. Field blanks will be collected for each type of sample bottle at a frequency of 1 per 20 samples or once per sampling event, whichever is more frequent. **Field Duplicate** Field duplicates are co-located samples collected identically and consecutively over a minimum period of time and provide a measure of the total analytical bias (field and laboratory variance), including bias resulting from the heterogeneity of the replicate sample set itself. Field duplicates consist of two samples (one sample-the natural sample-and one duplicate sample) collected consecutively at the same location and placed in different bottles for separate analysis. Each duplicate will have its own sample number. The two samples will be sent to the primary laboratory and analyzed for identical chemical parameters. Field duplicate samples will be collected at a minimum frequency of 1 per 20 samples or once per sampling event, whichever is more frequent. **Standard Reference Materials** Standard reference material samples (SRMs) are materials of known composition that have been prepared by and obtained from U.S. Environmental Protection Agency (EPA) approved sources, and that have undergone multi-laboratory analyses using a standard method. SRMs provide a measure of analytical performance and/or analytical method bias of both the primary and referee laboratories. Several SRMs may be required to cover all analytical parameters. SRMs are not required for every sampling project; but if SRMs are submitted, they will be submitted to both the primary and referee (if applicable) laboratories at a minimum frequency of 1 per 50 samples, or once per sampling event, whichever is more frequent. **Laboratory Split** A laboratory split consists of one well-mixed and homogenized natural sample, which is split in the field into two samples and placed in different bottles for separate analysis. One of the split samples will be sent to the primary laboratory and the other split sample will be sent to the referee laboratory. Each split will have its own sample number. Both split samples will be analyzed for identical chemical parameters. The results of the laboratory split from both laboratories will be compared to determine inter-laboratory precision. Laboratory splits are not required

	for every sampling project; but if laboratory split samples are collected, the frequency will be 1 per 20 samples or once per sampling event, whichever is more frequent. **Matrix Spike / Matrix Spike Duplicate** A matrix spike and its duplicate are generally performed on a random sample by the laboratory. The random sample will be labeled on the COC form with "MS/MSD" on the notes line for the sample. The field team leader shall track the number of samples submitted and request a matrix spike on one of every 20 non-QC samples submitted to the laboratory for analysis or one per event if 20 samples are not submitted.
FIELD QC SAMPLE ANALYSIS and LABELING	Analysis for field QC samples will be identical to that required for natural samples. Field QC samples will be assigned sample identification which align with those used for natural samples, and they will be consecutive with the natural sample identification. For example: Natural sample ID: BH-10m-080819 Field duplicate ID: BH-10m-D-080819 EB ID: GF-EB1-080819 FB ID: GF-FB1-080819 SRM ID: GF-SRM-080819
DOCUMENTATION	1. Field QC samples will be identified as such in the field logbook and on any field form. Documentation for field QC samples will be identical to that required for natural samples. 2. Field QC samples will be identified on the chain-of-custody by sample identification only. COC requirements for field QC samples will be identical to that for natural samples.

SOP-GF-SS-01

Soil Sample Collection - Manual

Date Validated/Authorized for use: 2/24/2023

Revision 1

SCOPE	This SOP addresses manually collecting soil samples. The SOP covers hand digging only.
TRA(s) Referenced/ Reviewed	R-L1 Common Hazards Driving Load Unload R-L1 Soil Sampling
STOP WORK TRIGGERS	Lightning (30 second rule) Extreme Wind Unsafe conditions Temperature < 20 F or > 90 F when working alone Inadequate PPE or equipment Inability to access the work area safely Black Eagle Dam warning siren
SDS	Antimony Arsenic Cadmium Copper Lead Mercury Nickel Selenium Silver Zinc Liquinox
PPE Required	Hard hat Safety glasses High visibility shirt or vest Safety-toed boots Gloves (impervious and work gloves) Long-sleeve shirt Long trousers Snake Gaiters (seasonal/weather dependent)
Other Instructions/SOPs	SOP-GF-G-01 Field Documentation SOP-GF-G-02 Sample Packing and Shipping SOP-GF-G-03 Sample Custody SOP-GF-G-04 Field Quality Control Samples
Required Tools	Sample containers - wide-mouthed sample jar or resealable freezer type plastic bags Drain spade (sharp-shooter shovel) 6-foot steel bar or posthole digger Plastic Sampling Scoops Clean Stainless-steel or plastic bowls, or plastic buckets Measuring device Water-proof markers Long-handled scrub brush 5-gallon buckets or water container with tap for decontamination Laboratory-grade detergent for decontamination
Trained, Competent and Authorized Employees in this SOP	Charlie Rogers

PROCEDURES	
GENERAL	The following procedures are to be used to collect soil samples from hand-dug pits. Sample collection and compositing for machine dug pits are identical to those explained in this SOP, but holes are not hand dug. These procedures may be modified in the field based on field and site conditions after appropriate annotations have been made in the bound or electronic field logbook. These procedures are not to be used when sampling for volatile organic compounds. Site-specific sampling plans will specify the sampling density (the number of samples required per acre or square foot), the compositing rate (the number of sub-samples required for each sample), and the specific property components (front yard, garden, earthen driveway, etc.) for which separate samples must be collected.
SAMPLE COLLECTION	1. Locate the site as directed in the site-specific sampling plan 2. When sampling in yards or sodded areas, always place a plastic kitchen (~ 13-gallon size) garbage bag on the ground next to each intended hole, just before digging the hole. The dirt will be placed on the bag. This is not required in open, naturally vegetated areas, but it will make it easier to refill the test pits. 3. Use an indelible marker and measuring device to mark sample depths on the shovel Dig the required number of holes to the required depth. If an organic layer is present, remove the organic layer for each hole. A drain spade will be used to dig the holes. Drain spades are often referred to by the brand name Sharp Shooter. 4. Once all required holes are dug for each sample, begin collecting the sample. To elaborate, two samples may be required, and each sample is a four-point composite. Thus, one sample point will consist of four equidistant holes. Eight holes will be dug in all, to make up two samples. Use markings on the shovel to determine what depths to sample. Begin at the bottom of the hole, and collect the deepest depth increment first, and collect subsequent depth intervals working upward. Collect sample material by scraping the wall of the hole with the sampling scoop. Deposit the sample material into a container in which the sample will be composited. Each depth interval will have a separate compositing container. 5. Place an equal sized sample volume from each depth interval of each hole into the appropriate compositing container. Remove all coarse fragments greater than 0.5 inches from the bowl, unless the analysis is for an entrainable metals, leachable metals or any analysis which would require different types of coarse fragments per the site-specific SAP. Mix the remaining sample in the bowl. Note: Samples collected for air entrainable metals will be prescreened with a No. 10 stainless steel screen (2 millimeters) prior to being homogenized. Samples collected for analysis of leachable metals should include coarse fragments. 6. Stir the sample to thoroughly mix it. Divide the sample material in the bowl into quarters. Put an equal number of sample portions from each quarter into a labeled sample container. Be certain the correct depth interval is deposited in the correct sample container. 7. Grab samples (not composite) can be mixed in the sample bag during collection.
EQUIPMENT DECONTAMINATION	1. Any re-usable equipment must be decontaminated between sample locations. Tap equipment on the ground or use the back of a long-handled scrub brush to remove large particles. 2. Fill a bucket with tap water and laboratory-grade detergent (Liquinox, for example). Place the equipment in the bucket and scrub with the long-handled scrub brush. 3. Using another bucket or water container with a tap filled with clean tap water, rinse detergent and small particles off equipment. 4. Place the decontaminated equipment on a clean, plastic sheet to dry (; or alternately, place the equipment upright in a manner that will allow the water to drain (i.e., a clean bucket). If placing the equipment upright, the equipment surface which will contact sample media must not be in contact with any other surface.
DOCUMENTATION	1. Follow guidelines in SOP-GF-G-01 Field Documentation 2. Each sample shall be clearly labeled in indelible ink(Sharpie) with a unique sample ID, sample date, sample time, sample analysis, sample preparation (i.e. filtered, preservative used), and sampler's initials.

Woodard & Curran

ATTACHMENT C2: SOIL LABORATORY STANDARD OPERATING PROCEDURES



Document Information

Document Number: ENV-SOP-MIN4-0056 **Revision:** 00

Document Title: Metals Preparation for Solid samples, Wipes and Filters

Department(s): Metals

Previous Document Number: S-MN-I-460-rev.19

Date Information

Effective Date: 31 Jul 2017

Next Review Date: 31 Jul 2019 **Last Review Date:**

Notes

Document Notes:

All Dates and Times are listed in: Central Time Zone

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STANDARD OPERATING PROCEDURE

PREPARATION OF SOLID SAMPLES FOR ANALYSIS BY ICP AND ICP-MS

Reference Methods: EPA 3050B

Local SOP Number:	S-MN-I-460-rev.19
Effective Date:	Date of Final Signature
Supersedes:	S-MN-I-460-rev.18

APPROVALS

Laboratory General Manager — Date: 31 Jul 2017

Laboratory Quality Manager — Date: 17 Jul 2017

PERIODIC REVIEW

SIGNATURES BELOW INDICATE NO CHANGES HAVE BEEN MADE SINCE PREVIOUS APPROVAL.

Signature	Title	Date

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1. Purpose/Identification of Method

1.1. The purpose of this SOP is to establish a procedure for the digestion of solid samples to be analyzed by ICP and ICP-MS as described in EPA Method 3050B.

2. Summary of Method

2.1. Inductively coupled plasma atomic emission spectroscopy (ICP-AES) and inductively coupled plasma mass spectrometry (ICP-MS) are utilized for the determination of metals in solution. The method is applicable to a large number of matrices.

2.2. The samples are digested in concentrated nitric acid, hydrochloric acid and hydrogen peroxide. After digestion, samples are filtered (unless ICPMS) and brought to volume.

3. Scope and Application

3.1. **Personnel**: The policies and procedures contained in this SOP are applicable to all personnel involved in the analytical method or non-analytical process.

3.2. **Parameters**: Not applicable to this SOP.

4. Applicable Matrices

4.1. This SOP is applicable to solid samples.

5. Limits of Detection and Quantitation

5.1. Not applicable to this SOP.

6. Interferences

6.1. Not applicable to this SOP.

7. Sample Collection, Preservation, Shipment and Storage

7.1. Table 7.1 – Sample Collection, Preservation, Shipment and Storage

Sample type	Collection per sample	Preservation	Storage	Hold time
Solid	Plastic or glass containers. Pre-cleaned containers are purchased from a supplier.	N/A	Above freezing but below 6°C until digested if samples are to be tested for mercury too	Must be analyzed within 6 months of collection.

8. Definitions

8.1. Definitions of terms found in this SOP are described in the Pace Analytical Services Quality Manual, Glossary Section.

9. Equipment and Supplies (Including Computer Hardware and Software)

9.1. Table 9.1 – Equipment and Supplies

Supply	Description	Vendor/Item #/Description
Mechanical pipettes	Various sizes	Fisher Scientific or equivalent
Digestion Cups	50 mL	Environmental Express or equivalent
Filtermate Plunge filters	2 um PTFE SC0408	Environmental Express
Hot Block ™	54 Place Hot Block	Environmental Express
Reflux Caps	Caps with a center hole	Environmental Express or equivalent

Analytical Balance	Ability to weigh to the nearest 0.01g	Fisher Scientific or equivalent
Resin beads	For solid matrix QC	Environmental Express or equivalent

10. Reagents and Standards

10.1. Table 10.1 – Reagents and Standards

Reagent/Standard	Concentration/Description	Requirements/Vendor/Item #
De-ionized (DI) water	ASTM Type II	Verify that background levels of volatile compounds are acceptable by analysis
Hydrogen Peroxide	30% ACS Grade	Fisher brand
Hydrogen Peroxide	30%, Optima Grade for tin only	Fisher brand
Concentrated nitric acid (HNO_3)	Trace Metal grade	Fisher brand
Concentrated hydrochloric acid (HCl)	Trace Metal grade	Fisher brand
Metals Spike - Stock solution standards for LCS and MS/MSD	The solution identifications are PACE-67Aand Pace-67B. See 10.1.1.	Purchased from Inorganic Ventures (or equivalent). Store at room temperature. Expires as specified by manufacturer.

10.1.1. Metals Stock Standards Table

PACE-67B		PACE-67A	
Element	(mg/L)	Element	(µg/L)
Ca	4000	Si	1000
Fe	4000	Sb	200
Mg	4000	Mo	200
K	4000	Sn	200
Na	4000	Ti	200
Se	200		
Al	4000		
Ba	200		
Be	200		
Bi	200		
B	200		
Cd	200		
S	4000		
Cs	200		
Cr	200		
Co	200		
Cu	200		
As	200		
Li	200		
P	200		
Mn	200		
Pb	200		
Ni	200		
Ag	100		
Sr	200		
Tl	200		

V	200		
Zn	200		
U	200		
Pd	40		
Pt	40		

11. Calibration and Standardization

11.1. Calibrate variable and fixed volume pipettes as specified in SOP S-MN-Q-264 – Support Equipment (or equivalent replacement). Calibration records are kept in the QA Office.

11.2. Calibrate the thermometer as specified in SOP S-MN-Q-264 – Support Equipment (or equivalent replacement). Calibration records are kept in the QA Office.

12. Procedure

12.1. Sample Preparation

12.1.1. Mix the sample thoroughly to achieve homogeneity. For each digestion procedure, weigh a 1-1.1g portion of sample (to the nearest 0.01g) and transfer to a 50 mL digestion cup. Alternative sample volume may be used based on sample matrix. Weigh out 3 aliquots for the batch QC sample (background, matrix spike (MS), and matrix spike supplicate (MSD) being sure to weigh them as close to the same weight as possible.

12.1.1.1. Create a method blank and a laboratory control sample (LCS) by weighing out 1 gram of resin beads for each.

12.1.1.2. Spike the LCS, MS/MSD using 0.25 mL of each PACE-67A and PACE-67B.

12.1.2. Add 10mL of DI water to each sample.

12.1.3. Add 7.5mL of concentrated HNO3, mix the slurry, and cover with a reflux cap. Heat the sample to 95 +/- 2°C and reflux for 70 minutes without boiling. Observe the sample during heating for brown fumes indicating oxidation of the sample. If this occurs, add up to an additional 5 mL HNO3 and re-heat. Repeat this process until no fumes are given off during heating. Record on the digestion log to what samples and how much additional acid was added.

Note: record initial Hot Black temperature in the digestion log.

12.1.4. Cool the sample 10 minutes. Add 2.5mL of 30% hydrogen peroxide. Cover with reflux cap and return to the Hot Block for warming which will start the peroxide reaction. Care must be taken to ensure that losses do not occur due to vigorous effervescence. Heat until effervescence subsides for a total of 10 minutes. Cool the samples in the plastic cups.

Note: use Optima grade hydrogen peroxide if the analysis of tin (Sn) is required. Tin is used as a stabilizer in the ACS grade of hydrogen peroxide.

12.1.4.1. If effervescence does not subside, continue to add 30% hydrogen peroxide in 1mL aliquots with warming until the effervescence is minimal or until the general sample appearance is unchanged. Note in the comments section of prep sheet the additional aliquots.

12.1.4.1.1. NOTE: Do NOT add more than a total of 10mL hydrogen peroxide.

12.1.5. Add 5mL of concentrated HCl, return the sample to the Hot Block and reflux for an additional 15 minutes without boiling.

12.1.6. Remove samples from Hot Block and record final temperature in digestion log. Allow samples to cool. Bring samples up to a final volume of 50 ml with DI water. Invert several times for good mixing. FOR ICP-MS sample prep, cap and label samples for analysis – do not filter if analyzed by ICPMS.

12.1.7. For ICP-AES, samples may be allowed to sit overnight while solid materials settle out or samples may be filtered. If filtered, use FilterMate plunge filters following manufacturers instructions. If

samples are filtered all QC samples including the method blank and laboratory control sample (LCS) must also be filtered.

12.1.7.1. Note: The method modifications that have been utilized have been defined in the above process have been demonstrated effective in MDLs, DOCs, successful PTs, and ongoing precision and accuracy data samples.

12.2. Documentation

12.2.1. Digestion Logbook

12.2.1.1. Record the necessary information in the digestion log book including sample ID, initial and final volumes, prep date, prep analyst, supporting equipment, and lot numbers of solutions used, including spike solutions and LCS solutions.

12.2.1.2. Also include any additional comments if needed.

12.2.2. Temperature Logbook

12.2.2.1. Record the temperature of each hot block daily in the temperature logbook.

12.2.2.2. Use a NIST-traceable thermometer inserted into a digestion cup filled with 50mL of DI to measure the temperature of the hot block. The temperature should be checked in different wells of the Hot Blocks such that all wells are evaluated over a period of time.

13. Quality Control

13.1. Table 13.1 – Quality Control

QC Sample	Components	Frequency	Acceptance Criteria	Corrective Action
Preparation Blank	A clean matrix similar to the samples. For solids, 1.0 grams of resin beads. For wipes, use a new Ghost Wipe.	Prepared with each batch	See appropriate analysis SOP.	See appropriate analysis SOP.
Laboratory Control Sample (LCS)	For solids, weigh 1.0 gram of resin beads. Spike with appropriate spiking solutions.	Prepared with each batch	See appropriate analysis SOP.	See appropriate analysis SOP.
Matrix Spike (MS) / Matrix Spike Duplicate (MSD)	Weigh out similar amounts of soil as the parent sample; be sure to weigh QC sample and MS/MSD samples as close as possible. Spike with appropriate spike solutions and record in digestion log.	Prepared with each batch of samples. Client specific requirements may result in a greater number of MS or MS/MSD sets in a batch.	See appropriate analysis SOP.	See appropriate analysis SOP.
Duplicate (DUP)	In some cases the client may request a duplicate in lieu of an MSD. This is weighed out in similar amount (as close as possible) to the background sample.	As requested.	See appropriate analysis SOP.	See appropriate analysis SOP.

14. Data Analysis and Calculations

14.1. Not applicable to this SOP.

15. Data Assessment and Acceptance Criteria for Quality Control Measures

15.1. See table in section 13.

16. Corrective Actions for Out-Of-Control Data

16.1. See table in section 13.

17. Contingencies for Handling Out-Of-Control or Unacceptable Data

17.1. If not specifically listed in the table in section 13, the contingencies are as follows. If there is no additional sample volume to perform re-analyses, all data will be reported as final with applicable qualifiers. If necessary, an official case narrative will be prepared by the Quality Manager or Project Manager.

18. Method Performance

18.1. All applicable personnel must read and understand this SOP with documentation of SOP review maintained in their training files.

18.2. **Method Detection Limit (MDL) Study**: An MDL study must be conducted annually (per the method) per S-MN-Q-269 – Determination of Limit of Detection and Limit of Quantitation (or equivalent replacement) for each matrix per instrument.

18.3. **Demonstration of Capability (DOC)**: Every analyst who performs this method must first document acceptable accuracy and precision by passing a demonstration of capability study (DOC) per S-ALL-Q-020 - Training Procedures (or equivalent replacement).

18.4. **Periodic performance evaluation (PE)** samples are analyzed to demonstrate continuing competence per SOP S-MN-Q-258 – Proficiency Testing Program (or equivalent replacement). Results are stored in the QA office.

19. Method Modifications

19.1. The preparation method has been modified in terms of the amounts of reagents used and the individual heating times. The chemistry is maintained. Part of the reason for this modification is better performance for silver and antimony. PT samples are analyzed regularly to validate that the modifications are effective. Per the method, the nitric acid and peroxide amounts are varied based on the sample reaction and this is the case with the Pace method. Overall, the Pace digestion ends up with a higher total acid concentration.

19.2. The final volume for the Pace method is 50 mL, opposed to 100 mL for the reference method.

19.3. Samples are processed using the Hot Block digestion system employing metals free disposable plastic ware rather than glass beakers.

20. Instrument/Equipment Maintenance

20.1. Please refer to the specific manufacturer's instrument manual for maintenance procedures performed by the lab.

20.2. All maintenance activities are listed daily in maintenance logs that are assigned to each separate instrument.

20.3. Logs are kept daily for each hot block, monitoring temperature. The temperature probe is varied daily so that each individual hot block sample cell is monitored to ensure consistency across the block.

21. Troubleshooting

21.1. Not applicable to this SOP.

22. Safety

22.1. Standards and Reagents: The toxicity and carcinogenicity of standards and reagents used in this method have not been fully defined. Each chemical compound should be treated as a potential health hazard. Reduce exposure by the use of gloves, lab coats and safety glasses. Material Safety Data Sheets (MSDSs) are on file in the laboratory and available to all personnel. Standard solutions should be prepared in a hood whenever possible.

22.2. Samples: Take precautions when handling samples. Samples should always be treated as potentially hazardous "unknowns". The use of personal protective equipment (gloves, lab coats and safety glasses) is required when handling samples. In the event a sample container must be opened, it is recommended to perform this in a hood whenever possible.

23. Waste Management

23.1. Procedures for handling waste generated during this analysis are addressed in S-MN-S-003 - Waste Handling and Management (or equivalent replacement).

23.2. In order to minimize the amount of waste generated during this procedure, analyst should prepare reagents in an amount which may be used in a reasonable amount of time (e.g., before a reagent expires).

24. Pollution Prevention

24.1. The company wide Chemical Hygiene and Safety Manual contains information on pollution prevention.

25. References

25.1. Pace Quality Assurance Manual- most current version.

25.2. National Environmental Laboratory Accreditation Conference (NELAC), Chapter 5, "Quality Systems"- most current version.

25.3. The NELAC Institute (TNI); Volume 1, Module 2, "Quality Systems"- most current version.

25.4. Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, Third Edition. Method 3050B

26. Tables, Diagrams, Flowcharts, and Validation Data

26.1. Attachment I – Wisconsin Procedure 3020A/3050B

27. Revisions

Document Number	Reason for Change	Date
S-MN-I-460-Rev.19	"And Wipes" removed from SOP title throughout. Section 4.1: "and wipes" deleted. Table 9.1: "or equivalent" added to vendor item description of digestion cups and reflux caps. Ghost wipes row deleted. Filtermate plunge filters description updated. Table 10.1: ICP spike updated as metals spike with updated solution identification information provided. ICP MS Spike row deleted. Table 10.1.1, ICP Stock Standards Table, deleted. Table 10.1.2 renumbered, and renamed "Metals Stock Standards Table, with updated element and unit of measurement values. Table 10.2 deleted. Section 10.2.1 deleted. Section 12.1.1: sample portion changed from 1.5 g to 1.1 g. Section 12.1.1.1 deleted Text regarding wipes removed from 12.1.1.1.1, as renumbered. Section 12.1.1.2, previously 12.1.1.1.2, appended with "MS/MSD using 025 mL of each PACE-67A and PACE-67B. Section 12.2.1 deleted. Subsequent sections renumbered. Section 12.2.1.1: "supporting equipment|" added following "prep analyst". Table 13.1: instructions regarding Ghost wipe use deleted from LCS row. Attachment I – updated to current revision Updated LLC Removed "uncontrolled" Added "Copies without a distribution number below are considered uncontrolled" to the statement of copyright.	19June2017

Attachment I – Wisconsin Procedure for 3020A and 3050B

Pace Analytical	Document Name: Procedure for Wisconsin Samples – 3010A/3020A/3050B	Document Revised: 03Feb2016 Page 1 of 1
	Document No.: F-MN-I-411-Rev.02	Issuing Authority: Pace Minnesota Quality Office

For Wisconsin solid samples only

ICPMS/ ICP Metals (1.0-1.5 grams sample)

1. Add at least 5mL of conc. HNO3 (or 10mL 1:1) to the samples
2. Heat at 95 'C for at least 10 minutes, covered with reflux cap for refluxing
3. Add at least 5mL conc. HNO3
4. Heat at 95 'C for at least 30 min, covered with reflux cap for refluxing
5. Check for brown fumes
    a. If no brown fumes - continue to step 6
    b. If brown fumes, add at least 5mL conc. HNO3
    c. Heat
    d. If no brown fumes - continue to step 6
    e. If brown fumes, add more conc. HNO3 and heat
    f. Continue step e until brown fumes no longer exist
6. Heat for at least 2 hrs, covered with reflux cap for concentrating
7. Add 2mL H2O and 3mL of 30% H2O2
8. Heat to 95 'C and add 1mL increments of H2O2 until effervescence subsides, covered with reflux cap for refluxing
9. Heat for at least 2 hrs, covered with reflux cap for concentrating
10. Add at least 10mL of conc. HCl, heat to 95 'C for at least 15 min, covered with reflux cap for refluxing.
11. Dilute to 50mL
12. Match standards to final acid concentrations

Note: Method 3050B section 4.2 states: "Vapor recovery device (e.g., ribbed watch glasses, appropriate refluxing device, appropriate solvent handling system) We have opted to use a reflux cap as the appropriate refluxing device as stated rather than the ribbed watch glass.

For Wisconsin water samples only

ICPM/ICP Metals (50mL sample)

Transfer 50mL of well-mixed sample into a labeled digestion tube.

Add 1.5mL concentrated nitric acid to each digestion tube. Place the tubes into the block digester which has been preheated to achieve a temperature of 95°C (+/- 3°C) in the digestion tubes and cover with ribbed watch glass.

Evaporate without boiling to <10mL. Do not allow samples to go dry.

If digestate is generating brown fumes, add another 2.5mL concentrated nitric acid and reflux gently. Continue heating and adding acid as necessary, until the digestion is complete, generally indicated when the digestate is light in color and brown fumes are no longer generated.

Evaporate without boiling to approximately 5mL. Do not allow samples to go dry.

Cool the samples then add 2mL concentrated hydrochloric acid, return the samples to the hot block and heat for 15 minutes to dissolve any precipitate then allow samples to cool.

Dilute the digestates to 50mL in the digestion tube with reagent water. If necessary, filter the digestates to remove particulates using a plunger filter. If any sample digestates in a batch are filtered, the Method Blank and LCS must also be filtered.

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Document Information

Document Number: ENV-SOP-BILL-0018 **Revision:** 01

Document Title: Soil Sieve

Department(s): Wet Chemistry

Previous Document Number: S-MT-ME-041-rev.02

Date Information

Effective Date: 03 Jan 2019

Next Review Date: 03 Jan 2021 **Last Review Date:**

Notes

Document Notes:

All Dates and Times are listed in: Central Time Zone

Signature Manifest

Document Number: ENV-SOP-BILL-0018 **Revision:** 01
Title: Soil Sieve

All dates and times are in Central Time Zone.

ENV-SOP-BILL-0018 Soil Sieve

QM Approval

Name/Signature	Title	Date	Meaning/Reason
Emily Agola (006966)	Quality Manager II	31 Dec 2018, 12:06:03 PM	Approved

Management Approval

Name/Signature	Title	Date	Meaning/Reason
Vivianne Johnson (004419)	Manager - Lab Services	31 Dec 2018, 12:48:33 PM	Approved
Dennis Leeke (007079)	Senior General Manager	02 Jan 2019, 09:29:32 AM	Approved

1. Purpose/Identification of Method

1.1. This standard operating procedure describes the process for drying and sieving soil samples to obtain a portion of soil for analysis

2. Summary of Method

2.1. A sample is homogenized and air dried. After air-drying, the sample is then sieved through a selected sieve size. The portion that passes the sieve is then ready for analysis.

3. Scope and Application

3.1. **Personnel:** This standard operating procedure is applicable to all analysts performing sieve analysis

3.2. **Parameters:** This standard operating procedure is applicable to soils or sediments.

4. Applicable Matrices

4.1. This SOP is applicable to soils and sediments.

5. Limits of Detection and Quantitation

5.1. Not applicable to this SOP.

6. Interferences

6.1. Not applicable to this SOP.

7. Sample Collection, Preservation, Shipment and Storage

7.1. The appropriate container for the analytical test requested should be used. For metals, samples are collected in plastic Ziploc bags. For organic parameters a 16 oz glass jar is used. Other sample container sizes may be used with the goal of providing at least 2 cups of soil to sieve.

7.2. The appropriate preservation is determined by the analytical test requested. Mercury and organics samples are to be kept cooled, above freezing but below 6° C, from collection to placing the samples in the drying cabinets. Other metals may be stored at ambient temperature.

7.3. Samples are dried and sieved at room temperature. When thermal preservation is required the samples are then re-cooled after sieving to <6°C and shipped on ice to the analytical laboratory.

8. Definitions

8.1. Definitions are located in the Glossary section of the Quality Manual.

9. Equipment and Supplies (Including Computer Hardware and Software)

9.1. Equipment Table

Equipment	Vendor	Model / Version	Description / Comments
Ro-Tap sieve shaker	Various manufacturers	--	--
Sieves	Gilson or equivalent	--	Stainless steel, #10, #60 or other sizes as needed
Sieve catch pans and lids	Gilson or equivalent	--	Stainless steel
Bakers racks	Restaurant Supply	--	To hold 18" x 26" trays
Drying Fans	Various manufacture	--	--
Mechanical Pulverizer	Retsch	RS200	--
Mortar and Pestle	--	--	Porcelain + rubber pestle

9.2. Supplies Table

Supplies	Vendor	Model / Version	Description / Comments
Aluminum Trays	Restaurant Supply	--	~18" x 26" x 1"
Freezer Paper	Fisher Scientific or equivalent	50-200-5215	18" x 100'
Ziploc bags	--	--	Sandwich, quart, gallon sizes
Wooden Rolling Pin	Restaurant Supply	--	--
Rubber Mallet	--	--	--
Scissors	--	--	--

10. Reagents and Standards

10.1. Not applicable to this SOP.

11. Calibration and Standardization

11.1. Not applicable to this SOP

12. Procedure

12.1. Place soils in the drying cabinet.

12.1.1. After samples are logged in they will be in a cooler or stored at ambient temperature depending on preservation requirements.

12.1.2. Pull a set of samples to be dried. Order the sample bags in numerical order. Make sure all the bags are present.

12.1.3. Line a tray with freezer paper wax side down. Fold the sides of freezer paper up about 1- 1 1/2" on each side to form a "boat".

12.1.4. Write the sample number on the freezer paper. Place the entire sample on the freezer paper. Multiple trays may be used for drying if a large sample volume was received.

NOTE: Entire sample does not need to be dried if excess volume was received. Sample must be homogenized before splitting. Return undried portion into original bag.

12.1.5. Spread the soil evenly. Break up all clumps into about 1/2" or less size pieces. This will speed the drying process and ease the disaggregation process prior to sieving. Continue this process for all samples in the set. Change gloves between each sample.

12.1.6. Record the sample numbers in the Sieve electronic prep log (Attachment I). Also record the date, time, temperature and humidity when the samples are placed in the drying cabinet. Place the entire set in a drying cabinet to air dry overnight. Longer drying may be required for wetter samples.

12.2. Soil disaggregation procedure

12.2.1. After the samples are dried remove them from the drying cabinets. Record the date, time, temperature and humidity in the electronic prep log.

12.2.2. Place a tray on the counter. Pick any rocks, twigs or other foreign matter and set to the side of the freezer paper boat.

12.2.3. Disaggregate the soil. Disaggregation is the process of loosening the clumped soil. It is not meant to crush or reduce the natural particle size of the soil. Place a sheet of paper, wax side up, over the sample. Using a rolling pin, roll over the dried soil for 1-2 minutes. A rubber mallet or pestle may be used to disaggregate soil clumps. Take care that the sample remains on the freezer paper. Change gloves between samples. NOTE: If sample is hard clay, a porcelain pestle may be used to break up chunks, being careful not to crush rocks.

12.2.4. Place sieve on catch pan or clean freezer paper, wax side down. Pour sample into sieve and sift. Gently rub the sample remaining on the sieve to break up clumps. When no more sample passes through sieve, dump all remaining sample on top of sieve onto a separate sheet of freezer paper. If large clumps still remain, repeat 12.2.3 until all sample is properly disaggregated.

12.2.5. Place all sample passing the #10 sieve into a labeled Ziploc bag. Add any organic matter that had been removed previously. This Organic matter may need to be cut up into smaller pieces using clean scissors.

12.3. Soil Sieving Procedure using sieves other than #10

12.3.1. Determine the sieve sizes to be used to meet project specifications. Check with the project manager or lab manager.

12.3.2. Stack a set of sieves in the following order, bottom catch pan, smallest sieve size on the bottom to largest on top. Pour the disaggregated soil onto top sieve. All contents are poured onto the sieve including the rocks and foreign matter that had been set to the side. Record the sample number on the side of the catch pan. An abbreviated number may be used such as 407-1. Use a sharpie marker to record.

12.3.3. Place the set of sieves on a RoTap. Tighten the RoTap adjustments so that the sieves fit tightly and securely in the RoTap. Set the timer for 10 minutes and begin the sieve shaking.

12.3.4. After10 minutes remove the sieves off the RoTap.

12.3.5. Label a glass jar or Ziploc bag with a printed sample label. Pour the contents in the catch pan into the labeled container. If a baggie is used, double bag to prevent spillage.

NOTE: Great care should be taken in matching the sample number written on the catch pans to the sample numbers on the labeled container.

12.3.6. Certain projects may require that the portion of sample above the sieve be retained. If this is required pour the sample remaining on top of the sieve(s) into a second container, label with the lab number and mark "Coarse Fragments".

12.3.7. Record the sieve date, analyst, shaker ID and sieve size used on the Soil Sieve Prep Log. Note if coarse fragments were retained.

12.4. Pulverization - Some projects or methods may require that the sieved sample be further pulverized prior to analysis. The sample may be pulverized with a motor and pestle or using the Retsch soil pulverizer. Refer to example of Instructions for the use of the Retsch pulverizer in Attachment II.

12.5. Cleaning Sieves – the sieves must be washed and dried between each use.

12.5.1. Place the sieves in the sink and scrub with a brush or green scrubbie and running hot water to remove any soil particles embedded in the mesh. Rinse well with tap water then rinse with deionized water. Soap is not used as it is very difficult to rinse from the sieves.

12.5.2. Place the sieves and catch pans in an oven to dry. Alternatively allow to air dry overnight on the counter.

13. Quality Control

13.1. Not applicable to this SOP.

14. Data Analysis and Calculations

14.1. Not applicable to this SOP.

15. Data Assessment and Acceptance Criteria for Quality Control Measures

15.1. Not applicable to this SOP.

16. Corrective Actions for Out-of-Control Data

16.1. Not applicable to this SOP.

17. Contingencies for Handling Out-of-Control or Unacceptable Data

17.1. Not applicable to this SOP.

18. Method Performance

18.1. The analyst must read and understand this procedure with written documentation maintained in his/her training file which is located in the QA Office.

18.2. An initial demonstration of capability (IDC) must be performed per ENV-SOP-NW-0025, or equivalent replacement. A record of the IDC will be maintained in his/her file with written authorization from the Laboratory Manager and Quality Manager. Results are stored in the QA office.

19. Method Modifications

19.1. Not applicable to this SOP.

20. Instrument/Equipment Maintenance

20.1. All maintenance activities are listed daily in maintenance logs that are assigned to each separate instrument.

21. Troubleshooting

21.1. Not applicable to this SOP.

22. Safety

22.1. Chemicals or reagents are not used in this procedure.

22.2. Do not attempt to adjust the sieves in the "RoTap" while in use.

22.3. The "RoTap" sieve shaker should be placed in the drying room to reduce noise levels in the lab. Keep the drying room door closed during use to control noise levels.

23. Waste Management

23.1. Procedures for handling waste generated during this analysis are addressed in ENV-SOP-BILL-0024, Waste Handling and Management, or equivalent replacement.

23.2. The Environmental Protection Agency (USEPA) requires that laboratory waste management practice be conducted consistent with all applicable rules and regulations. Excess reagents, samples and method process wastes are characterized and disposed of in an acceptable manner. For further information on waste management consult ENV-SOP-BILL-0024, or equivalent replacement.

24. Pollution Prevention

24.1. The company wide Chemical Hygiene and Safety Manual contains information on pollution prevention.

25. References

25.1. Pace Quality Assurance Manual - most current version.

25.2. The NELAC Institute (TNI); Volume 1, "Management and Technical Requirement for Laboratories Performing Environmental Analysis" - most current version

26. Tables, Diagrams, Flowcharts, and Validation Data

26.1. Attachment I – Sieve prep log (Example)

26.2. Attachment II – RS100 Pulverizer Operating Instructions F-MT-I-192

27. Revisions

Document Number	Reason for Change	Date
S-MT-ME-041-Rev.01	Updated attachments Updated title 2.1: Edited summary to streamline explanation. 7.1 removed "1 quart size" 9.1 added "rubber pestle" 12.1.2 Streamlined for clarity 12.1.4 Edited NOTE Added recording of temperature and humidity in sections 12.1.6 and 12.2.1 12.2.1 Edited to streamline explanation 12.2.2 Edited to streamline explanation of organic matter removal 12.2.3 Added " Place a sheet of freezer paper wax side up, over the sample.", "or pestle" and a NOTE Added 12.2.4 and 12.2.5 12.3 Edited entire section to streamline sieve procedure, removed 12.3.8 General editing and formatting Changed Pace Analytical Services, Inc. to Pace Analytical Services, LLC	28Oct2016
ENV-SOP-BILL-0018.Rev.01	Updated to MasterControl Formatting Updated SOP reference numbers throughout 7.2 Added ° 23.1 Added "or equivalent replacement" 25.2 Removed (referenced NELAC not TNI) New 25.2 Updated to include all of TNI vol 1	28Dec2018

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Attachment I – Sieve Prep Log (Example)

Pace Analytical Prep Log Report

Batch Information: MT 424808 WT Sieve **Template Version: MT-I-258-Rev.00**

Analysis Method	Sieve	Instrument		Thermometer ID	150878949
Correction Factor (F)	0	Room Temp In (F) | Corr. | Date/Time | Init.	73.30 | 73.30 | 07/12/2016 10:38 | WT1	Humidity In (%)	40
Room Temp Out (F) | Corr. | Date/Time | Init.	76.10 | 76.10 | 07/13/2016 14:50 | WT1	Humidity Out (%)	40	Reviewed By	
Reviewed By Date		Batch Notes			

Sample Information:

QC Rule	Sample Type	Lab Sample ID	Select	Shake Date/Time	Shaker ID	Prepared By	Sieve Size	Coarse Frag. Retained?
SievePrp11	PS	10354948001	Y	07/13/2016 14:55:00	Hand Sieve	WT1	#10	Yes

QC Rule	Sample Type	Lab Sample ID	Pulverized?	Sample Notes
SievePrp11	PS	10354948001	No	

Attachment II – RS100 Pulverizer Operating Instructions (Example)

Pace Analytical	Document Name: RS100 Pulverizer Operating Instructions	Document Revised: 15Mar2012 Page 1 of 1
	Document No.: F-MT-I-192-Rev.00	Issuing Authority: Pace Montana Quality Office

PACE MT RS100 PULVERIZER OPERATING INSTRUCTIONS

STATEMENT OF PURPOSE

To aid analysts with the operation of the RS100 Pulverizer.

TO OPEN PULVERIZER

Power on
Key unlocked
Push circle  until green and red lights come on
Lift lid

TO OPERATE

Remove lid from grinding set
Leaving grinding tools in place, add sample
Brush excess sample off top of grinding tools
Replace lid
Place set on vibrating plate and clamp securely
Close lid, red light should turn off
Using + or - keys, set time in seconds (20-25 is usually sufficient)
Set speed (usually 1400)
Press blue S to start
Open lid when red light comes on
If washing between samples, you *must* dry the grinding set- otherwise it will rust

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ENVIRONMENTAL SCIENCES

Document Information

Document Number: ENV-SOP-MIN4-0043 **Revision:** 02

Document Title: Metals Analysis by ICP/MS - Method 6020 and 200.8

Department(s): Metals

Date Information

Effective Date: 01 Apr 2020

Notes

Document Notes:

All Dates and Times are listed in: Central Time Zone

Signature Manifest

Document Number: ENV-SOP-MIN4-0043 **Revision:** 02

Title: Metals Analysis by ICP/MS - Method 6020 and 200.8

All dates and times are in Central Time Zone.

ENV-SOP-MIN4-0043 - ICPMS

QM Approval

Name/Signature	Title	Date	Meaning/Reason
Janielle Ward (007319)	Manager - Quality	25 Mar 2020, 12:50:47 PM	Approved

Management Approval

Name/Signature	Title	Date	Meaning/Reason
Andrew Mickelson (009792)	Manager	18 Mar 2020, 03:48:01 PM	Approved
Krista Carlson (004514)	Project Coordinator 1	19 Mar 2020, 06:02:37 PM	Approved
Adam Haugerud (005828)	General Manager 1	31 Mar 2020, 08:07:32 PM	Approved

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TITLE: Metals Analysis by ICP/MS
TEST METHOD 6020, 6020A, 6020B, and 200.8
ISSUER: Pace ENV – Minneapolis – MIN4

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1.0 SCOPE AND APPLICATION

This standard operating procedure (SOP) describes the laboratory procedure for the determination of dissolved and total recoverable metals by Inductively Coupled Plasma – Mass Spectrometry (ICP-MS).

1.1 Target Analyte List and Limits of Quantitation (LOQ)

The target analytes and the normal LOQ that can be achieved with this procedure are provided in Table 1, Appendix A.

LOQ are established in accordance with Pace policy and SOPs for method validation and for the determination of detection limits (DL) and quantitation limits (LOQ). DL and LOQ are routinely verified and updated when needed. The current LOQ for each target analyte that can be determined by this SOP as of the effective date of this SOP is provided in Table 1, Appendix A.

The reporting limit (RL) is the value to which analytes are reported as detected or not detected in the final report. When the RL is less than the lower limit of quantitation (LLOQ), all detects and non-detects at the RL are qualitative. The LLOQ is the lowest point of the calibration curve used for each target analyte.

2.0 APPLICABLE MATRICES

This SOP is applicable to ground, surface, drinking, and storm runoff water samples; industrial, domestic waste waters and solids.

Dissolved elements are determined after suitable filtration and acid preservation. In order to reduce potential interferences, dissolved solids should not exceed 0.2 % (w/v).

For the determination of total recoverable analytes in aqueous samples containing particulate and suspended solids a digestion step is required prior to analysis.

3.0 SUMMARY OF METHOD

Prior to analysis, samples must be solubilized or digested using appropriate sample preparation methods. For the total recoverable determination of analytes in drinking water by 200.8 where sample turbidity is < 1 NTU, the sample is made ready for analysis by the appropriate addition of nitric acid, mixed, and allowed to equilibrate for the required time prior to analysis.

Sample solutions are introduced by pneumatic nebulization into a plasma, in which desolvation, atomization and ionization occurs. Ions are extracted from the plasma through a differentially pumped vacuum interface and sorted on the basis of their mass-to-charge ratio. The ions transmitted through the quadrupole are detected by an electron multiplier. Ion intensities at each mass are recorded and compared to those obtained from external calibration standards to generate concentration values for the samples. Results are corrected for instrument drift and matrix effects using internal standards.

4.0 INTERFERENCES

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Isobaric Elemental Interferences – Isobaric elemental interferences result when isotopes of different elements have the same nominal mass-to-charge ratio and cannot be resolved with the instruments spectrometer. One way to solve this problem is to measure a different isotope for which there is no interference. Alternatively, one can monitor another isotope of the element and subtract an appropriate amount from the element being analyzed, using known isotope ratio information. Corrections for most of the common elemental interferences are programmed into the software.

Isobaric Polyatomic Interferences – Isobaric polyatomic interferences result when ions containing more than one atom have the same nominal mass-to-charge ratio as an analyte of interest and cannot be resolved by the instrument's spectrometer. An example includes ClO+ (mass 51), which interferes with V, and must be corrected by measuring ClO+ at mass 53. When possible an interference free isotope should be chosen for measurement.

Physical interferences are associated with the sample nebulization and transport processes as well as with ion-transmission efficiencies. Nebulization and transport processes can be affected if a matrix component causes a change in surface tension or viscosity. Changes in matrix composition can cause significant signal suppression or enhancement. Dissolved solids can deposit on the nebulizer tip of a pneumatic nebulizer and on the interface skimmers (reducing the orifice size and the instrument performance). Total solid levels below 0.2% (2,000 mg/L) have been currently recommended to minimize solid deposition. An internal standard can be used to correct for physical interferences, if it is carefully matched to the analyte so that the two elements are similarly affected by matrix changes.

Memory interferences can occur when there are large concentration differences between samples or standards, which are analyzed sequentially. Sample deposition on the sampler and skimmer cones, spray chamber design, and the type of nebulizer affects the extent of the memory interferences, which are observed. The rinse period between samples must be long enough to eliminate significant memory interference.

5.0 DEFINITIONS

Refer to the Laboratory Quality Manual for a glossary of common lab terms and definitions.

6.0 HEALTH AND SAFETY

The toxicity or carcinogenicity of each chemical material used in the laboratory has not been fully established. Each chemical should be regarded as a potential health hazard and exposure to these compounds should be as low as reasonably achievable.

The laboratory maintains documentation of hazard assessments and OSHA regulations regarding the safe handling of the chemicals specified in each method. Safety data sheets for all hazardous chemicals are available to all personnel. Employees must abide by the health, safety and environmental (HSE) policies and procedures specified in this SOP and in the Pace Chemical Hygiene / Safety Manual.

Personal protective equipment (PPE) such as safety glasses, gloves, and a laboratory coat must be worn in designated areas and while handling samples and chemical materials to protect against physical contact with samples that contain potentially hazardous chemicals and exposure to chemical materials used in the procedure.

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Concentrated corrosives present additional hazards and are damaging to skin and mucus membranes. Use these acids in a fume hood whenever possible with additional PPE designed for handing these materials. If eye or skin contact occurs, flush with large volumes of water. When working with acids, always add acid to water to prevent violent reactions. Any processes that emit large volumes of solvents (evaporation/concentration processes) must be in a hood or apparatus that prevents employee exposure.

Contact your supervisor or local HSE coordinator with questions or concerns regarding safety protocol or safe handling procedures for this procedure.

7.0 SAMPLE COLLECTION, PRESERVATION, HOLDING TIME, AND STORAGE

Samples should be collected in accordance with a sampling plan and procedures appropriate to achieve the regulatory, scientific, and data quality objectives for the project.

The laboratory does not perform sample collection or field measurements for this test method. To assure sample collection and field checks and treatment are performed in accordance with applicable regulations Pace project managers will inform the client of these requirements at the time of request for analytical services when the request for testing is received prior to sample collection. If samples were already collected, the laboratory will record any nonconformance to these requirements in the laboratory's sample receipt record when sufficient information about sample collection is provided with the samples.

General Requirements

Matrix	Routine Container	Minimum Sample Amount[1]	Preservation	Holding Time
Aqueous	250 mL Plastic	25 mL	Acidified[2] with nitric acid to pH<2, stored ambient	Must be analyzed within 180 days of collection. If mercury is requested, analysis must occur within 28 days of sample collection.
Solid	8 oz glass jar	1 gram	<6°C, but above freezing	

[1]*Minimum amount needed for each discrete analysis.*
[2] *Samples must equilibrate for a minimum of 24 hours following acidification. Lead and Copper Rule Monitoring and Reporting Guidance for Public Water Systems, EPA 816-R-10-004, March 2010, Exhibit II-9, Samples must stand in the original container used for sampling for at least 28 hours after acidification.*

Thermal preservation is checked and recorded on receipt in the laboratory in accordance with laboratory ENV-SOP-MIN4-0008 *Sample Management*, or equivalent replacement. Chemical preservation is checked and recorded at time of receipt or prior to sample preparation.

After receipt, samples are stored either stored at ambient or 6°C until sample preparation. Prepared samples digestates are stored at ambient temperatures until sample analysis.

After analysis, unless otherwise specified in the analytical services contract, samples are retained for 45 days from date of final report and then disposed of in accordance with Federal, State, and Local regulations.

8.0 EQUIPMENT AND SUPPLIES

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8.1 Equipment

Equipment	Description
ICPMS (Inductively Coupled Plasma Mass Spectrometer)	Agilent 7700, 7800 7900 ICPMS instrumentation equipped with interference reduction technology. Each instrument has an associated auto-sampler, rough pump and recirculating chiller.
Centrifuge	Thermo Sorvall Legend XT
Analytical Balance	Sartoriius or equivalent, capable of weighing to 0.01g
Mechanical pipettors	Eppendorf, Fisher brand or equivalent replacement, various sizes
Glassware	Class A volumetric flasks and graduated cylinders of various sizes

8.2 Supplies

Supply	Description
Argon gas	Praxair or equivalent, High purity grade, 99.99%
Collision Gas	Praxair or equivalent, Ultra high purity He, Ultra high purity H_2,
Analytical Balance	Sartoriius or equivalent, capable of weighing to 0.01g
Auto-sampler tubes	Moldpro or equivalent, 15 mL metals free auto-sampler tubes
Digestion cups	Moldpro or equivalent, 50 mL disposable digestion cups
Data-Uploading Software	Pace internal software used to transfer data from the instrument to the LIMS

9.0 REAGENTS AND STANDARDS

9.1 Reagents

Reagent	Description
Reagent water	ASTM Type II
Nitric Acid (HNO_3)	Fisher Scientific, A-509-P212 or equivalent replacement
Hydrochloric acid (HCl)	Fisher Scientific, A-508-P212 or equivalent replacement
2% (v/v) Nitric Acid/1% (v/v) Hydrochloric Acid Solution	Used for instrument blanks, standards and dilutions. Prepared in 1 L increments utilizing a volumetric flask and transferring into a C&G narrow mouth storage bottle. This is measured by mixing 20 mL of HNO_3 trace metals grade acid and 10 mL of HCl trace metals grade acid and DI H2O, and bringing to volume of 1 L.
Rinse Blank	2-5% (v/v) Nitric Acid solution for rinsing between runs. Combine76 mL of HNO_3 trace metals grade acid and 38 mL of HCl trace metals grade and DI H2O, and bringing to volume of 1 G.

9.2 Standards

Reagent	Description
Calibration Stock Standards	Custom blend of elements. See Appendix D for the standard information
Agilent Tune Solution	Purchased multi-element standard from a qualified vendor, 10ug/mL.
EPA Tune solution	Purchased multi-element standard from a qualified vendor, 10ug/mL.

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Internal Standard Stock Solution	Various suppliers; single element standards to be mixed prior to use with concentrations of 10,000 ug/mL.
Working Standards	See Appendix C

10.0 PROCEDURE

10.1 Equipment Preparation

Pre-Start Checks: Turn on the computer and load the software. Initiate appropriate operating configuration of the instrument's computer according to the instrument manufacturer's instructions. Check the following:

10.1.1 Support Equipment

- Vacuum pump oil - Examine the sight glasses of the vacuum pump. Oil should be no darker than a light brown color. If it is, change the oil in the pump according to the directions in the manufacturer's guide.
- Chiller temperature, pressure and water level - The temperature should be regulated at 17 ± 1ºC. Check the current temperature on the chiller to ensure it is within this range. Check the inlet cooling water pressure that must be between 55 and 60psi. Check to ensure that chiller water level is full. If it is not, fill with Polyclear 30.
- Verify the level of nebulizer waste and rinse waste, if more than half full, empty it into the acid waste stream.
- Ar/O pressure - The argon supply pressure should be set at about 80psi. If the supply argon pressure falls below about 45psi, a safety interlock automatically shuts off the torch.
- Helium / Hydrogen pressure - The helium and hydrogen supply pressure should be set at about 15 and 9 psi respectively.
- Wash solution level - The wash solution supply is maintained in a 4-liter carboy. Ensure that there is sufficient volume present for the analytical sequence.
- Peristaltic pump tubing - Change the sample and internal standard tubing, spray chamber drain tubing and the rinse station tubing as needed. Signs of degradation include flattened sections and hazy appearance. Allow at least 30 minute for break-in period.
- Interface cones - Remove and inspect the outside of the sampling and skimmer cones around the orifice. Install a new set of cones if needed or clean the existing cones using the following procedure: Carefully polish each cone with silver polish and cotton swabs dampened with deionized water. Rinse cones with deionized water and blow-dry with house air supply, being careful not to damage the cones. After the cones are fully dry, replace them in the instrument. Allow for conditioning of the cones with a solution containing sufficient concentrations of major cations. The orifice should be circular and about 1mm in diameter. Examine the orifice periodically with a magnifier to determine if there are irregularities that may impair instrument performance. DO NOT use a cone with a significantly degraded tip.

10.1.2 Instrument

Lighting Torch and Warm-Up: After all pre-start checks pass inspection, perform the following steps:

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- Torch Ignition - Click on the Plasma icon to open the Instrument window, and then click on the plasma on button to light the plasma. This takes a little over a minute to complete. (See instrument software guide.)
- Warm-up- Instrument is allowed to warm-up 30 minutes. Instrument has a timer to let you know when it is ready to move on to the next step.
- Check peristaltic pump flow by monitoring bubble movement in the pump tubing. Adjust tension as needed to achieve a smooth flow.
- Start-up Configuration - Once the analysis tubing is placed in the Agilent tune solution and stable signal is achieved, the start-up configuration can be initiated. See section 9.1.2.1 for Agilent tune performance monitoring and criteria.
- Create New Experiment File – Open template from the drive. Apply the proper run name for the day (MMDDYYICPMS#). Introduce EPA tune solution and allow signal to stabilize. Initiate performance verification for each mode of analysis. Save each performance report to the network drive. See section 9.1.2.1 for EPA tune acceptance criteria.

10.1.2.1 Routine Instrument Operating Conditions

The instrument is configured to go through the manufacturer recommended startup tune procedure which includes; Torch Alignment, Axis/Resolution, EM settings, Plasma Correction, Standard Lenses tune, and standard mode performance verification. The measured ratios of oxides 156/140 and doubly charged 70/140 should be <3%. The measured masses of ^{7}Li, ^{89}Y, ^{205}Tl are monitored for initial resolution/axis tuning. EPA Performance verification is later performed for each cell condition used for sample analysis.

EPA Tune Verification - The EPA tuning standard must be analyzed in each mode of analysis to verify resolution and mass calibration are within the required specifications. The tuning standard is analyzed in each mode of analysis at least five times and the relative standard deviation (RSD) must be <5% for all analytes contained in the tuning standard. Conduct mass calibration and resolution checks in the mass regions of interest. If the mass calibration differs more than 0.1 amu from the true value, then the mass calibration must be adjusted to the correct value. The resolution must also be verified to be <0.9 amu full width at 5% peak height.

Pace Minneapolis maintains approval for the analysis of up to 35 elements by the EPA Methods 200.8, 6020, 6020A, 6020B for water and soil matrices. All target analytes are analyzed either in a Helium mode (Collision Cell), hydrogen (Collision Cell), or No gas mode on the Agilent instruments depending on the sample matrix type. The use of interference reduction technologies (Collision Cell) is not allowed for drinking water analysis. Separate calibrations are performed for samples reporting by regulation of the SDWA.

10.2 Initial Calibration

10.2.1 Calibration Design

The calibration curve must consist of a minimum of a calibration blank and three non-zero standards for each mode of analysis. Use the average of at least three integrations for both calibration and sample analyses. Using the instrumentation software, prepare a

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standard curve for each element by plotting absorbance versus concentration. The calibration is a linear regression using equation; $y = mx + b$ The analyst may employ a regression equation that does not pass through the origin, however forcing through zero is not allowed. Additional calibration specifications may be referenced in ENV-SOP-NW-0027 *Calibration Procedures*, or equivalent replacement.

10.2.2 Calibration Sequence

Calibration Blank (CAL0)
CAL1
CAL2
CAL3
CAL4
CAL5
CAL6
ICV
ICB
CRDL
ICSA
ICSAB
CCV
CCB
Client samples
CCV
CCB
CRDL (Optional)

10.2.3 ICAL Evaluation

10.2.3.1 Curve Fit

With a multi-point calibration, the regression calculation will generate a correlation coefficient (r) that is the measure of the “goodness of fit” of the regression line to the data. In order to be used for quantitative purposes, the correlation coefficient must be > 0.998.

10.2.3.2 Relative Standard Error (RSE)

%RE is measured at the lowest calibration level and at a point near the mid-level of the calibration (the continuing calibration verification level is recommended). In order for a standard curve to be acceptable, the correlation coefficient/coefficient of determination criterion specified in the method must be met **and** both the low-level and mid-level %RE measures must meet the acceptance criteria. The low-level %RE acceptance criteria is 60%-140% and the mid-level is 90-110%.

10.2.3.3 Initial Calibration Verification

In addition to meeting the linearity requirement, any new calibration curve must be assessed for accuracy in the values generated. To assess the accuracy, a single standard from a secondary source must be analyzed and the results obtained must be compared to the known value of the standard. This step is

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referred to as Initial Calibration Verification. The ICV is analyzed immediately following an initial calibration curve.

10.2.4 Continuing Calibration Verification

A CCV followed immediately by a CCB must be analyzed after every 10 samples and at the end of the analytical batch to verify the system is still calibrated.

10.3 Digestate Preparation

10.3.1 Homogenization and Subsampling

All solid matrices are subject to centrifuge at a rate of 1000 rpm for 15 minutes or allowed to settle overnight prior to analysis. Once samples have been centrifuged or allowed to settle, an initial dilution of 20 fold is performed on each sample. This is completed by taking 4.75mL of 2% HNO3 / 1% HCL diluent and mixing with a 0.25mL aliquot of sample by means of vortex.

Aqueous samples are inverted multiple times and poured without initial dilution unless historical data demonstrates otherwise.

10.4 Analysis

The instrument performs sample analysis by executing 100 mass sweeps per replicate. Three replicates are utilized for an average result which must fall within a 20% RSD for the replicate values. If any sample or QC is found to have a concentration of >5x the RL and >20% RSD it must be evaluated for interference. If a matrix interferent is determined to be the cause, dilute the sample by 5x and re-analyze. Perform further dilutions if necessary.

The instrument(s) have been setup and configured in conjunction with manufacturer specifications. Masses were carefully selected to avoid and/or minimize interferences. Internal standard selection was based on performance for the appropriate mass range. Internal standard association must remain within 50 amu of targeted analyte.

The total recoverable sample digestion procedure is suitable for the determination of silver in aqueous samples containing concentrations up to 0.1 mg/L. For the analysis of wastewater samples containing higher concentrations of silver, succeeding smaller volumes of well mixed sample aliquots must be prepared until the analysis solution contains < 0.1 mg/L silver.

11.0 Data Analysis And Calculations

See the Laboratory Quality Assurance Manual for common laboratory calculations.

11.1 Hardness as CaCO3 in mg/L = 2.497 * [Ca in mg/L] + 4.118 * [Mg in mg/L]

11.2 Concentration of lead = summation of signals at 206, 207, and 208 m/z.

11.3 Silica (SiO2) (µg/L) = Silicon (Si) (µg/L) * DF * 60.09 amu (SiO2 molecular weight) / 28.09 amu (Si atomic weight)

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Where: DF is the sample Dilution Factor

12.0 QUALITY CONTROL AND METHOD PERFORMANCE

12.1 Quality Control

The following QC samples are prepared and analyzed with each batch of samples. Refer to Appendix B for acceptance criteria and required corrective action.

QC Item	Frequency
Method Blank (MB)	1 per batch of 20 or fewer samples.
Laboratory Control Sample (LCS)	1 per batch of 20 or fewer samples.
Laboratory Control Sample Duplicate (LCSD)	As needed
Matrix Spike (MS)	1 per batch of 20 or fewer samples for 6020 (A)(B). 1 per batch of 10 or fewer samples for 200.8
Matrix Spike Duplicate (MSD)	1 per batch of 20 or fewer samples.
Sample Duplicate	Performed at client request.
Serial Dilution	1 per batch of 20 or fewer samples.
Post Digestion Spike	1 per batch of 20 or fewer samples for method 6020(A)(B).
Internal Standard	An appropriate internal standard is required for each analyte and sample determined by ICP-MS.

Internal Standard	Associated element
Scandium 45	Li, Be, B, Na, Mg, Al, Si, K, Ca, Ti, V, Cr, Mn, Fe, Se
Germanium 72	Co, Ni, Cu, Zn, As, Sr
Indium 115	Mo, Pd, Ag, Cd, Sn, Sb
Terbium 159	Ba, Pt, Hg, Tl, Pb, Bi
Thorium 232	U

12.2 Instrument QC

The following Instrument QC checks are performed. Refer to Appendix B for acceptance criteria and required corrective action.

QC Item	Frequency
Tune	Daily prior to any calibration
Initial Calibration	Daily
Initial Calibration Verification	Immediately after each initial calibration
Initial Calibration Blank	Immediately after each initial calibration
Continuing Calibration Verification	Prior to the analysis of any samples and after every 10 injections thereafter. Samples must be bracketed with a closing CCV standard.
Continuing Calibration Blank	Following every CCV injection
CRDL / LLCCV verification	At the beginning of each run for 6020/6020B/200.8 and must be analyzed at the beginning of each run, and once at the end of each analytical batch for 6020A.

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ICSA verification	At the beginning of each sample run sequence after the CRDL. 6020A and 6020B requires the ICSA/AB be analyzed every 12 hours thereafter.
ICSAB verification	At the beginning of each sample run sequence after the ICSA. 6020A and 6020B requires the ICSA/AB be analyzed every 12 hours thereafter.

12.3 Method Performance

12.3.1 Method Validation

12.3.1.1 Detection Limits

Detection limits (DL) and limits of quantitation (LOQ) are established at initial method setup and verified on an on-going basis thereafter. Refer to Pace ENV corporate SOP ENV-SOP-CORQ-0011 *Method Validation and Instrument Verification* and to the laboratory's SOP ENV-SOP-NW-0018 *Determination of LOD and LOQ* for these procedures.

12.4 Analyst Qualifications and Training

Employees that perform any step of this procedure must have a completed Read and Acknowledgment Statement for this version of the SOP in their training record. In addition, prior to unsupervised (independent) work on any client sample, analysts that prepare or analyze samples must have successful initial demonstration of capability (IDOC) and must successfully demonstrate on-going proficiency on an annual basis. Successful means the initial and on-going DOC met criteria, documentation of the DOC is complete, and the DOC record is in the employee's training file. Refer to laboratory SOP ENV-SOP-NW-0025 *Training and Orientation Procedures* for more information.

13.0 Data Review And Corrective Action

13.1 Data Review

Pace's data review process includes a series of checks performed at different stages of the analytical process by different people to ensure that SOPs were followed, the analytical record is complete and properly documented, proper corrective actions were taken for QC failure and other nonconformance(s), and that test results are reported with proper qualification.

The review steps and checks that occur as employee's complete tasks and review their own work is called primary review.

All data and results are also reviewed by an experienced peer or supervisor. Secondary review is performed to verify SOPs were followed, that calibration, instrument performance, and QC criteria were met and/or proper corrective actions were taken, qualitative ID and quantitative measurement is accurate, all manual integrations are justified and documented in accordance with the Pace ENV's SOP for manual integration, calculations are correct, the analytical record is complete and traceable, and that results are properly qualified.

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A third-level review, called a completeness check, is performed by reporting or project management staff to verify the data report is not missing information and project specifications were met.

Refer to laboratory SOP ENV-SOP-MIN4-0092 *Data Review Process* for specific instructions and requirements for each step of the data review process.

13.2 Corrective Action

Corrective action is expected any time QC or sample results are not within acceptance criteria. If corrective action is not taken or was not successful, the decision/outcome must be documented in the analytical record. The primary analyst has primary responsibility for taking corrective action when QA/QC criteria are not met. Secondary data reviewers must verify that appropriate action was taken and/or that results reported with QC failure are properly qualified.

Corrective action is also required when carryover is suspected and when results are over range.

Samples analyzed after a high concentration sample must be checked for carryover and reanalyzed if carryover is suspected. Carryover is usually indicated by low concentration detects of the analyte in successive samples analyzed after the high concentration sample.

Sample results at concentrations above the upper limit of quantitation must be diluted and reanalyzed. The result in the diluted samples should be near the midpoint of the calibration range. If dilution is not performed, any result reported above the upper range is considered a qualitative measurement and must be qualified as an estimated value.

Refer to Appendix B for a complete summary of QC, acceptance criteria, and recommended corrective actions for QC associated with this test method.

14.0 Pollution Prevention And Waste Management

Pace proactively seeks ways to minimize waste generated during our work processes. Some examples of pollution prevention include but are not limited to: reduced solvent extraction, solvent capture, use of reusable containers for solvent management, and real-time purchasing.

The EPA requires that laboratory waste management practice to be conducted consistent with all applicable federal and state laws and regulations. Excess reagents, samples and method process wastes must be characterized and disposed of in an acceptable manner in accordance with Pace's Chemical Hygiene Plan / Safety Manual.

15.0 Modifications

A modification is a change to a reference test method made by the laboratory. For example, changes in stoichiometry, technology, quantitation ions, reagent or solvent volumes, reducing digestion or extraction times, instrument runtimes, etc. are all examples of modifications. Refer to Pace ENV corporate SOP ENV-SOP-CORQ-0011 *Method Validation and Instrument Verification* for the conditions under which the procedures in test method SOPs may be modified and for the procedure and document requirements.

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1. Tuning criteria observed is more stringent than required by the SW846 methods so that the same criteria can be used for both methods 6020 and 200.8.
2. The following elements are not listed in the method 6020A recommended analyte list; bismuth, boron, lithium, molybdenum, palladium, platinum, silica, silicon, strontium, tin, titanium, and uranium-238. The accuracy and precision for the analysis of these analytes have been demonstrated in the matrices of interest, at the concentration of interest, and in the same manner as the elements recommended in the method.
3. The following elements are not listed in the method 200.8 recommended analyte list: bismuth, boron, calcium, iron, lithium, magnesium, palladium, platinum, potassium, silica, silicon, sodium, strontium, tin, and titanium. The accuracy and precision for the analysis of these analytes have been demonstrated in the matrices of interest, at the concentration of interest, and in the same manner as the elements recommended in the method.
4. The following elements are not listed in the method 6020B recommended analyte list: bismuth, boron, lithium, molybdenum, palladium, platinum, silica, silicon, strontium, tin, titanium and uranium-238. The accuracy and precision for the analysis of these analytes have been demonstrated in the matrices of interest, at the concentration of interest, and in the same manner as the elements recommended in the method.

16.0 RESPONSIBILITIES

Pace ENV employees that perform any part this procedure in their work activities must have a signed Read and Acknowledgement Statement in their training file for this version of the SOP. The employee is responsible for following the procedures in this SOP and handling temporary departures from this SOP in accordance with Pace's policy for temporary departure.

Pace supervisors/managers are responsible for training employees on the procedures in this SOP and monitoring the implementation of this SOP in their work area.

17.0 ATTACHMENTS

Appendix A – Target Analyte List and Routine LOQ

Appendix B – QC Summary

Appendix C – Working Standard Summary

Appendix D – Stock Standard Summary

18.0 REFERENCES

Pace Quality Assurance Manual- most current version.

U.S. Environmental Protection Agency. Method 200.8, Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma – Mass Spectrometer, Revision 5.4, EMMC Version, May 1994.

Fisons –VG Genesis Users Manual.

Region 9 Laboratory Standard Operating Procedure 130, Glassware Cleaning Procedures.

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Region 9 Laboratory Standard Operating Procedure 462, Analysis of Total Suspended Solids By EPA Method 160.2.

U.S. Environmental Protection Agency. SW846 Method 6020, Inductively Coupled Plasma – Mass Spectrometry, Revision 0, 9/94.

U.S. Environmental Protection Agency. SW846 Method 6020A, Inductively Coupled Plasma – Mass Spectrometry, Revision 1, 02/2007.

U.S. Environmental Protection Agency. SW846 Method 6020B, Inductively Coupled Plasma – Mass Spectrometry, Revision 2, 7/2014.

Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, Third Edition. Method 3020A.

Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, Third Edition. Method 3050B.

40 CFR Appendix B to Part 136, Definition and Procedure for the Determination of the Method Detection Limit - Rev 2, August 28, 2017.

19.0 REVISION HISTORY

This Version:

Section	Description of Change
All	Converted to new corporate format.
Appendix B, Acceptance Criteria	ICAL – added verbiage and updated for RSE. Internal standard - method revisions 6020 A / B from 70-125% to 70-130% per method section 9.10. CCB - method 6020B only, from 1/2 RL evaluation to Full RL evaluation per method section 10.5.5. Method Blank - from 1/2 LLOQ to full LLOQ evaluation per method section 9.7.1, updated verbiage.

This document supersedes the following document(s):

Document Number	Title	Version
ENV-SOP-MIN4-0043	Metals Analysis by ICP/MS – Method 6020 and 200.8	01

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Appendix A: Target Analyte List and Routine LOQ[1]

Analyte	Non-Potable Water (ug/L)	Potable Water (ug/L)	Soil (mg/kg)
Aluminum	20.00	20.0	20.00
Antimony	0.50	0.50	0.50
Arsenic	0.50	0.50	0.50
Barium	0.30	0.30	0.30
Beryllium	0.20	0.20	0.20
Bismuth	0.50	-	0.50
Boron	10.00	-	10.00
Cadmium	0.08	0.08	0.08
Calcium	40.00	-	40.00
Chromium	0.50	0.50	0.50
Cobalt	0.50	-	0.50
Copper	1.00	1.00	1.00
Iron	50.00	-	50.00
Lead	0.10	0.10	0.20
Lithium	0.50	-	0.50
Magnesium	10.00	-	10.00
Manganese	0.50	0.50	0.50
Mercury	0.20	0.20	0.20
Molybdenum	0.50	-	0.50
Nickel	0.50	0.50	0.50
Palladium	0.50	-	-
Platinum	0.50	-	-
Potassium	100.00	-	100.00
Selenium	0.50	0.50	0.50
Silica	107.00	-	107.00
Silicon	50.00	-	50.00
Silver	0.50	0.50	0.50
Sodium	50.00	-	50.00
Strontium	0.50	-	0.50
Thallium	0.10	0.10	0.10
Tin	0.50	-	2.000
Titanium	1.00	-	1.00
Vanadium	1.00	1.00	1.00
Uranium-238	0.50	0.50	0.50
Zinc	5.00	5.00	5.00

[1] *Values in place as of effective date of this SOP. LOQ are subject to change. For the most up to date LOQ, refer to the LIMS or contact the laboratory.*

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Appendix B: QC Summary

QC Item	Frequency	Acceptance Criteria	Corrective Action	Qualification
Tune	Daily prior to any calibration	Adjust spectrometer resolution to produce a peak width of approximately 0.75 amu at 5% peak height. This must be completed using 5 replicates with a resulting RSD of <5%.	Adjust mass calibration if it has shifted by more than 0.1 amu from unit mass. Identify and correct source of problem, repeat performance verification(s).	None. Do not proceed with analysis.
ICAL	Daily	r ≥ 0.998 Mid Level (Cal4) %RE 90-110% Low-Level (Cal1) %RE 60-140%	Identify and correct source of problem, repeat.	None. Do not proceed with analysis.
ICV	After Each ICAL	All analytes must be within ± 10% of the true value. (%R)	Identify source of problem, re-analyze. If repeat failure, repeat ICAL. Analysis may proceed if it can be demonstrated that the ICV exceedance has no impact on analytical measurements. For example, the ICV %R is high, CCV is within criteria, and the analyte is not detected in sample(s).	Qualify analytes with ICV out of criteria.
ICB	Immediately after the initial calibration verification	All elements of interest must be evaluated to a criterion of +/- ½ of the RL for method 6020 (A)(B) and samples originating from NC. All elements of interest must be evaluated to +/- the RL for method 200.8, and 6020. WIDNR and West Virginia require samples to be reported to the MDL. The blanks must be clean to the data quality objectives.	Identify source of problem, re-analyze. Analysis may proceed if it can be demonstrated that the ICB exceedance has no impact on analytical measurements. For example, the ICB has detections and the analyte is not detected in sample(s).	Qualify analytes with ICB out of criteria.
CRDL / LLCCV	At the beginning of each run for 6020/6020B/200.8 and must be analyzed at the beginning of each run, and once at the end of each analytical batch for 6020A.	For 6020/200.8: The acceptance criteria are ± 40% (or specified by the client). For 6020A: The acceptance criteria are ± 30% (or specified by the client). 6020B: The acceptance criteria is ± 20% (or specified by the client).	Identify source of problem, re-analyze. Analysis may proceed if it can be demonstrated that the CRDL exceedance has no impact on analytical measurements. For example, the CRDL %R is high and the analyte is not detected in sample(s). For example, the CRDL %R is high and the analyte detections exceed the continuing calibrations verification level (midpoint of the curve).	Qualify outages and explain in case narrative.

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			If the CRDL is biased low, no data can be reported for the target elements failing criteria.	
CCV	Daily, before sample analysis, after every 10, and at end of analytical window.	All analytes must be within ± 10% of the true value. (%R): %RSD between multiple integrations must be ≤ 5%	Identify source of problem, re-analyze. Analysis may proceed if it can be demonstrated that the CCV exceedance has no impact on analytical measurements. For example, the CCV %R is high, and the analyte is not detected in sample(s).	Qualify analytes with CCV out of criteria.
CCB	Daily, before sample analysis, after every 10, and at end of analytical window	All elements of interest must be evaluated to a criterion of +/- ½ of the RL for method 6020 (A) and samples originating from NC. All elements of interest must be evaluated to +/- the RL for method 200.8, and 6020 (B). WIDNR and West Virginia require samples to be reported to the MDL. The blanks must be clean to the data quality objectives.	Identify source of problem, re-analyze. Analysis may proceed if it can be demonstrated that the CCB exceedance has no impact on analytical measurements. For example, the CCB has detections and the analyte is not detected in sample(s).	Qualify analytes with CCB out of criteria.
Internal Standards	Every field sample, standard and QC sample	For method 6020, the intensity of internal standard in the ICB/CCB and ICS (ICSA/AB) standards must not deviate more than 80-120% from its original intensity in the associated calibration blank. The intensity of internal standard in the samples and remaining QC must not deviate more than 30-120%. For method 6020A/B, the intensity of the internal standard must not fall below 70% and not exceed 130% from its original intensity in the associated calibration blank. For Method 200.8 the intensity of internal standard in the samples and QC must not deviate more than 60-125% from its original intensity in the associated calibration blank.	Troubleshoot instrument performance. Reanalyze samples and dilute if needed.	Qualify outages and explain in case narrative.
Interference check solutions	ICSA containing high concentrations of C, Cl, Al, Ca, Fe, K, Mg, Mo, Na, P, S and Ti is analyzed at the beginning of each sample run sequence after the CRDL.	ICSA all spiked elements are to be within 20% of the expected true value. The non-spiked elements are to be below the RL. ICSAB all spiked elements are to be within 20% of the expected true value.	Identify and correct source of problem, repeat performance verification(s).	None. Do not proceed with analysis for elements that cannot be verified.

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	ICSAB containing high concentrations of C, Cl, Al, Ca, Fe, K, Mg, Mo, Na, P, S and Ti and mid-range concentrations of the remaining elements is analyzed at the beginning of each sample run sequence following the ICSA. 6020A and 6020B requires the ICSA/AB be analyzed every 12 hours thereafter.			
Method Blank	One per 20 samples	All elements of interest must be evaluated to a criterion of +/- ½ of the RL for method 6020 (A) and samples originating from NC. All elements of interest must be evaluated to +/- the RL for method 200.8, and 6020(B). . WIDNR and West Virginia require samples to be reported to the MDL. The blanks must be clean to the data quality objectives.	Identify source of problem, re-analyze. If reanalysis of the MB fails, all samples affected by the failing MB elements need to be re-digested and re-analyzed. If sample(s) non-detect, report the data. If sample result >10x MB detections, report the data	Qualify outages and explain in case narrative.
LCS	One per 20 samples	6020/6020A/6020B: 80-120% 200.8: 85-115%	Identify source of problem, re-analyze. If reanalysis of the LCS fails, all samples affected by the failing LCS elements need to be re-digested and re-analyzed. If LCS recovery is > QC limits and these compounds are non-detect in the associated samples	Qualify analytes with LCS out of criteria.
LCSD	An LCSD must be substituted in the event of insufficient sample volume for a matrix spike duplicate sample.	6020/6020A/6020B: 80-120% 200.8: 85-115% %Diff ≤ 20%	Identify source of problem, re-analyze. If reanalysis of the LCS fails, all samples affected by the failing LCS elements need to be re-digested and re-analyzed. If LCS recovery is > QC limits and these compounds are non-detect in the associated samples	Qualify analytes with LCS out of criteria.
MS/MSD	One per 20 samples for 6020 / 6020A / 6020B One per 10 samples for 200.8	6020/6020A/6020B: 75-125% 200.8: 70-130%	Perform a SD and PDS on any elements that fail to meet criteria for method 6020(A)(B).	Qualify analytes with MS out of criteria.
Sample Duplicate	Per client request	%Diff ≤ 20%	Qualify outages	Qualify outages.
Serial Dilution[1]	One per batch of 20 samples or less		If criteria is not met, original sample and dilution shall be	Qualify outages.

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		6020/6020A fivefold dilution must agree within ± 10% of the original determination if analyte concentration is >50x MDL. 6020B 1:5 dilution of sample 25x > LLOQ or 1:5 dilution of MS since reasonable concentrations are present, results to agree to ± 20%.	reanalyzed. If reanalysis fails, it is determined to be matrix interference.	
Post Digestion Spike[2]	One per batch if there is a MS failure.	6020/ 6020A 80-120% 6020B applicable to elements failing MS, results to agree to +/- 25%. Recommended if high concentration sample not available for dilution test.	If the element fails to meet the recovery criteria, reanalyze. If reanalysis fails, it is determined to be matrix interference.	Qualify outages.
Laboratory Filter Blank (FB)	Analyzed only with batches of lab filtered dissolved metals, one per batch of 20 or less.	Target analytes must be less than reporting limit. NC samples are required to be < ½ RL for target analytes. WIDNR and West Virginia require samples to be reported to the MDL. The blanks must be clean to the data quality objectives.	Identify source of problem, re-analyze. If reanalysis of the MB fails, all samples affected by the failing MB elements need to be re-digested and re-analyzed. If sample(s) non-detect, report the data. If sample result >10x MB detections, report the data.	Qualify outages and explain in case narrative.
Linear Dynamic Range	For method 6020B: Following calibration, the laboratory may choose to analyze a standard at a higher concentration than the high standard in the calibration. If a linear range standard is not analyzed for any specific element, the highest standard in the calibration becomes the linear range.	The standard must recover within 10% of the true value, and if successful, establishes the linear range. In each scenario, the linear range is established using 90% of the highest calibration level or LDR sample.	The linear range of the instrument must be adjusted until 90% recovery of the reference standard can be achieved as well as maintaining the minimum number of calibration standard requirements.	N/A

[1]To prepare a 5-fold dilution: take a 1 mL aliquot from the sample and add to 4 mL of diluent. Note: this is a typical process for 200.8 and 6020W. It can be replicated for the preparation of highly concentrated samples by starting with a diluted "parent" sample and then performing the stepwise dilution process.
[2]To Prepare a Post Digestion Spike: An aliquot of the parent sample used for the MS, prepared at the same dilution as the parent sample. The spike addition should produce a minimum level of 10 times the lower limit of quantitation; routine spike volume is 0.020 mL of 20/250 mg/L and 1mg/L mercury stock concentration(s).

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Appendix C: Working Standard Summary

Standard	Standard(s) Used	Standard(s) Amount (mL)	Diluent	Diluent Volume (mL)	Final Total Volume (mL)	Final Concentration (ug/L)
Internal Standard	6020-Ge	1	See table 8.1	495	500	2000
	6020-Sc	1				
	6020-Tb	1				
	6020-In	1				
	6020-Th	1				
Hg 10ppb intermediate solution	HG-LL Stock	0.05		49.95	50	10
Cal 0	N/A	N/A		50	50	0
Cal 1	PACE-28	0.1		9.8	10	Varied
	Hg 10ppb intermediate solution	0.1				0.1
Cal 2	Cal 4	0.500		9.5	10	0.5/10/125
Cal 3	Cal 4	1.000		9	10	1.0/20/250
Cal 4	Hg 10ppb intermediate solution	0.1		9.6	10	10/200/2500
	XFSPA-221-250	0.1				
	XFSPA-656-250	0.1				
	XFSPA-220-250	0.1				
Cal 5	XFSMN-26-250A	0.05		9.45	10	20/250/500/25000
	XFSMN-27-250A	0.05				
	XFSMN-28-250A	0.25				
	Hg 10ppb intermediate solution	0.2				
CRDL	PACE-28	0.1		9.7	10	varied
	Hg 10 ppb intermediate solution	0.2				0.2
ICS-A	6020 ISC-OA	0.25		9.75	10	25000
ICS-AB	6020 ISC-OA	0.25		9.56	10	4/100/1250/26250
	XFSPA-221-250	0.05				
	XFSPA-656-250	0.05				
	XFSPA-220-250	0.05				
	Hg 10 ppm intermediate	.04				
ICV / CCV	PACE-5	0.2		49.4	50	4/80/1000
	PACE-4B	0.2				
	CGHG1	0.2				

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Appendix D: Stock Standard Summary

	Stock Standard Concentrations											
	XFSPA-221-250	XFSPA-656-250	XFSPA-220-250	XFSMN-26-250A	XFSMN-27-250A,	XFSMN-28-250A	PACE-5	PACE-4B	PACE-28	6020 ISC-OA	Agilent Tune	EPA Tune
Analyte	(ug/mL)	(ug/mL)	(ug/mL)	(ug/mL)	(ug/mL)	(ug/mL)	(ug/mL)	(ug/mL)	(ug/L)	(ug/mL)	(ug/mL)	(ug/mL)
Aluminum		20		1000				20	1,000	1,000		
Antimony	20				100		20		50			
Arsenic	20					100		20	50			
Barium		20				100		20	30			10
Beryllium		20				100		20	20			10
Bismuth		20						20	50			
Boron		20			100			20	500			
Cadmium		20				100		20	8			
Calcium		250		1000				250	4000	1,000		
Chromium		20				100		20	50			
Cobalt		20				100		20	50		10	10
Copper		20				100		20	100			
Iron		250		1000				250	5000	1,000		
Lead		20				100		20	10			
Lithium		20				100		20	50		10	10
Magnesium		250		1000				250	1,000	1,000		10
Manganese		20				100		20	50			
Molybdenum		20			100		20		50	20		
Nickel		20				100		20	50			
Palladium			20				20		50			
Platinum			20				20		50			
Potassium		250		1000				250	5000	1,000		
Selenium		20				100		20	50			
Silicon	250				500		250		5000			
Silver		20			50			20	50			
Sodium		250		1000				250	5000	1,000		
Strontium		20				100		20	50			
Thallium	20					100		20	10		10	10
Tin	20				100		20		50			
Titanium		20			100		20		100	20		
Vanadium		20				100		20	100			
Zinc		20				100		20	500			
Uranium		20						20	50			10
Indium												10
Cesium												10
Cerium											10	
Yttrium											10	10
Rhodium												10

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ATTACHMENT C3: SAMPLING FIELD DATA SHEETS

ATTACHMENT C3-1: RESIDENTIAL PROPERTY SAMPLING FIELD DATA SHEET

ACM Smelter and Refinery NPL Site - Operable Unit 1
Residential Yard Sampling Field Data Sheet

Sample Identifier – _____ Date-_____ Time - _____

Owner_____

Address - _____ Phone Number - _____

Samplers - _____ Weather - _____

Owner Present - _____

Describe Hazards/Obstacles in the Yard and Control Measures Identified:

COMPONENTS SAMPLED

Component	Feet^2	No. of Samples	No. of Holes	Sample in Drip Zone	Comments

PHOTOGRAPHS

House and Trim Color**:**
Photographers Name:

Number	Time	Description
		Front of house looking (N, S, E, W)

Location	Sample ID	Component	Depth	QA/QC
BE - Black Eagle	Resident ID (Examples: 001, 022, 159)	FY - Front Yard, BY - Back Yard, DZ - Drip Zone, FG - Flower Garden, VG - Vegetable Garden, RG - Rock Garden, BA - Bare Area, ED - Earthen Drive, PA - Play Area, OPP - Opportunistic	0006 - 0" to 6" 0612 - 6" to 12" 1218 - 12" to 18" VG only: 1824 - 18" to 24"	D-Duplicate B-Blank

Examples: BE-84A-DZ-1218; BE-107-FY-0612

ACM Smelter and Refinery NPL Site - Operable Unit 1
Residential Yard Sampling Field Data Sheet

GENERAL INFORMATION:

Type of Roof: _____ Condition: _____
Type of Siding: _____ Condition: _____
Exterior Lead Paint? Y / N Peeling Paint? Y / N
Type of Trim (Windows, doors, eaves) _____
Condition of trim: _____
Outbuildings/Type? _____ Condition: _____
Porch/Other: _____ Condition: _____
Gutters? _____ Type(s):_____ Condition:_____
Sprinkler System Present? _____ Location: _____
Fence Present?_____ Type(s):_____ Condition:_____

SAMPLES COLLECTED

Metals to Analyze for: **As, Pb**

Sample ID Sample Identifier :	Time	No. of Holes	QA/QC	Paint chips /Amount	Comments

COMMENTS:

ACM Smelter and Refinery NPL Site - Operable Unit 1
Residential Yard Sampling Field Data Sheet

Sample Identifier – _____ Date-_____ Time - _____

CONTINUATION: PHOTOGRAPHS

House and Trim Color**:**
Photographers Name:

Number	Time	Description

ACM Smelter and Refinery NPL Site - Operable Unit 1
Residential Yard Sampling Field Data Sheet

CONTINUATION: SAMPLES COLLECTED

Metals to Analyze for: **As, Pb**

Sample ID Sample Identifier :	Time	No. of Holes	QA/QC	Paint chips /Amount	Comments

Woodard & Curran

ATTACHMENT C3-2: NON-RESIDENTIAL PROPERTY SAMPLING DATA SHEET

ACM Smelter and Refinery NPL Site - Operable Unit 1
Non-Residential Sampling Field Data Sheet

Sample Identifier – _____ Date-_____ Time - _____

Owner_____

Address -_____ Phone Number - _____

Samplers -_____ Weather - _____

Owner Present - _____

Describe Hazards/Obstacles on the property and Control Measures Identified:

Commercial Use of Property? Yes ☐ No ☐ If yes, describe Use: _____

Undeveloped ? Yes ☐ No ☐

COMPONENTS SAMPLED

Component	Feet^2	No. of Samples	No. of Holes	Comments

PHOTOGRAPHS

Number	Time	Description
		Front of shop building looking (N, S, E, W)

Location	Sample ID	Component	Depth	QA/QC
OA -outlying area or BE - Black Eagle	Resident ID (Examples: 001, 022, 159)		0006 - 0" to 6" 0612 - 6" to 12"	D-Duplicate

Examples: BE-1000-SL-01-1218; OA-1020-SL-02-0612

ACM Smelter and Refinery NPL Site - Operable Unit 1
Non-Residential Sampling Field Data Sheet

SAMPLES COLLECTED
Metals to Analyze for: **As, Pb**

Sample ID Sample Identifier :	Time	No. of Holes	QA/QC	Comments

ACM Smelter and Refinery NPL Site - Operable Unit 1
Non-Residential Sampling Field Data Sheet

CONTINUATION: PHOTOGRAPHS

Photographers Name:

Number	Time	Description

ACM Smelter and Refinery NPL Site - Operable Unit 1
Non-Residential Sampling Field Data Sheet

CONTINUATION: SAMPLES COLLECTED
Metals to Analyze for: **As, Pb**

Sample ID Sample Identifier	Time	No. of Holes	QA/QC	Comments

ATTACHMENT C4: CORRECTIVE ACTION REPORT

Woodard & Curran

Corrective Action Report7Corrective Action Plan

PROJECT: ACM Smelter and Refinery Site 8 perable Unit 1
DATE:
TO:
CC:
FROM: **[**QA8 , QAM or PM#
RE:

Recommended Sections]Include or add sections, attachments or other information as appropriate#

Bac(ground

Discussion

Recommendation for Corrective Action

References

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ATTACHMENT C5: LEVEL A7B SCREENING CHECKLIST

Level A/B Field Screening Checklist

I. General Information	**II. Screening Results**
Site: Project/SDG: Client: Sample Matrix:	Data are: 1) Unusable _____ 2) Level A Yes/No 3) Level B Yes/No

II. Level A Screening

		Yes/No
1.	Sampling date	
2.	Sample team/or leader	
3.	Physical description of sample location	
4.	Sample depth (soils)	
5.	Sample collection technique	
6.	Field preparation technique	
7.	Sample preservation technique	
8.	Sample shipping records	

III. Level B Screening

		Yes/No
1.	Field instrumentation methods and standardization complete	
2.	Sample container preparation	
3.	Collection of field duplicates (1/20 minimum)	
4.	Proper and decontaminated sampling equipment	
5.	Field custody documentation	
6.	Shipping custody documentation	
7.	Traceable sample designation number	
8.	Field notebook(s), custody records in secure repository	
9.	Completed field forms	

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ATTACHMENT C6: VALIDATION INFORMATION

ATTACHMENT C6-1: VALIDATION CHECKLIST

DATA VALIDATION CHECKLIST FOR FIELD QUALITY CONTROL

Site: Case No: Laboratory:

Project: Sample Matrix: Analyses:

Sample Date: Analysis Dates:

Data Validator: Validation Date:

1. Holding Times

Analyte	Matrix	Method	Collection Date	Analysis Date	Affected data flagged
				.	

2. Field QC Samples

Field Blanks

Were field blanks sumbitted as specified in the Sampling & Analysis Plan? Y____ N_____

Were results for field blanks within the target control limits in the FGFR QAPP? Y____ N_____

Were any data qualified because of field blank problems? Y____ N_____

Field Replicates

Were field duplicates submitted as specified in the Sampling & Analysis Plan? Y____ N_____

Were any data qualified because of field duplicate results? Y____ N_____

Field Reference Materials

Were field Reference Materials or Performance Evaluation Samples submitted as specified in the Sampling & Analysis Plan? Y_____ N_____

Were the results within the manufacturer's control limits? *NA* Y_____ N_____

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ATTACHMENT C6-2: VALIDATION CRITERIA

Category	QC Sample	QC Category	Analyses	Frequency	Notes	Criteria	Condition	Flag (+) Data	Flag (-) Data (i.e non-detects)	First data validation stage to which it applies
Field QC	Field Duplicates	Field	All Parameters	Per QAPP/FSP	Solid versus aqueous matrices should have different limits. In addition to RPD statistic, use %D depending on concentration relative to RL. Some use different limits for wet chem vs metals, anions	Aqueous samples: ≤20% RPD, solid samples ≤35% RPD IF both results are more than 5 times the reporting limit. If either results is <RL, use Difference calculation: Difference < RL for aqueous; difference<2XRL for solid samples.	If RPD meets limits	No Flag	No Flag	2A
							If RPD> limit	J	UJ	
Blanks	Field/Equipment/Rinsate Blank	Field	All parameters	Per QAPP/FSP	Ensure consistent units between blank(s) and associated samples accounting for weight/volume, final volume, dilutions, and % solids. Pool blanks associated with samples, compare against the highest positive result (pooled blank). Ideally should be < MDL, LaMP specifies <1/2 RL before action is to be taken by laboratory.	In the absence of method quality objectives in the QAPP, the highest associated blank should be <20% of the associated positive samples	If a target analyte is detected in the blank, but not in the associated sample(s)	No Flag	No Flag	2A
	Method Blanks	Batch	All parameters	Per Method, generally each Preparation Batch			If the result in an associated sample is > 5× the blank result	No Flag	No Flag	2A
	Initial and Continuing Calibration Blanks	Instrument	All parameters with calibration	Per Method, generally each Analytical Batch			If the result in an associated sample is ≤ 5× the blank result	U	No Flag	2B
Batch QC	Blanks	Instrument, see above								2A
	Initial Calibration	Instrument	All parameters with calibration	Per Method, generally each Analytical Batch	Number of calibration levels is typically method defined.	Calibration model and relative error meet method and TNI requirements. %RSD, correlation coefficient, and coefficient of determination most common checks.	If critera do not meet method requirements (e.g. r is NOT ≥0.995)	R	R	2B if provided in a summary form. Stage 4 if not included as such.
	ICV and CCV	Instrument	All parameters where applicable	Per method, each Analytical Batch	flag (+) only if high, reject ND at 75% unless method has lower limit.	Use method limits, then QAPP if not specified. Metals are 90-110%	If recovery meets limits	No Flag	No Flag	2B
							If recovery <lower limit %. If,75% reject non-detected	J or J-	UJ (75-89%), U/R (<75%) for metals	
							If recovery >upper limit%	J or J+	No Flag	
	Low-level Initial Calibration Verification (aka CRDL or RL check)	Instrument	All parameters where applicable	Per Method and QAPP/FSP	In the absence of method-specified limits use this criterion	50-150% recovery;	If recovery meets limits	No Flag	No Flag	2B
							If recovery <50%	J or J-	UJ or UJ-	
							If recovery >150%	J	No Flag	
	Laboratory Control Samples	Batch	All parameters	Each Preparation Batch	Most LCS recovery limits are method or laboratory defined	Recovery: use method limits, then laboratory-generated. Metals are 80-120%. **If only recovery does not meet criteria, still identified as out of control with a qualifier**. Just not systemic but sporadic issue	If recovery meets limits	No Flag	No Flag	2A
							If recovery <80%	J or J-	UJ or UJ-	
							If recovery >120%	J or J+	No Flag	
			All parameters	Each Preparation Batch	Precision limits are generally generic, ≤20% RSD or RPD.	Precision, RPD for duplicates, RSD for >2 replicates. **Evaluated independently of % Recovery.** Evaluate even when native is >4X spike unless outside of calibration range. With high native relative to spike can evaluate the native/MS/MSD as a triplicate using RSD statistic. If also includes a field duplicate can add this as a fourth replicate to RSD calculation.	If meets limits	No Flag	No Flag	2A
							If exceeds limits	J	No Flag	
	Internal Standards for Metals	Instrument	Metals	With each measurement	LaMP limits are 60-125% for ICP metals; >70% for ICP-MS	60-125% for ICP, >70% for ICP-MS	If recovery meets limits	No Flag	No Flag	2B if provided in a summary form. Stage 4 if not included as such.
							If recovery <lower limit %	J or J-	UJ/R if recovery is <30%	
							If recovery >upper limit%	J	No Flag	
	Interference Check Sample for Metals	Instrument	Metals	Per method, each Analytical Batch	Varies slightly with method whether both ICSA and ICSAB are required	If required by the method ICSA recovery 80-120%, ICSAB 80-120% recovery AND absolute value of the concentration of the analytes not included in the ICSAB less than the RL. This is consistent with LaMP	If recovery meets limits	No Flag	No Flag	2B
							If recovery <lower limit %	J or J-	UJ (70-30%), UJ/R (<30%) for metals. Non-metals J or professional judgement	
							If recovery >upper limit%	J or J+	No Flag	

Category	QC Sample	QC Category	Analyses	Frequency	Notes	Criteria	Condition	Flag (+) Data	Flag (-) Data (i.e non-detects)	First data validation stage to which it applies
Batch QC	MS/MSD*	Batch	All parameters where applicable*	Each Preparation Batch	Recovery limits for metals consistent with Post-digestion Spike.	Recovery: order of precedence is: 1)method, or if unavailable use 2) laboratory-generated limits, otherwise use 3)NFGs. In none are available use 70-130%. **If only recovery exceeds criteria, data are still identified as out of control with a qualifier.** Just not systemic but sporadic issue	If recovery meets limits	No Flag	No Flag	2A
							If recovery <lower limit %	J or J-	UJ (70-30%), U/R (<30%) for metals. Non-metals J or professional judgement	
							If recovery >upper limit%	J or J+	No Flag	
					Precision of MS/MSD pair same as Field Duplicates. Solid versus aqueous matrices should have different limits. In addition to RPD statistic, use %D depending on concentration relative to RL. Some use different limits for wet chem vs metals, anions	**Evaluated independently of % Recovery**. Aqueous samples: ≤20% RPD, solid samples ≤35% RPD IF both results are more than 5 times the reporting limit. If either results is <RL, use Difference calculation: Difference < RL for aqueous; difference<2XRL for solid samples. Evaluate even when native is >4X spike unless outside of calibration range. With high native relative to spike ratio can evaluate the native/MS/MSD as a triplicate using RSD statistic. If also includes a field duplicate can add this as a fourth replicate to RSD calculation.	If RPD meets limits	No Flag	No Flag	2A
							If RPD/RSD> limit	J	UJ	
	Laboratory Duplicates	Instrument	All parameters per method requirements	Each Preparation Batch when required	Same as field duplicates except for gravimetric (TDS, TSS, VSS) use ≤10%RPD					2A
	ICP Serial Dilution	Instrument	Metals	Each Analytical Batch	Agreed to standardarize on new NFGs of ≤20% D if meets conc criteria.	≤20% D if meets conc criteria.	If recovery meets limits	No Flag	No Flag	2B
							If difference is >20 %	J	UJ	
	Post-digestion Spike	Instrument	Metals	Each Analytical Batch with failed MS	note differences between ICP and ICP-MS methods in various QAPPs. LaMP also has different limits based upon method and version	% recovery relative to method requirements AND consistent with MS/MSD limits	If recovery meets limits	No Flag	No Flag	2B
							If recovery <lower limit %	J or J-	UJ/R if recovery is <30%	
							If recovery >upper limit%	J	No Flag	

* matrix spike for some parameters are not possible. Matrix spike of alkalinity is also geochemically suspect. If limits are exceeded may be due to water chemistry, not a method interference.

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ATTACHMENT C6-3: VALIDATION REASON CODES

Table 1B. Definitions of Data Flags and Qualifiers for Inorganic Data

Type	Description
Laboratory Qualifier/Flag[a]	
B	Analyte was detected in the associated method blank.
CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
D6	The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.
D8	The sample and duplicate results for this parameter are less than 5 times the reporting limit, the RPD may not be statistically valid.
E	E Analyte concentration exceeded the calibration range. The reported result is estimated.
J	Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
H1	Analysis conducted outside the recognized method holding time.
H5	Reanalysis conducted in excess of EPA method holding time. Results confirm original analysis performed in hold time.
L2	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results may be biased low.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M2	Matrix spike recovery was below QC limits due to sample dilution. Data acceptance based on laboratory control sample (LCS) recovery.
M3	Matrix spike recovery was outside laboratory control limits due to matrix interferences.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
N2	The lab does not hold TNI accreditation for this parameter
P8	Analyte was detected in the method blank. All associated samples had concentrations of at least ten times greater than the blank or were below the reporting limit.
R1	RPD value was outside control limits.
TNI	The NELAC Institute
U	Indicates the compound was analyzed for, but not detected.
Qualifier[b]	
U	Indicates the compound was analyzed for, but not detected.
UJ	Analyte was analyzed for, but not detected. The reported quantitation limit is approximated and may be inaccurate or imprecise.
J	Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
J+	Estimated high
J-	Estimated low
U[c]	Result was affected by contamination in either the method blank, field blank, or both. Sample result is between the method detection limit and the contract required quantitation limit.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
Validation Code[c]	
AB	Sample batch did not pass Level B assessment.
CCB	Continuing calibration blank contamination
CCV	Continuing calibration verification outside of control limits.
CRQL	Contract required quantitation limit standard recovery outside quality control limits.
FB	Field blank contamination
FD	Field Duplicate sample relative percent difference exceeds QC limits.
HT	Holding time violation
ICB	Initial calibration blank contamination
LCS	Laboratory control sample percent recovery did not meet acceptance criteria.
LDS	Laboratory duplicate sample relative percent difference exceeds QC limits.
MB	Method blank contamination
MS	Matrix spike and/or matrix spike duplicate percent recovery did not meet acceptance criteria.
RPD	Matrix spike/matrix spike duplicate relative percent difference exceeds QC limits.
SD	ICP serial dilution percent difference outside QC limits
TB	Trip Blank Contamination
X	Sample was collected past water treatment system

[a] Defined by Pace Analytical Services

[b] Defined in USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Methods Data Review, USEPA, Washington DC, January 2017

[c] Defined by TREC, Inc.



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APPENDIX D: CONSTRUCTION QUALITY ASSURANCE PLAN AND CONSTRUCTION QUALITY CONTROL PLAN

ACM SMELTER & REFINERY SITE OU1 COMMUNITY SOILS

Final Appendix D Construction Quality Assurance Plan and Construction Quality Control Plan

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ATTACHMENTS

Attachment D1: Field Standard Operating Procedures
Attachment D2: Non-Conformance Report Form and Log

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REVISION SUMMARY

Revision No.	Author	Version	Description	Date
Rev 0	Woodard & Curran	Draft Final	Issued for Agency Review	March 17, 2023
Rev 1	Woodard & Curran	Revised Draft Final	Issued for Agency Review and Approval	May 8, 2023
Rev 2	Woodard & Curran	Final	Issued for Agency Approval	June 6, 2023

LIST OF ACRONYMS

ACM	Anaconda Copper Mining Company
AOC	Administrative Settlement Agreement and Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirement
ARC	Atlantic Richfield Company
ARM	Administrative Rules of Montana
BMP	Best Management Practice
BTCA	Best Technology Currently Available
CCR	RA Construction Completion Report
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CQAP	Construction Quality Assurance Plan
CQA/CP	CQAP/CQCP
CQCP	Construction Quality Control Plan
CSAOI	Community Soils Area of Interest
CSOU1	OU1 Community Soils
DWA	Depth-weighted Average
EPA	U.S. Environmental Protection Agency
GIS	Geographic Information System
GPS	Global Positioning System
HASP	Health and Safety Plan
IQAT	Independent Quality Assurance Team
ISWP	Individual Site Work Plan
LaMP	ARC Laboratory Management Program
MDEQ	Montana Department of Environmental Quality
mg/kg	milligrams per kilogram
NCR	Non-conformance Report
NOA	Northern Outlying Area
NTE	Not to Exceed
OLEM	Office of Land and Emergency Management
OUs	Operable Units
OU1	Operable Unit 1
OU2	Operable Unit 2
OU3	Operable Unit 3
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
QA/QC	Quality Assurance/Quality Control
RA	Remedial Action
RAWP/FDR	Remedial Action Work Plan/Final Design Report
RCOU1	Railroad Corridor (of OU1)
RD/RA	Remedial Design/Remedial Action
RFC	Request for Change
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SOW	Statement of Work

1. INTRODUCTION

This Construction Quality Assurance Plan (CQAP) and Construction Quality Control Plan (CQCP) describes construction quality assurance (QA) and quality control (QC) procedures and responsibilities applicable to the construction of the selected remedy for the Community Soils Portion of OU1 (CSOU1) of the Anaconda Copper Mining Company (ACM) Smelter and Refinery Superfund Site (ACM Site) in and near Black Eagle, Cascade County, Montana. This CQAP/CQCP (CQA/CP) is Appendix D to the Remedial Action Work Plan/Final Design Report (RAWP/FDR) for CSOU1, developed by Atlantic Richfield Company (ARC) to describe the scope of the remedy, the basis of the design, and the technical approach for implementation of the Remedial Action (RA).

In 2021, the U.S. Environmental Protection Agency (EPA) in consultation with the Montana Department of Environmental Quality (MDEQ) (collectively, the Agencies) issued the OU1 ROD (EPA, 2021) which presents the selected remedy for the ACM Smelter and Refinery Community Soils Operable Unit National Priorities Site. ARC is conducting the Remedial Design/Remedial Action (RD/RA) work pursuant to and in accordance with the Consent Decree for the Community Soils Portion of OU1 of the ACM Smelter and Refinery Superfund Site and associated Statement of Work (SOW) (EPA, 2023). The RD/RA for CSOU1 addresses arsenic and lead contamination in soils in residential and non-residential areas.

1.1 Purpose and Objectives

In accordance with section 7.7(d) of the SOW, the purpose of this CQA/CP is to describe planned and systematic activities that provide confidence that the RA construction will satisfy all plans, specifications, and related requirements, including quality objectives, and to verify that RA construction has satisfied all plans, specifications, and related requirements, including quality objectives.

Construction QA will be the responsibility of ARC and ARC's Supervising Contractor. An Independent QA Team (IQAT) will perform construction oversight to inspect and document quality of the materials and implementation of construction in accordance with *Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties* (EPA, 1990) Construction QC will be the responsibility of the Construction Subcontractor.

The specific objectives of this CQA/CP, per section 7.7(d) of the SOW (EPA, 2023), include:

- Identify, and describe the responsibilities of, the organizations and personnel implementing the CQA/CP; (Section 2)
- Describe performance standards required to be met to achieve completion of the RA; (Section 3)
- Describe the activities to be performed: (i) to provide confidence that performance standards will be met; and (ii) to determine whether performance standards have been met; (Section 4)
- Describe verification activities, such as inspections, sampling, testing, monitoring, and production controls, under the CQA/CP; (Section 4)
- Describe industry standards and technical specifications used in implementing the CQA/CP; (Section 3)
- Describe procedures for tracking construction deficiencies from identification through corrective action; (Section 5)

- Describe procedures for documenting all CQA/CP activities; (Section 6) and
- Describe procedures for retention of documents and for final storage of documents. (Section 6)

1.2 Site Location and Description

The ACM Site is located on the north bank of the Missouri River and includes the unincorporated community of Black Eagle near Great Falls, Montana. Under the OU1 Remedial Investigation/Feasibility Study (RI/FS) Administrative Settlement Agreement and Order on Consent (AOC), EPA subdivided the ACM Superfund Site into the following Operable Units (OUs) to manage the RI/FS process required under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (EPA, 2011):

- OU1: Northern and Southern Community Soils Areas of Interest (CSAOIs), Northern and Southern Outlying Areas, and the Railroad Corridor (RCOU1);
- Operable Unit 2 (OU2): Former Smelter and Refinery; and
- Operable Unit 3 (OU3): Missouri River adjacent to, and downstream of, OU2.

RI/FS activities for the CSAOIs and Outlying Areas of OU1 were completed by ARC in accordance with the AOC (EPA, 2011). The RI and FS for the RCOU1 were conducted under a separate Unilateral Administrative Order between Burlington Northern Santa Fe Railway Company and EPA. As shown on Figure D-1, this CQA/CP addresses both CSAOIs and the eastern portion of the Northern Outlying area (NOA) east of Black Eagle Road. EPA determined in the OU1 ROD that the western portion of the NOA and the Southern Outlying Area were not subject to RA. However, ARC has identified several current residential properties in the western portion of the NOA that will be addressed under this RAWP/FDR.

The CSAOIs are located on the north side of the Missouri River. The Southern CSAOI is located immediately west of the Former Smelter and Refinery. The Southern CSAOI is primarily residential and includes the eastern portion of the community of Black Eagle, which was built as a company town for the copper smelter starting in 1891. Homes in the older, central part of Black Eagle were generally constructed before 1920, and the majority of homes within OU1 were constructed prior to 1950. These homes are a mix of brick and wood-frame structures, typically set on 30-foot by 150-foot lots along avenues and 40-foot by 150-foot lots on streets (URS, 2007). The Northern CSAOI is located on the north side of the Former Smelter and Refinery and is predominantly undeveloped land with some commercial and residential properties intermixed.

The NOA is located north of the Missouri River and outside of the Great Falls city limits. The NOA includes the unincorporated areas of Cascade County that surround the CSAOIs and the Former Smelter and Refinery. The NOA includes commercial, industrial, agricultural, and recreational properties, as well as undeveloped land. The primary recreational property in the NOA is the Electric City Dirt Riders off-road racetrack.

1.3 Site History

The Great Falls Reduction Works operated as a copper smelter and refinery from approximately 1893 to 1917 and then primarily as a copper and zinc refinery until 1980. Specialty metals and copper and aluminum products were also produced. Emissions from the copper smelter were vented from a 186-foot-tall stack located on top of Indian Butte (ACM, 1943). In 1908, the original stack was replaced by a 506-foot-tall stack that was used from 1909 until the zinc plant closed in 1972. Demolition of the zinc plant facilities began in

1973. After closure of the facility in 1980, large-scale building demolition, salvage, and reclamation activities were performed in the 1980s and 1990s (Anderson, 2010). Historically, air emissions from copper smelting and copper and zinc refining operations were deposited on soils within OU1.

1.4 Description of the Remedial Action

Environmental data were collected in the CSAOIs and Outlying Areas as part of the OU1 RI (Formation, 2015). Residential soil investigation activities included collecting soil samples from various yard components (i.e., front yard, back yard, flower garden, rock garden, vegetable garden, earthen driveway, and play area) at residential properties from four depth intervals (0 to 2 inch, 2 to 6 inch, 6 to 12 inch, and 12 to 18 inch). Non-residential properties (e.g., commercial, agricultural, recreational, and vacant land) in the CSAOIs and Outlying Areas were sampled at the same four depth intervals. A baseline Human Health Risk Assessment was conducted to assess whether arsenic and lead in soil might be harmful to people living, working, and recreating within OU1, potential risk levels were estimated, and risk-based Preliminary Remediation Goals were calculated for each exposure scenario (Ramboll Environmental, 2016). Areas of concern were identified as part of the FS and remedial alternatives were developed and evaluated to address impacted soil in these areas (Pioneer and Formation, 2017).

As described in section 2 and section 3.2 of the RAWP/FDR, the selected remedy in the OU1 ROD for the CSOU1 is Alternative 4 – Soil Removal and Replacement (Component-Specific Not to Exceed/Risk-based Remedial Approach) with some modification and addresses arsenic and lead contamination in soils in residential and non-residential areas. Each Individual Site Work Plan (ISWP) shows the components and depths that require removal for that specific property. The following summarizes the major components of residential and non-residential RA from the OU1 ROD (EPA, 2021).

Major components of the remedy to address current residential soils in the CSOU1 include:

- Step 1 – Remove soils in any yard component exceeding the Not to Exceed (NTE) action level of 250 milligrams per kilogram (mg/kg) arsenic and 400 mg/kg lead to a maximum depth of 18 inches (maximum 24 inches in gardens).
- Step 2 – Calculate the residual risk that may be present after Step 1 and remove any additional soil to achieve a yard average concentration, in the top 6 inches, less than 54 mg/kg arsenic and 281 mg/kg lead.

Major components of the remedy for current non-residential soils in the CSOU1 include:

- Confirm that the property average soil concentration, in the top 6 inches, is below risk-based action levels for the current non-residential land use or remediate soils to achieve the risk-based action levels for current non-residential land use in the top 6 inches.
- To address a potential land use change to residential, one of the following must be completed for properties where such a change in use could be reasonably anticipated:
    - Confirm that the property-specific 0 to 12 inch depth-weighted-average (DWA) soil concentration meets the RAOs for residential soils, or

- Place ICs on the property, including, but not limited to, restricting future residential use or providing for additional remediation at the time of residential redevelopment, or
- Remediate soils to further reduce soil concentrations to achieve a property average concentration in the top 12 inches that meets the RAOs for residential soils.

Excavated materials removed from residential and non-residential properties during RA will be consolidated within OU2. If needed, clean cover materials, either soil or aggregate, will be used to backfill residential areas disturbed during RA activities and will be procured and then stockpiled within OU2. Materials (e.g., soil, aggregate, sod, etc.) will be sourced from local vendors when feasible.

1.5 Document Organization

In addition to the introduction, this CQA/CP consists of the following sections:

Section 2 – QA/QC Organization and Responsibilities,

Section 3 – Performance Standards and Technical Specifications,

Section 4 – Construction Quality Assurance Activities,

Section 5 – Construction Deficiencies and Corrective Action,

Section 6 – Project Documentation,

Section 7 – Site Controls During Construction, and

Section 8 – References.

2. QA/QC ORGANIZATION AND RESPONSIBILITIES

This Section addresses administrative functions related to QA/QC as well as the specific responsibilities of the IQAT and the Construction Subcontractor's QC Team for the CSOU1 RA.

2.1 QA Organization

ARC is responsible for implementing and maintaining construction QA activities. The IQAT for ARC is tasked with performing the QA activities. The IQAT is comprised of engineers, scientists, and technicians qualified and experienced in work similar to the CSOU1 RA. Specific personnel assignments will be established prior to initiating the RA construction activities. The QA Team Leader is the main point of contact for the IQAT. The IQAT will conduct both office and fieldwork activities to verify that the RA construction work is completed as specified. Laboratory analyses and testing will be performed by an ARC Laboratory Management Program (LaMP) certified laboratory. An organizational chart showing the organization of the IQAT for the CSOU1 RA work related to this CQA/CP is provided as Figure D-2.

2.2 QA Responsibilities

The following Subsections of this plan detail the responsibilities of the IQAT. In general, the IQAT is responsible for the following during the RA construction activities:

- Attending preconstruction or progress meetings, and other meetings as necessary to plan for necessary QA tasks;
- Planning and implementing QA reporting, record keeping, progress meetings, and inspections;
- Reviewing and approving material certifications and other submittals;
- Conducting inspections, field sampling, and materials analyses;
- Verifying the quality of all construction activities to assure compliance with the design criteria;
- Verifying excavation depth (compliance with design depth and associated tolerances);
- Verifying cover soil quality and application thicknesses;
- Verifying proper sod installation procedures;
- Verifying embankment and surface aggregate application thicknesses and compaction;
- Developing a punch list of items that do not conform to the approved plans and specifications (where applicable) and provide a Non-conformance Report (NCR) and discuss with the Construction Subcontractor;
- Verifying QA/QC Standard Operating Procedures (SOPs) are followed as outlined in the CSOU1 SOPs (Attachment D1); and
- Preparing red-line construction drawings in the field as preparation for as-built drawings.

2.3 QC Organization

The Construction Subcontractor is responsible for providing labor and equipment to construct the designed work and to implement and maintain the construction related QC program. The Construction Subcontractor

is responsible for necessary inspections and tests to ensure that their work complies with the contract documents. The Construction Subcontractor will provide an organization chart to show the Construction Manager and Construction QC personnel and how they integrate with the Construction Team. The Construction Subcontractor QC Manager will have overall responsibility for construction QC and must have a minimum of five years similar construction experience.

2.4 QC Responsibilities

In general, the Construction Subcontractor and its QC Manager are responsible for the following during the RA construction activities:

- Reviewing contract requirements;
- Reviewing design plans, technical specifications and drawings;
- Attending preconstruction or progress meetings, and other meetings as necessary to plan for construction;
- Discussing procedures for controlling quality with ARC's Supervising Contractor;
- Examining the work area to ensure that any required preliminary work has been completed and complies with the design plans;
- Examining the required materials and equipment to ensure that they are available and conform to the design plans;
- Reviewing the design plans and hazard analyses with all workers; and
- Preparing QC reports associated with construction such as: daily construction reports (date, property location, weather, equipment and personnel), reports on meetings, work completed, problems or deviations, corrective actions, progress photographs, etc.

3. PERFORMANCE STANDARDS AND TECHNICAL SPECIFICATIONS

This Section summarizes the Performance Standards and Technical Specifications that are applicable for the RA construction at the CSOU1.

3.1 Performance Standards

Performance Standards include the cleanup levels for arsenic and lead in soil established by EPA in the OU1 ROD.

3.1.1 Contaminants in Soil

The CSOU1 will comply with the Performance Standards for contaminants in soil as specified in the ROD for ACM Smelter and Refinery Community Soils Operable Unit National Priorities Site (EPA, 2021) and listed below:

- NTE action levels of 250 mg/kg arsenic and 400 mg/kg lead in soil for any individual yard component at residential properties;
- Residential yard average concentrations in the top 6 inches of soil of less than or equal to 54 mg/kg arsenic and 281 mg/kg lead; and
- Non-residential property average concentrations in the top 6 inches of soil of less than or equal to 120 mg/kg arsenic and 1,766 mg/kg lead.

The general plan for RA construction for residential and non-residential properties and the final design that will meet these Performance Standards is detailed in the RAWP/FDR. Property-specific plans for RA are provided in ISWPs (Appendix E of the RAWP/FDR).

3.1.2 Solid Waste, Stormwater, Air Quality, and Noxious Weed Requirements

RA construction will also comply with State of Montana Applicable or Relevant and Appropriate Requirements (ARARs) related to solid waste management, stormwater discharge, air quality, solid waste run-on and runoff, and noxious weeds within the area of RA construction during the RA. ARARs include the following:

- Solid Waste Management Statutes and Regulations (ARM §17.50.1004-1006, 1008-1009);
- Stormwater Discharge Requirements (ARM §17.24.633);
- Air Quality Requirements (ARM §17.8.220-221, §178.308, §17.24.761);
- Solid Waste Run-On and Runoff Requirements (ARM §17.50.11); and
- Noxious Weed Requirements (Section 7-22-2101(9)(a) MCA, and ARM §4.5.201 *et seq*.).

All requirements for solid waste management, stormwater discharge, air quality, solid waste run-on and runoff, and noxious weeds will be evaluated prior to RA work to ensure requirements are met before construction commences. It is expected that standard construction dust suppression activities will satisfy the air quality requirements. Equipment used during RA construction will be equipped with the standard or required pollution control devices. Additional information regarding how ARARs will be met is provided in Section 7 of this CQA/CP.

3.2 Technical Specifications

Industry standards and specifications that will be used in implementing the CQA/CP for the CSOU1 RA describe the scope of the work, the materials to be used, the methods of installation, and the quality of the workmanship required, are provided in the Technical Specifications (Appendix H of the RAWP/FDR) and include the following:

- Subsection 130.00 Submittals
- Subsection 160.00 Existing Utilities
- Subsection 201.00 Clearing and Grubbing
- Subsection 202.00 Residential Yard Excavation and Backfill/Cover
- Subsection 203.00 Providing and/or Stockpiling Backfill and Cover Materials
- Subsection 206.00 Haul
- Subsection 220.00 Residential Soil Disposal
- Subsection 222.00 Non-Residential Excavation
- Subsection 290.00 Tillage
- Subsection 310.00 Fences
- Subsection 315.00 Chain Link Fences and Gates
- Subsection 320.00 Fertilizing and Seeding
- Subsection 323.00 Sodding
- Subsection 330.00 Mulch
- Subsection 540.00 Provide Water
- Subsection 550.00 Traffic Control
- Subsection 820.00 Aggregate Surfacing Materials
- Subsection 830.00 Structural Concrete

The use of uniform engineering or technical criteria, methods, processes, and practices detailed in the Technical Specifications will ensure that the construction will meet the QA/QC requirements for the project.

4. CONSTRUCTION QUALITY ASSURANCE ACTIVITIES

Construction QA activities applicable to the RA work are outlined in the following Subsections and include certification of materials, verification of removal and replacement steps, testing of cover soil, aggregate materials sampling and analysis, and compaction testing. The IQAT is responsible for testing, verification, and certification activities during the RA construction.

4.1 Materials Certification

It is imperative that the correct materials are used during RA construction to maintain the functionality of the design. It will be the responsibility of the IQAT to review and approve all certifications required as specified in the project Technical Specifications (Appendix H of the RAWP/FDR). Table D-1 lists the materials anticipated for certification submittal and review. Table D-1 may change, if necessary.

4.2 Construction Staking and Verification

The IQAT will be responsible for all construction area staking prior to the RA work. The following Subsections of this plan describe the anticipated features of the RA that will need to be staked for excavation depth and alignment.

4.2.1 Residential Yards

As deemed necessary by the IQAT, individual residential yard components (i.e., front yards, back yards, gardens, gravel driveways, etc.) to be excavated and backfilled may be staked to indicate the excavation depth(s) (6 to 24 inches) and associated lateral excavation boundaries. Due to the small areas involved with this RA work, excavation staking will not always be necessary.

The location of each yard component associated with the RA can be determined using markers (installed by the IQAT) in conjunction with the scaled maps of the ISWPs generated for each residence involved with the RA. Due to the relatively small areas involved, delineation of yard components may consist of measuring using a hand tape and using existing features (i.e., fences, foundations, concrete sidewalks, concrete driveways, etc.) to define excavation boundaries. Otherwise, excavation boundaries may be delineated using a resource grade global positioning system (GPS).

4.2.1.1 Excavation Depth Verification

Due to the relatively small areas involved (i.e., residential yards, gardens, gravel driveways, etc.), depth verification of yard component excavation may consist of measuring using a hand tape and existing perimeter features (i.e., fences, foundations, concrete sidewalks, concrete driveways, etc.) to verify excavation depths. As needed, the IQAT will complete measurements throughout the course of the work to verify that excavation depths implemented are within the specified tolerances. Acceptable depth tolerance for excavations will be the specified depth (6, 12, 18, or 24 inches) ±0.1 foot, measured from below the existing ground surface or below existing sod or aggregate layers, as applicable.

4.2.1.2 Backfill Placement

Areas to receive general backfill will be defined by the limits of excavation. In general, backfill will be placed to a depth corresponding to the surrounding ground surface. The uppermost lift of backfill in lawn areas

(i.e., within 6 inches of the final grade surface) will not be compacted to attain a specific density and moisture content, but will be rolled and slightly compacted using small, hand-operated equipment to achieve a smooth surface that matches the surrounding topography. Driveways will be compacted using appropriate compaction equipment to attain moisture and density specifications as indicated in the Technical Specifications. The bottom 6 inches of backfill in lawn areas excavated to a total depth of 12 or 18 inches, and in driveways, will be compacted using compaction equipment indicated in the Technical Specifications. The surface of backfilled areas will be prepared in such a manner that they are amenable to sod placement or aggregate placement (i.e., smooth, not overly steep, no abrupt edges, etc.).

4.2.1.3 Sod Placement

The IQAT will ensure that all sod is placed in accordance with the Standard Drawings (Appendix G of the RAWP/FDR) and the project Technical Specifications (Appendix H of the RAWP/FDR). Areas to receive sod will be identified on the ISWP.

4.2.1.4 Aggregate Placement

Aggregate materials may be placed over backfilled driveways. Areas to receive aggregate surface materials will be identified on the ISWP including the aggregate placement boundary and depth.

4.2.1.5 Seeding

Some residential yards may be seeded instead of receiving sod application. Additionally, some residential areas may not be classified as "yards" and may receive an "uplands" seed mix. Areas to be seeded will be identified on the ISWP. Seeding will be monitored to ensure compliance with Technical Specifications (i.e., seed and fertilizer mixes and application rates, etc.). The seedbed will be inspected to verify that it is suitable for planting. This inspection will include verification that the soil is not overly compacted.

Revegetation equipment will be inspected to verify that the equipment is adequate for the job and has been properly calibrated to apply seed mixes, fertilizer, and mulch at the application rates stated in the Technical Specifications (Appendix H of the RAWP/FDR). The Construction Subcontractor must supply certified mixtures for all areas. The IQAT will check the seed and fertilizer container labels for product verifications and will keep a record of relevant information. The IQAT will also verify that mulch consists of either grass, hay or straw free of noxious weeds. Tilling or crimping will be performed perpendicular to the flowline of the slope.

4.2.2 Non-Residential Properties

As deemed necessary by the IQAT, individual non-residential subareas to be excavated may be staked to indicate the excavation depth (6 inches) and associated lateral excavation boundaries. Because the areas involved with this RA work are larger than individual residential yard components, excavation staking will likely be necessary at all properties. Large properties where tillage will be used for the RA may be staked to indicate the lateral tillage boundaries. Those properties where tillage is used will be tilled to the design depth.

The location of each subarea associated with the RA can be determined using markers (installed by the IQAT) in conjunction with the scaled maps of the ISWPs generated for each non-residential property involved with the RA. Delineation of subareas may consist of measuring using a hand tape and using existing

features (i.e., fences, roads, etc.) to define excavation boundaries. Otherwise, excavation boundaries may be delineated using resource grade GPS.

4.2.2.1 Excavation Depth Verification

Depth verification of non-residential subarea excavation may consist of measuring using a hand tape and existing perimeter features (i.e., fences, roads, etc.) to verify excavation depths. As needed, the IQAT will complete measurements throughout the course of the work to verify that excavation depths implemented are within the specified tolerances. Acceptable depth tolerance for excavations will be the specified depth (6 inches) ±0.1 foot, measured from below the existing ground surface.

4.2.2.2 Grading or Backfill Placement

Non-residential properties will be excavated to depths of 6 inches and backfill is not anticipated to be needed. Excavated areas would likely need to be graded to match the surrounding topography. In the event that non-residential subareas are backfilled, the subareas to receive general backfill will be defined by the limits of excavation. In general, backfill will be placed to a depth corresponding to the surrounding ground surface. The backfilled subarea will be rolled and slightly compacted using small, hand-operated equipment to achieve a smooth surface that matches the surrounding topography, and the surface will be prepared in such a manner that it is amenable to seeding.

4.2.2.3 Seeding

Non-residential properties will likely be seeded with an "uplands" seed mix instead of receiving sod application. Areas to be seeded will be identified on the ISWP. Seeding will be monitored by the Construction Subcontractor's QC Manager to ensure compliance with Technical Specifications (i.e., seed and fertilizer mixes and application rates, etc.). The seedbed will be inspected to verify that it is suitable for planting. This inspection will include verification that the soil is not overly compacted.

Revegetation equipment will be inspected to verify that the equipment is adequate for the job and has been properly calibrated to apply seed mixes, fertilizer, and mulch at the application rates stated in the Technical Specifications (Appendix H of the RAWP/FDR). The Construction Subcontractor must supply certified mixtures for all areas. The IQAT will check the seed and fertilizer container labels for product verifications and will keep a record of relevant information. The IQAT will also verify that mulch consists of either grass, hay or straw free of noxious weeds. Tilling or crimping will be performed perpendicular to the flowline of the slope.

4.2.2.4 Tillage

Large, vacant non-residential properties may be remediated using tillage. Soil tillage involves mechanically turning over and mixing the soil column at depths based on site-specific data. Confirmation sampling may be used to confirm mixing adequacy as needed using sampling procedures for non-residential soil in the Quality Assurance Project Plan (QAPP) (Appendix C of the RAWP/FDR). Amendments may be mixed in with the tilled soil. A resource grade GPS will be used to determine the depth of tillage, defined as the distance from original ground (untilled at a surveyed location) to the bottom of the tilled interval at the same surveyed location, as described in the Technical Specifications (Appendix H of the RAWP/FDR).

4.2.3 Cover Soil Stockpile

The soil borrow source (Shumaker stockpile) to be used for this RA project has been approved by EPA and MDEQ, and the OU1 Type A Cover Soil Sampling Results Memorandum is provided as Appendix E of the RAWP/FDR. The soils originated from a 120-acre tract of agricultural land north of Black Eagle. A total of 32 three-point composite samples were collected from the stockpile and analyzed for texture, metals, and organic matter content in order to determine their suitability for use as cover soil. The soils meet the acceptance criteria, are protective of human health, and are suitable for use as fill soil and topsoil for establishment of vegetation in residential yards. The soils were hauled to OU2 and temporarily stockpiled there for use in RA construction at CSOU1. As determined necessary by the IQAT, Construction Subcontractor's QC Manager and the EPA Field Oversight representative, cover soil borrow material will be screened to achieve a final product that passes through a 1-inch minus screen.

In the event that additional cover soil borrow material is needed, the Supervising Contractor Project Coordinator (or designee) will locate additional source(s) and will arrange for sampling and analysis of additional soil sources. Composite samples will be collected and analyzed for texture, rock content (screen size), saturation percentage, pH, electrical conductivity, sodium adsorption ratio, and total metals (as detailed in Table D-2). All cover soil borrow material will be Agency approved prior to use during the RA.

4.2.4 Aggregate Materials Sampling and Analysis

Conformance testing of the specified aggregate material(s) to be installed on driveways will be conducted by the IQAT to assure the consistency of the aggregate material properties obtained from the aggregate source. At a minimum, the particle size distribution of the aggregate material(s) will be tested in accordance with ASTM C136 at least once prior to initiating the construction phase of the project.

4.2.5 Compaction Testing

The following components of the RA will require compaction verification by the IQAT:

- In yard/lawn areas that involve removal to a depth of 12 or 18 inches, the bottom 6 or 12 inches of the backfilled soil is subject to qualitative compaction specifications;
- General backfill replaced in excavated driveways; and
- Aggregate surface course placed on driveways.

Due to the relatively shallow depths of embankments involved with this project in conjunctions with lessons learned from similar RA activities conducted at other sites, all compaction specifications for this project are qualitative in nature (i.e., quantitative compaction verification using a moisture density gauge is not necessary). The IQAT will verify that the minimum number of passes is completed using specified equipment in areas subject to qualitative compaction specifications and will ensure that all subgrades and embankments are reasonably firm and unyielding considering the intended use of the final product.

5. CONSTRUCTION DEFICIENCIES AND CORRECTIVE ACTION

The overall goal of this CQA/CP is to ensure all work performed for the CSOU1 RA is of the highest quality and is in conformance with the ISWP for each property (Appendix E of the RAWP/FDR), Standard Drawings (Appendix G of the RAWP/FDR), and Technical Specifications (Appendix H of the RAWP/FDR). This Section addresses the identification of construction deficiencies and non-conformances and implementation of corrective actions.

5.1 Identification of Construction Deficiencies

A member of the IQAT will be at the work site during RA construction to perform the QA responsibilities outlined in Section 2.2 of this CQA/CP. When a material, performed work, or installation is found deficient (i.e., does not meet the plans and/or specifications), the QA Team Leader will notify the Construction Subcontractor. The Construction Subcontractor will, after receipt of such notice, immediately take corrective action. Minor deficiencies noted during tests or inspections will be verbally reported to the Construction Subcontractor's QC Manager and noted on the Daily Construction Report. Minor deficiencies are items that do not require significant rework or repair work to correct and will not result in significant deviations from required quality standards if corrected immediately. Control and disposition of such deficiencies will be by the originator of the Daily Construction Report and the Construction Subcontractor's Project Manager responsible for the work and do not require formal action by the QA Team Leader or the Supervising Contractor's Project Coordinator. Ideally, such minor deficiencies can be corrected on the spot by agreement with the Construction Subcontractor's Project Manager or QC Manager.

Non-conformances are major deficiencies from the contract requirements and/or accepted standard of quality, which must be formally documented for corrective action by the IQAT. Failure by the Construction Subcontractor to correct a minor deficiency after having been put on notice will also result in a non-conformance if it is not corrected within 5 days of notification. Non-conformances shall be formally documented on the NCR form as described in Section 5.2.

5.2 Non-Conformance Report

The NCR is a formal notification to the Construction Subcontractor that RA work does not meet the plans or specifications for the project. A typical Non-Conformance Report form is provided in Attachment D2. In addition, a log shall be maintained for all NCRs in accordance with the Non-Conformance Report Log which is also provided in Attachment D2. The NCR shall be distributed to QA Team Leader and the Construction Subcontractor's Project Manager and QC Manager.

Any item of work found to be deficient (i.e., out of conformance with the ISWP or Standard Drawings and/or Technical Specifications) and not corrected within 5 days will be identified by the QA Team Leader on the report. NCRs will fully describe the deficiency and the conditions requiring corrective action. An approach and schedule for the corrective action will be included. The NCR will be issued by the QA Team Leader, and a copy will be attached to the Daily Construction Log and the Daily Project Log. The QA Team Leader will follow up on the NCR as required to verify that corrective action has been completed. The Construction Subcontractor's QC Manager and the Supervising Contractor's Design Engineer shall verify and accept the corrected work by actual inspection.

All non-conforming conditions will be tracked on the Non-Conformance Report Log. Deficiencies will be summarized in tabular format showing a brief description of the deficiency or condition, the date recorded, the date the NCR is issued, the proposed corrective action, the date that the proposed corrective action is approved, the date the corrective action is completed, and the date of acceptance of the corrected work. This summary will be updated daily and provided to the Construction Subcontractor's Project Manager or QC Manager at the weekly progress meeting. NCRs will be included on the Non-Conformance Report Log and tracked through verification that the non-conformance has been corrected.

5.3 Corrective Action

When material, performed work or installation is found to be deficient and/or does not meet the project specifications, the QC Manager will ensure that deficiency correction is implemented. The Construction Subcontractor will implement corrective actions to remedy work that is not in accordance with the drawings and specifications. The corrective actions will include removal and replacement of deficient work using methods approved by the Construction Subcontractor's Project Manager. Removal must be done in a manner that does not disturb work that meets QA/QC criteria; otherwise, the disturbed material must also be removed and replaced. Replacement must be done in accordance with the corresponding Technical Specifications. Replacement will be subjected to the same scope of QA/QC inspection and testing as the original work. If the replacement work is not in accordance with the drawings and specifications, the replacement work will be removed, replaced, reinspected, and re-tested.

6. PROJECT DOCUMENTATION

The record keeping and reporting responsibilities and construction meetings and inspections required by the SOW to meet the objectives for RA project documentation under the CQA/CP are described in the following Subsections.

6.1 Reporting

ARC will be responsible for submitting a Monthly Progress Report to EPA and MDEQ on or before the 10th day of every month. These reports will present summaries of the important information relating to the monthly RA construction activities. The Monthly Progress Report will include, if necessary, any proposed or field-approved modifications (and justifications) to the RAWP/FDR, this CQA/CP, the Standard Drawings, the Technical Specifications, or the Health and Safety Plan (HASP). The QA Team Leader will obtain updated information from the Construction Subcontractor regarding construction activities, including percent completion and any scheduling modifications. The Monthly Progress Report will summarize the construction progress information.

6.2 Record Keeping

Members of the IQAT will perform various record keeping duties under the supervision of the QA Team Leader. The IQAT is responsible for maintaining a complete and accurate record of all significant observations and inspections and documenting all field and laboratory testing. Copies of these records will be provided to and maintained by the Supervising Contractor's Project Coordinator (or designee) to be available for review by ARC and Agency personnel. All record keeping will be completed in accordance with the methods and procedures specified in the CSOU1 Field SOPs (Attachment D1 of this CQA/CP) and Technical Specifications (Appendix H of the RAWP/FDR). The record keeping responsibilities of the IQAT will include the following:

- Daily Project Logs – A member of the IQAT will complete a Daily Project Log describing all field activities. Log entries will document all significant activities including any abnormal observations, weather conditions, deviations from the Standard Drawings or the Technical Specifications or other standard procedures, health and safety meetings, important information and summaries regarding field sampling, measurements, observations or testing, equipment calibration results (as necessary), any photographs taken and topics/results of any significant meetings or discussions.
- Photographs – Construction photographs and associated logs will be recorded on a periodic basis to visually document significant construction activities and to provide visual reference material. Photographs will be taken of residential yards and non-residential properties prior to and following construction activities.
- QA Testing Documents – Instrument calibration/standardization forms (if any), field and laboratory measurement and sampling forms, sample logs, documentation forms, sample analyses requests, chain of custody forms, and any other documents related to QA testing will be kept by the QA Team Leader and provided to the Project Coordinator.
- Request for Change (RFC) Forms – All proposed and actual changes to any portion of the RAWP/FDR must be clearly delineated. Major changes will be documented on an RFC form. Determination of whether a change requires an RFC will be made in consultation with the EPA Field Oversight representative. These completed forms will be used to update the as-built drawings to

provide a clear record of all field modifications, the exact location and reason for the modifications, and suggested alternatives and solutions to field complexities. Copies of RFC forms will be maintained by the Supervising Contractor. Changes that do not require completing an RFC will be documented in the Daily Project Logs and in the Construction Completion Report (CCR).

- As-built Drawings – A master set of working ISWPs will be stored at the project field office. These drawings will be clearly and neatly updated to provide an as-built record of all changes and modifications to the final design and specifications for each individual property, with each modification being dated and signed by the QA Team Leader (or designated representative) and the Agency field representative. All modifications must also be clearly documented and described on an accompanying RFC form as described above. Upon completion of the RA, final as-built drawings (final ISWPs for each individual property) will be prepared for inclusion in the CCR to document the actual conditions of each residential or non-residential property of the OU1 Community Soils RA.
- Other Documentation – Other documentation may include, but is not limited to, materials compliance certifications, health and safety and construction meeting summaries, inspection records, relevant construction files, etc.

6.3 Construction Meetings and Inspections

A series of meetings and inspections will be conducted while implementing each phase of the RA work. The meetings and inspections mentioned in this Subsection are in addition to the daily construction oversight inspections to be conducted by the IQAT. The following are meetings and inspections anticipated for each phase of RA construction:

- Pre-construction Meeting – ARC will initiate and conduct a pre-construction meeting with the RA Supervising Contractor, Agency personnel, and other involved parties prior to the start of each RA construction season. The goal of this meeting includes familiarizing all parties with the requirements of the project; safety concerns and hazards; any relevant access and logistical issues; and verifying that the design criteria specified in the RAWP/FDR, associated ISWPs, Standard Drawings, and Technical Specifications are understood.
- Weekly Progress Meetings – Weekly progress meetings will be conducted during construction to inform all parties of scheduling changes, the overall RA implementation progress, and any other relevant construction issues, as necessary. Weekly progress meetings will be scheduled for a common day and time that is mutually agreed upon by all parties involved. Weekly progress meetings may be changed to a less frequent schedule if construction activities become routine and weekly meetings are not warranted. The Construction Subcontractor's Construction Project Manager or QC Manager will attend the weekly progress meetings.
- Periodic Inspections – The EPA Field Oversight representative will conduct periodic inspections of the RA work. At EPA's request, the QA Team Leader or designee will accompany the EPA Field Oversight representative during inspections.
- Final Inspection – The ARC Project Coordinator will schedule an inspection to review the construction of the remedy and whether the remedy is functioning properly and as designed. In addition to the ARC Project Coordinator, the inspection will be attended by the Supervising Contractor's Project Coordinator and the EPA Field Oversight representative.

- RA Completion Inspection – The RA is "complete" for purposes of the SOW when it has been fully performed and the Performance Standards have been achieved. Following submittal of the RA CCR, the ARC Project Coordinator will schedule an inspection for the purpose of obtaining EPA's Certification of Remedial Action Completion. The inspection will be attended by the Supervising Contractor's Project Coordinator and the EPA Field Oversight representative.

6.4 Remedial Action Construction Completion Report

Upon completion of the construction phase of the RA, a CCR will be completed and submitted to EPA to document the RA construction and to request EPA's determination that the RA construction has been completed. As described in section 5.7(c) of the SOW, the CCR will, unless the requirement is waived by the EPA Project Coordinator, include statements by ARC's Project Coordinator that the construction of the remedy is complete and is functioning properly and as designed, a demonstration and supporting documentation that construction of the remedy is complete and is functioning properly, and as-built drawings. The report will be comprehensive and will contain a description of all QA/QC activities, and a summary of the results, significant events, and supporting data. The report will not include the Daily Construction Logs; however, significant or relevant portions of the logs may be used or referenced. The CCR will be prepared in accordance with Chapter 2 (Remedial Action Completion) of EPA's *Close Out Procedures for NPL Sites* guidance (EPA, 2022), as supplemented by *Guidance for Management of Superfund Remedies in Post Construction* (EPA, 2017). The CCR will include the deliverables certification statement from section 7.5 of the SOW.

6.5 Remedial Action Report

Following the RA Completion Inspection, ARC will prepare and submit a Remedial Action Report (RA Report) to EPA requesting EPA's Certification of Remedial Action Completion. The RA Report will include as-built drawings and certifications by a registered professional and by ARC's Project Coordinator that the RA is complete. As described in section 5.8(b) of the SOW, the RA Report will be prepared in accordance with Chapter 2 (Remedial Action Completion) of EPA's *Close Out Procedures for NPL Sites* guidance (EPA, 2022), supplemented by *Guidance for Management of Superfund Remedies in Post Construction* (EPA, 2017). It will contain monitoring data and other appropriate information to demonstrate that Performance Standards have been achieved. The RA Report will be signed by ARC's Project Coordinator and will include the deliverables certification statement from section 7.5 of the SOW.

6.6 Document Retention and Storage

Daily Project Logs, photographs, QA testing documents, and other construction QA/QC documentation will be retained and stored by the Supervising Contractor. The Supervising Contractor's Geographic Information System (GIS) will serve as the primary database for RA. Upon conclusion of the OU1 Community Soils RA, it is anticipated that this database will be transmitted to ARC and the appropriate local, state, and federal agencies. ARC will retain records, reports, and other information until 10 years after the Certification of Completion of the work and will provide records to EPA and MDEQ upon request.

7. SITE CONTROLS DURING CONSTRUCTION

Site controls that will be implemented during RA construction are related to management of solid waste, stormwater discharge, fugitive dust, run-on and runoff, and noxious weeds as described in the following Subsections.

7.1 Solid Waste Management

ARARs related to treatment, storage, or disposal of solid waste per the Solid Waste Management Statutes and Regulations listed in Section 3.1.2 of this CQA/CP and will be addressed during the RA.

All solid waste management statutes and regulations will be adhered to during RA construction. If additional stockpile locations are added within OU1 or OU2, the area proposed for the soil stockpile will be evaluated prior to construction to verify that all applicable requirements are being met.

7.2 Stormwater Discharge Controls

Stormwater discharge will be controlled during RA construction to comply with the ARARs listed in Section 3.1.2 of this CQA/CP.

Surface drainage from disturbed areas that have been graded, seeded, or planted must be treated by the best technology currently available (BTCA) before discharge. Sediment control through BTCA practices must be maintained until construction in the disturbed area has been completed, the revegetation requirements have been met, and the area meets state and federal requirements for the receiving stream.

7.3 Fugitive Dust Control

Fugitive dust emissions will be controlled during RA construction to comply with the ARARs for air quality, listed in Section 3.1.2 of this CQA/CP.

Best Management Practices (BMPs) to minimize air emissions will be implemented during all RA activities. Dust control measures may include: water application to removal areas and haul roads, vehicle speed restrictions, construction of windbreaks around the excavation areas, using paved surfaces for construction traffic when feasible, work activity modification or shutdown during times of high winds, and covering loads during transport to and from the excavation and consolidation areas. BMPs are expected to reduce dust to acceptable levels throughout the Black Eagle community and nearby areas. The need for dust suppression will be determined based on visual observations during construction activities. A final decision regarding what, if any, dust control measures are required will be made by the Supervising Contractor's Project Coordinator and the EPA Field Oversight representative.

7.4 Solid Waste Run-on and Runoff Controls

Run-on and runoff control systems will be required during RA construction to comply with the ARARs listed in Section 3.1.2 of this CQA/CP.

The Construction Subcontractor will practice good housekeeping in order to keep the construction site clean and tidy. This includes not working during muddy conditions and using track-out control mats to prevent tracking sediment off site. BMPs will be employed when construction operations are in progress in

and around natural drainages to minimize the potential for downstream transport of sediments. During grading activities, standard engineering practices will be followed to divert potential stormwater run-on flows around the work area and minimize stormwater runoff from transporting sediment off-site to the extent practicable. BMPs for stormwater and sediment control (e.g., upgradient berms, straw bale check dams, and temporary silt fencing) will be implemented as needed during RA activities based on site-specific conditions. BMPs will be inspected and maintained as appropriate.

7.5 Noxious Weed Controls

Montana law requires the control and/or avoidance of certain plants classified as noxious weeds during revegetation and monitoring activities. Compliance with ARARs listed in Section 3.1.2 of this CQA/CP will be required. Designated noxious weeds are listed in Administrative Rules of Montana (ARM) §4.5.201 and ARM §4.5.206 through §4.5.210 and must be managed consistent with criteria developed under §7-22-2109(2)(b), MCA.

The presence of noxious weeds will be evaluated prior to beginning work at a property to ensure all requirements are met or planned for before RA construction is commenced. Presence of noxious weeds on a property may require cleaning of equipment before that equipment is used on replaced materials (e.g., borrow soil, aggregate, etc.) or before moving equipment to a new property. The need for equipment cleaning will be determined on a specific property basis by the Supervising Contractor in consultation with the Agency field representative. The seed mixes and mulches used for RA construction shall be Montana Noxious Weed Seed Free as identified in the Technical Specifications (Appendix H of the RAWP/FDR).

8. REFERENCES

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TABLES

Table D-1: Material Certification Requirements

Table D-2: Cover Soil Suitability Criteria

Table D-1: Material Certification Requirements

Material/Equipment	Specific Certifications Required
Aggregates	General Crushed Top Surfacing Material, Decorative Top Surfacing Material
Fence	Fence Posts, Fence Panels
Revegetation	Seed, Fertilizer, Sod, Mulch

Table D-2: Cover Soil Suitability Criteria

Parameter	Acceptance Criteria
Texture	Cannot be sand, clay, or loamy sand
Rock Fragments	<45% by volume in the bank, 6-inch maximum rock diameter
Saturation Percent	>25% and <85%
pH	>6.5 and <8.5 standard units
Electrical Conductivity	<4,000 umhos/cm(1) with standard seed mix <6,000 umhos/cm for salt tolerant
Sodium Adsorption Rate	<12 for root zone materials <20 for general fill
Total Elemental Concentration Arsenic Cadmium Copper Lead Zinc	 <30 mg/kg(2) <4 mg/kg <250 mg/kg <100 mg/kg <250 mg/kg
Organic Matter	Minimum 1.5% (existing or amended to)

Notes:

(1) "umhos/cm" is micromhos per centimeter.

(2) "mg/kg" is milligrams per kilogram.

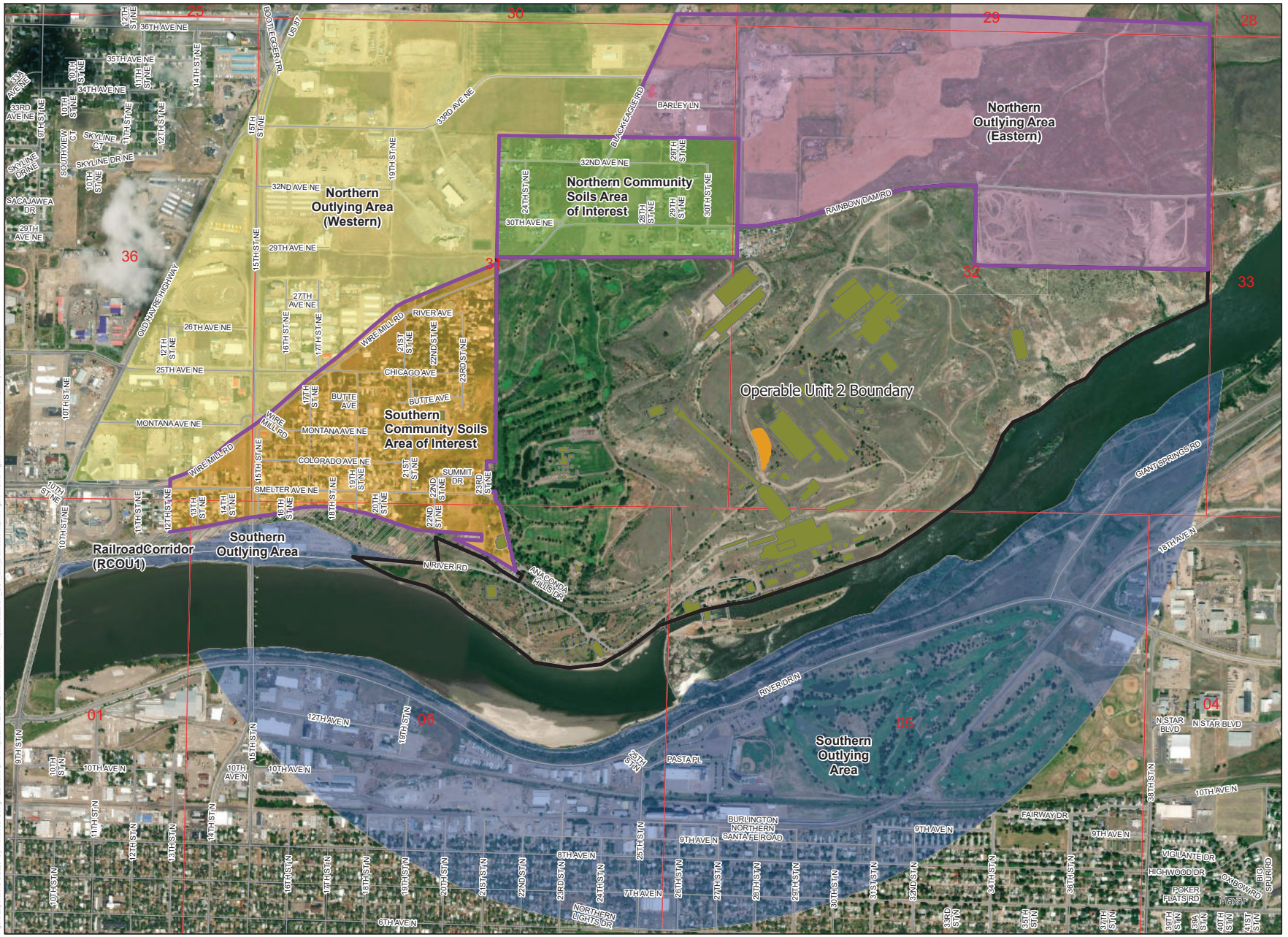
Woodard & Curran

FIGURES

Figure D-1: ACM Smelter and Refinery Site Location

Figure D-2: Construction Quality Control/Quality Assurance Organization Chart

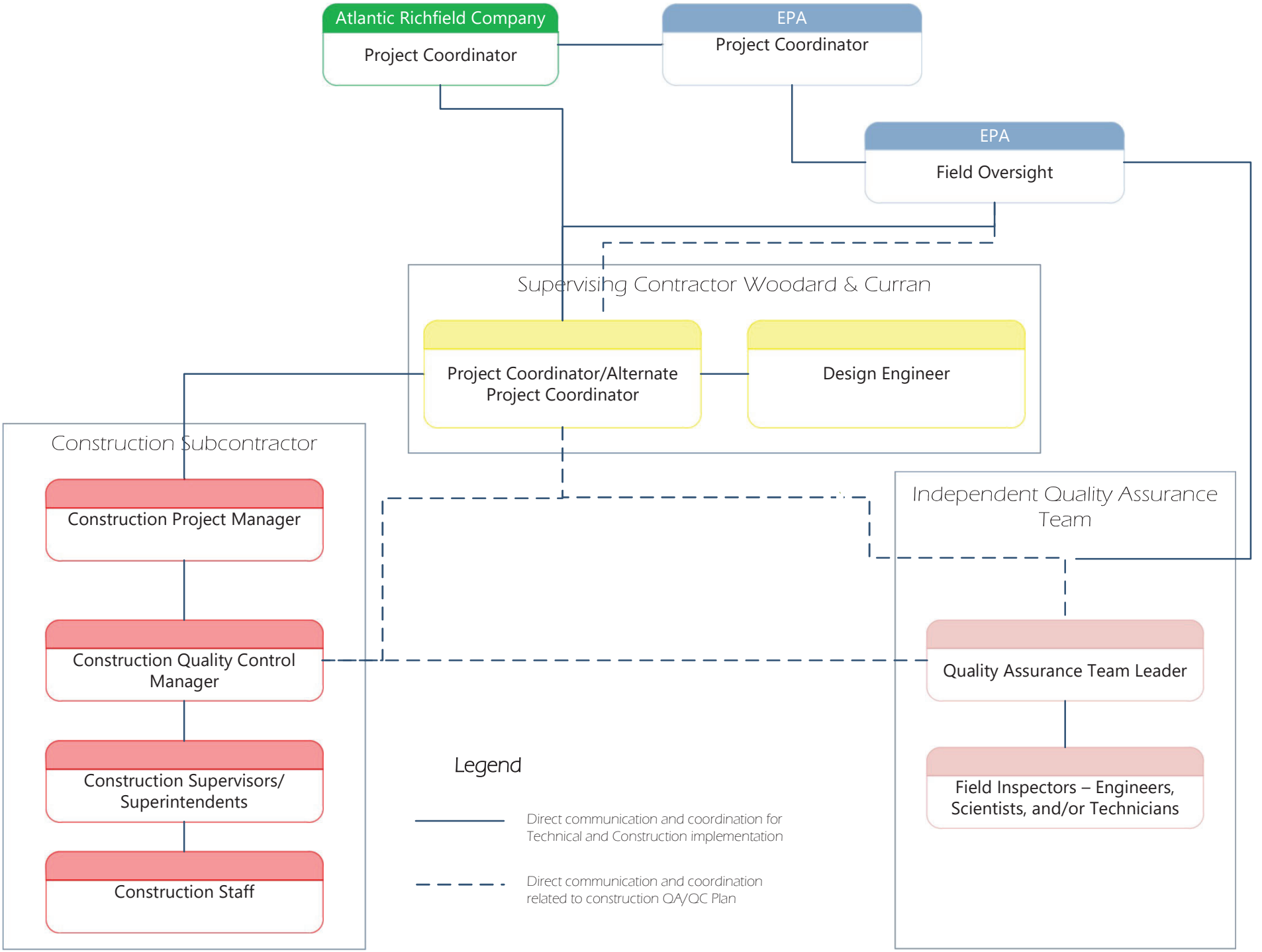
Figure D-1: ACM Smelter and Refinery Site Location



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Figure D-2: Construction Quality Control/Quality Assurance Organization Chart

Figure D-2. Construction Quality Control/Quality Assurance Organization Chart



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ATTACHMENT D1: FIELD STANDARD OPERATING PROCEDURES

SOP – GF – G – 01

Field Documentation

Authorized for use: 02/21/23
Revision 1

Scope	This SOP addresses field documentation including notes in field books on field forms (including electronic forms) and photographs.
TRA(s) Referenced/ Reviewed	
Stop Work Triggers	Lightning (30 second rule) Extreme wind Unsafe conditions Inadequate PPE or equipment Inability to access site safely
PPE Required	Hard Hat Safety Toe Boots Safety Glasses High Visibility Shirt or Vest Gloves (Leather, impervious) Long Pants & Long-Sleeve Shirt Snake Gaiters (Required when the high temp is expected to be above 50°F)
Other Referenced SOPs	
Required Tools	Field logbook Pen with indelible ink, black Electronic tablet, when applicable
Trained, Competent, & Authorized Personnel	Charlie Rogers Nico Harrison
PROCEDURES	
Field Logbook - General	A separate field logbook will be used for each field task (NBS investigation, storm water sampling, soil sampling, etc.). Each logbook shall have a unique document control number. The logbooks will be bound and have consecutively numbered pages. The information recorded in these logbooks shall be written in indelible ink. The author will initial and date entries at the end of each day, and a line shall be drawn through the remainder of the page. All corrections will consist of a single line-out deletion in indelible ink followed by the author's initials and the date. No bound field logbooks will be destroyed or thrown away even if they are illegible or contain inaccuracies that require a replacement document.
Required Logbook entries	1. The date shall be entered at the top of each page, 2. The purpose and description of the proposed field task, 3. Time and date fieldwork started, 4. Location and description of the work area, including sketches where helpful, any map and photograph references, and sketches of well construction details, soils, pits, etc., 5. Names of field personnel and subcontractors, 6. Name and affiliation of any field visitors, 7. Name, address, and phone number of any field contacts, 8. Meteorological conditions at the beginning of fieldwork and any ensuing changes in these conditions, 9. Documentation of tailgate safety meeting, 10. Documentation of any equipment calibrations, 11. Details of the fieldwork performed and field data sheets used (including document control numbers), with special attention to any deviations from the task-specific Quality Assurance Project Plan (QAPP) and/or Standard Operating Procedures (SOPs), 12. All field measurements made or reference to network location of field forms, and 13. Personnel and equipment decontamination procedures.

Required Logbook Entries for any Field Sampling	1. Sample location and sample identification, 2. Sample type (i.e., ground water) and sample aliquots collected, 3. Date and time of sample collection, 4. Split samples taken by other parties. Note the type of sample, sample location, time/date, name of person, person's company, any other pertinent information, 5. Sampling method, particularly any deviations from the SOP, 6. Any field analytical results (i.e. field soil pH) or measurements (ORP, SC, etc. for water sampling), 7. Sample preparation, including filtration and preservation, handling, packaging, labeling, shipping tracking number, the shipping agent, laboratory where the samples will be sent, and the address and contact number of the laboratory, and 8. Equipment decontamination process.
Supplemental Logbook Entries	Any unusual circumstances should be noted in the field book, and photographic evidence should be provided where practical.
Field Forms - General	Electronic field forms or notes can be used in lieu of field notebook entries for specific tasks: Electronic forms will include field logbooks elements as follows: 1. Electronic forms will automatically default to the current date (the date the form is being used) and each form will include a date, 2. Electronic forms will be developed for specific tasks, thus the task purpose will be implied, 3. Current time and date will autofill when selected, 4. Forms will include location with the option of selecting the location from a drop-down menu or typing a location in, 5. Forms will include names of field personnel with the option of selecting from a drop-down menu or typing names in, 6. Meteorological conditions at the beginning of fieldwork and any ensuing changes in these conditions (changes will be noted in the comments section), 7. Tailgate safety meetings will be documented on Field Authorization Forms, 8. Equipment calibrations will be documented on electronic field forms, 9. Any deviations from the task-specific Quality Assurance Project Plan (QAPP) or Standard Operating Procedures (SOPs) will be documented in the comments section and the field book used will be referenced if additional notes have been made in the field book, 10. All field measurements made, 11. Personnel and equipment decontamination procedures. For sample collection, forms will also include: 1. Sample location and number, 2. Sample type (i.e., ground water), and sample aliquots collected, 3. Date and time of sample collection, 4. Any field laboratory analytical results, and 5. Sample preparation, including filtration and preservation.
Field Photographs	Electronic field forms have photographic capabilities, and if field photos are taken, it is preferable to capture them in field forms. If it is not possible to capture a photo in a field form, a digital camera shall be used. Specifically, photographs should be taken of unexpected circumstances (for example, channel erosion caused by high flows). Photographs should include a scale in the picture when warranted and practical.
Required Documentation for Field Photographs	1. The photographer's name, date, time, and the general direction faced; 2. A brief description of the subject and the fieldwork portrayed in the picture; and 3. Sequential number of the photograph. If photos are captured within electronic field forms, the photographer's name, the date, and time will be implied since it's within the form. The photo will be associated with the field work inherent to the form. Thus it is not necessary to record these the photographer's name, the date and time of the photo, or a sequential number for the photo. However, once the photo is downloaded/uploaded, the photo will be named to include the photo date and either named or placed in a folder structure which implies the photo subject.
Field Documentation Storage	Field logbooks will be stored in a secure location accessible to the Quality Assurance Officer. Field logbooks will be scanned to the server on a quarterly basis.

ATTACHMENT D2: NON-CONFORMANCE REPORT FORM AND LOG

Woodard & Curran	Non-Conformance Report	ACM Smelter Site OU1 Community Soils (0231336)	Page 1 of 1
To:		**Date:**	
From:		**cc:**	
NCR No.		**Property ID:**	
Background:			
Deficiency or Condition Description:			
Proposed Approach/Schedule for Corrective Action (CA):			
Comments:			

Woodard & Curran	Non-Conformance Report Log					ACM Smelter Site OU1 Community Soils (0231336)		Page 1 of 1
Construction Subcontractor								
NCR No.	**Condition Description**	**Originator**	**Date Recorded**	**Date NCR Issued**	**Proposed Corrective Action (CA)**	**Approval of Proposed CA**	**Date CA Completed**	**Date CA Accepted**

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APPENDIX E: INDIVIDUAL SITE WORK PLANS, LANDOWNER ACCESS AGREEMENT AND DATA NOTIFICATION LETTER (EXAMPLES), AND STATEMENT OF COMPLETION (EXAMPLE)

Woodard & Curran

ACM SMELTER & REFINERY SITE OU1 COMMUNITY SOILS

Final Appendix E Individual Site Work Plans, Landowner Access Agreement and Data Notification Letter (Example) and Statement of Completion (Example)

Prepared for:

Atlantic Richfield Company

317 Anaconda Road

Butte, Montana 59701

Prepared by:

Woodard & Curran

601 Riverside Drive South

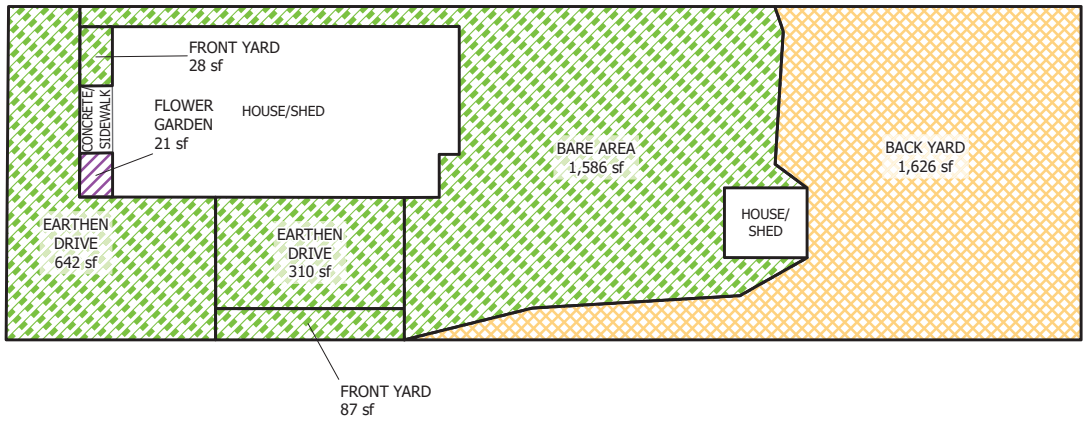
Great Falls, Montana 59405

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0231336

Atlantic Richfield Company

June 2023



Resident ID
BE-001

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-001			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-001-BA	Bare Area (BA)	1,586	27	26	68	83	174	128	30	90	-	-	-	-	-	-
BE-001-BY	Back Yard (BY)	1,626	21	42	13	14	409	16	167	140	-	30.1	30.1	1,626	-	-
BE-001-DZ	Drip Zone (DZ)	220	14	9	18	39	53	204	49	187	-	-	-	-	-	-
BE-001-ED	Earthen Drive (ED)	952	26	17	58	66	130	143	147	10	-	-	-	-	-	-
BE-001-FG	Flower Garden (FG)	21	16	16	18	14	193	246	1500	248	-	0.8	0.8	21	-	-
BE-001-FY	Front Yard (FY)	115	41	8	11	11	48	59	75	16	-	-	-	-	-	-
	TOTALS	4,520										30.9	30.9	1,647		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable **to 24 inches** below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Any reliance upon the map or data contained herein shall be at the users' sole risk. Data Sources: GPS Survey



Resident ID
BE-008B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-008B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-008B-BY	Back Yard (BY)	3,623	21	25	69	43	129	110	207	79	-	-	-	-	-	-
BE-008B-DZ	Drip Zone (DZ)	220	39	44	39	26	317	237	153	104	-	-	-	-	-	-
BE-008B-ED	Earthen Drive (ED)	177	16	35	59	30	106	130	158	8	-	-	-	-	-	-
BE-008B-FY	Front Yard (FY)	2,053	42	44	29	43	465	333	367	220	-	38.0	38.0	2,053	-	-
TOTALS		6,073										38.0	38.0	2,053		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

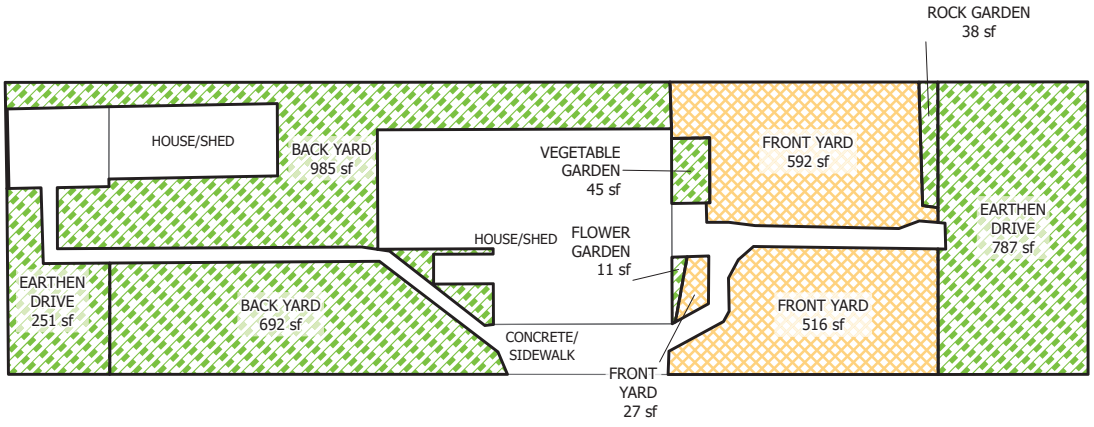
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-011

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-011			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-011-BY	Back Yard (BY)	1,677	22	32	55	41	225	138	113	14	-	-	-	-	-	-
BE-011-DZ	Drip Zone (DZ)	220	32	74	40	73	274	348	52	137	-	-	-	-	-	-
BE-011-ED	Earthen Drive (ED)	1,038	37	64	71	43	220	305	120	11	-	-	-	-	-	-
BE-011-FG	Flower Garden (FG)	11	25	18	17	38	224	187	102	121	-	-	-	-	-	-
BE-011-FY	Front Yard (FY)	1,135	33	24	35	110	559	83	52	310	-	21.0	21.0	1,135	-	-
BE-011-RG	Rock Garden (RG)	38	21	31	25	17	100	80	82	21	-	-	-	-	-	-
BE-011-VG	Vegetable Garden (VG)	45	22	32	41	32	190	82	173	226	-	-	-	-	-	-
	TOTALS	4,164										21.0	21.0	1,135		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/Flower garden** component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable **to 24 inches** below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

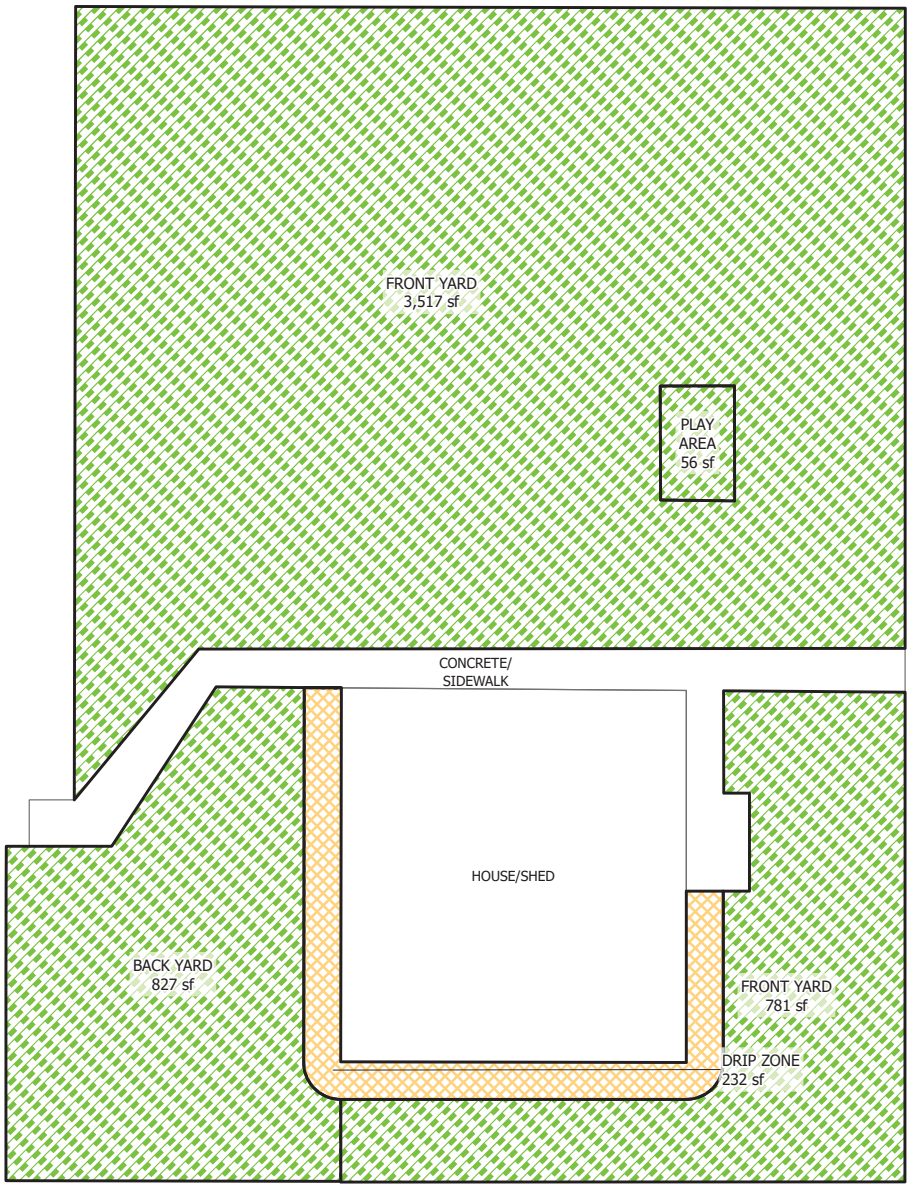
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-014

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-014			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-014-BY	Back Yard (BY)	827	22	37	51	43	219	202	104	43	-	-	-	-	-	-
BE-014-DZ	Drip Zone (DZ)	232	21	25	37	21	447	224	70	27	-	4.3	4.3	232	-	-
BE-014-FY	Front Yard (FY)	4,298	16	27	131	29	171	181	83	43	-	-	-	-	-	-
BE-014-PA	Play Area (PA)	56	15	26	32	47	135	177	157	53	-	-	-	-	-	-
	TOTALS	5,413										4.3	4.3	232		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable **to 24 inches** below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

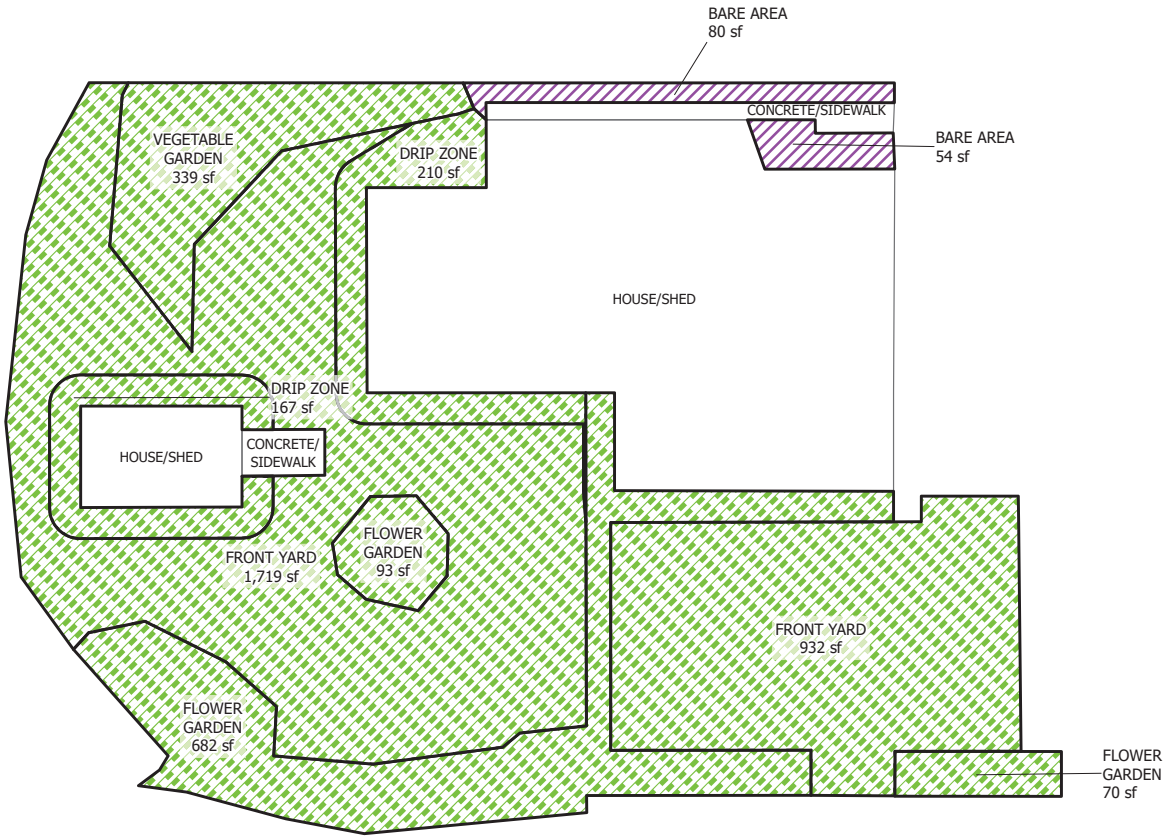
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions.
Any reliance upon the map or data contained herein shall be at the users' sole risk. Data Sources: GPS Survey



Resident ID
BE-020A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-020A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-020A-BA	Bare Area (BA)	134	27	32	33	50	130	169	488	114	-	5.0	5.0	134	-	-
BE-020A-DZ	Drip Zone (DZ)	377	15	17	20	21	84	93	114	53	-	-	-	-	-	-
BE-020A-FG	Flower Garden (FG)	845	21	25	38	59	107	130	177	313	-	-	-	-	-	-
BE-020A-FY	Front Yard (FY)	2,651	21	19	24	51	122	93	156	204	-	-	-	-	-	-
BE-020A-VG	Vegetable Garden (VG)	339	20	18	14	13	101	57	52	69	-	-	-	-	-	-
	TOTALS	4,346										5.0	5.0	134		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

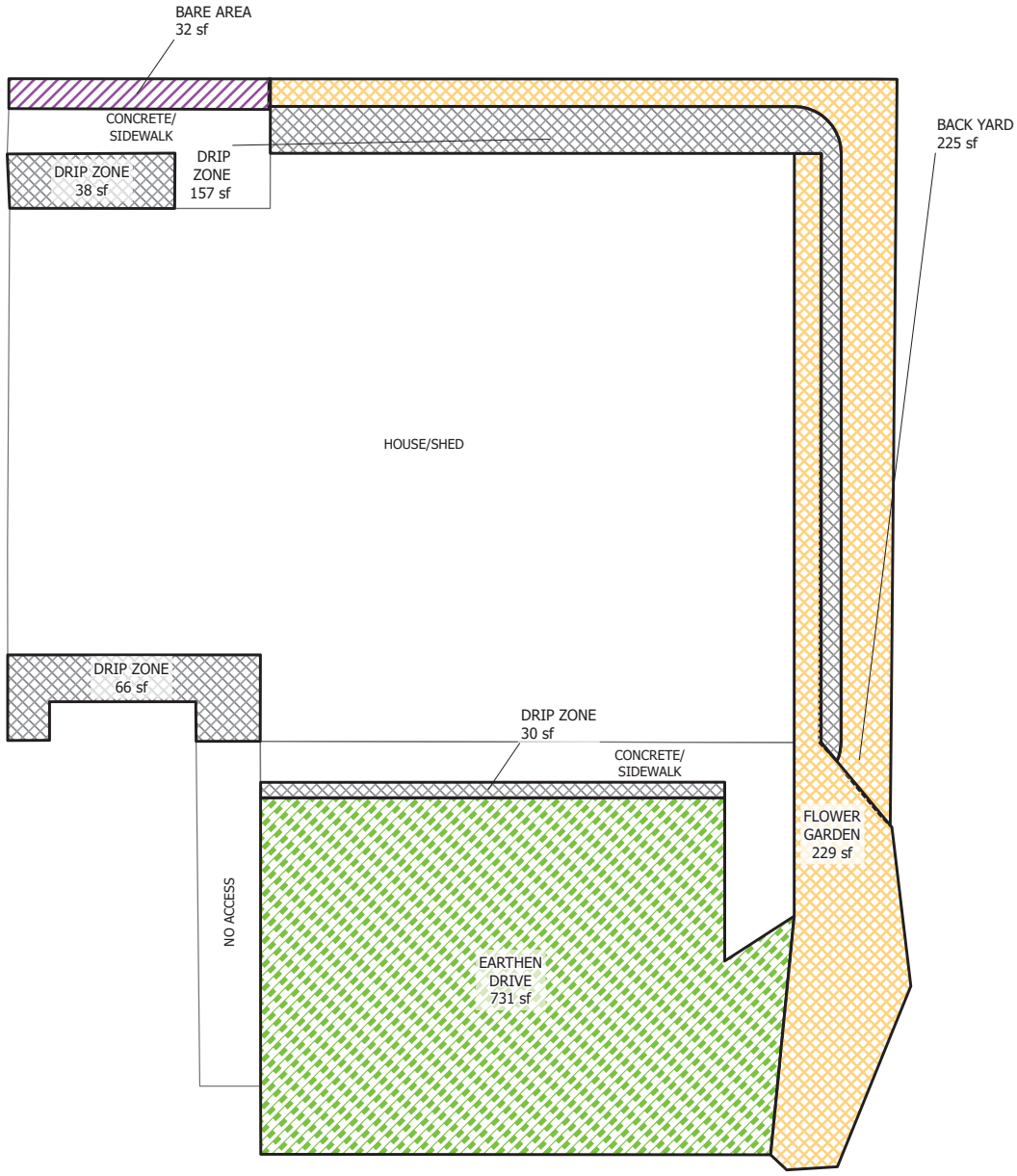
Legend
No Action
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-020B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)									
BE-020B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-020B-BA	Bare Area (BA)	32	27	32	33	50	130	169	488	114	-	1.2	1.2	32	-	-
BE-020B-BY	Back Yard (BY)	225	28	39	50	22	92	478	356	33	-	4.2	4.2	225	-	-
BE-020B-DZ	Drip Zone (DZ)	291	19	41	45	48	76	223	451	1310	-	16.2	16.2	291	-	-
BE-020B-ED	Earthen Drive (ED)	731	33	41	32	31	156	167	96	108	-	-	-	-	-	-
BE-020B-FG	Flower Garden (FG)	229	31	57	39	27	89	713	207	99	-	4.2	4.2	229	-	-
	TOTALS	1,508										25.8	25.8	777		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

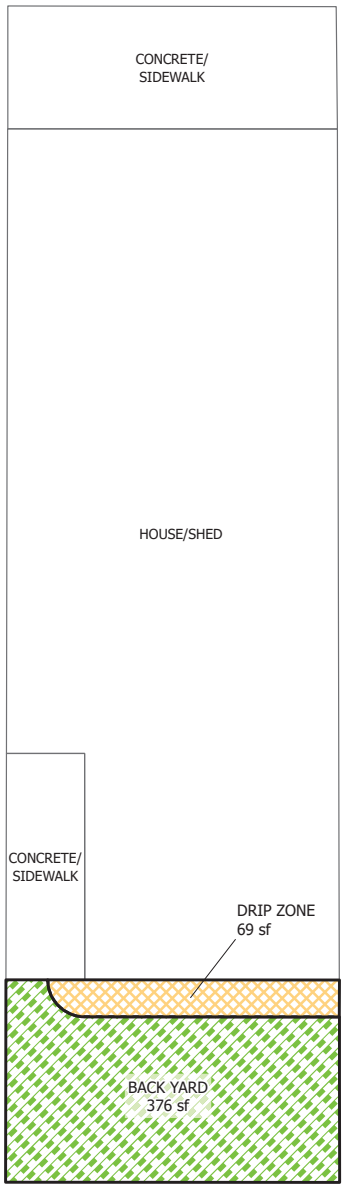
Legend
No Action
6" RA
12" RA
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-021A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-021A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-021A-BY	Back Yard (BY)	376	20	33	42	42	297	320	390	148	-	-	-	-	-	-
BE-021A-DZ	Drip Zone (DZ)	69	25	26	54	61	556	517	258	167	-	1.3	1.3	69	-	-
TOTALS		445										1.3	1.3	69		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

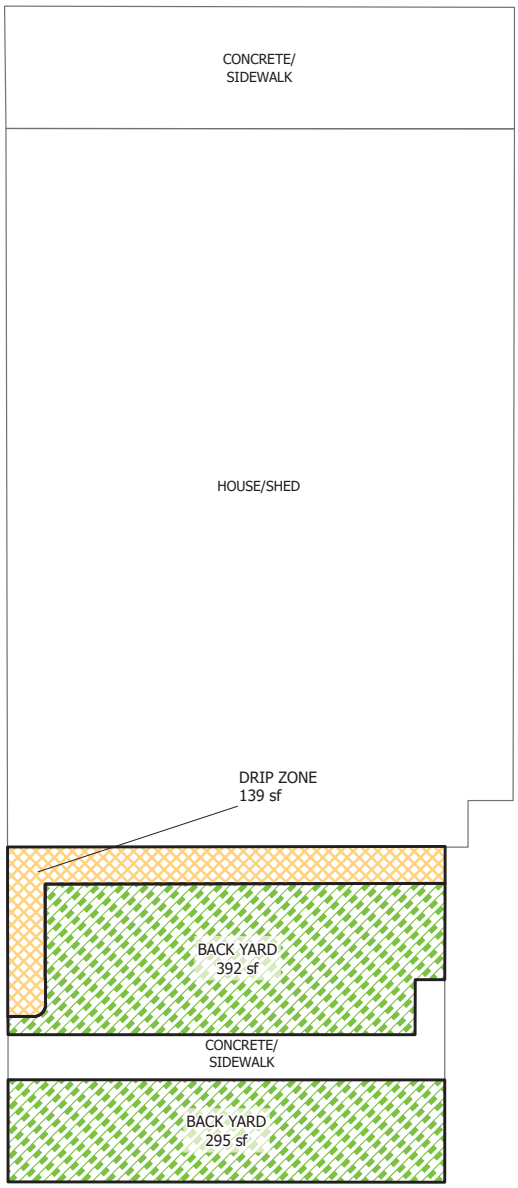
Legend
No Action
6" RA

0 10 20 Feet

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Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-021B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-021B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-021B-BY	Back Yard (BY)	687	15	24	26	28	179	231	272	264	-	-	-	-	-	-
BE-021B-DZ	Drip Zone (DZ)	139	30	31	27	17	1270	394	219	37	-	2.6	2.6	139	-	-
TOTALS		826										2.6	2.6	139		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

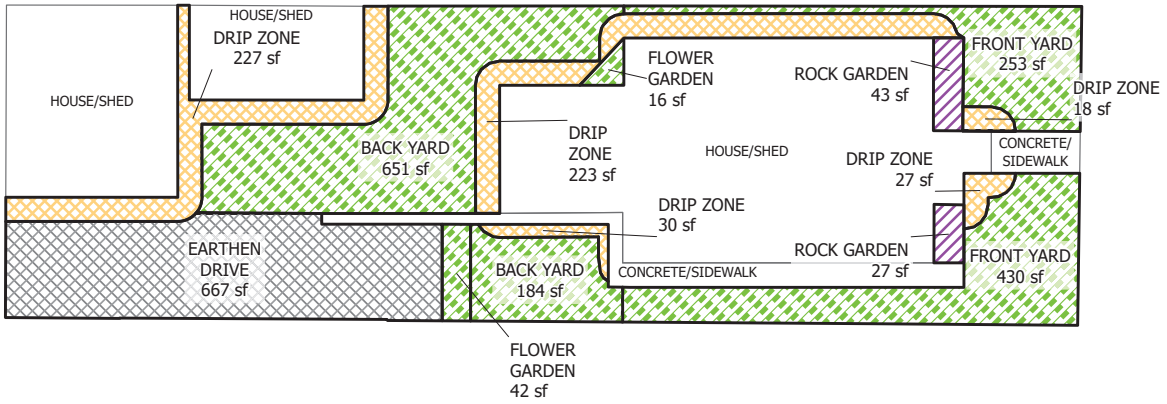
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No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-024

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-024			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-024-BY	Back Yard (BY)	835	14	17	24	26	139	224	186	125	-	-	-	-	-	-
BE-024-DZ	Drip Zone (DZ)	525	21	37	39	21	436	491	318	97	-	9.7	9.7	525	-	-
BE-024-ED	Earthen Drive (ED)	667	17	29	59	147	230	327	183	707	-	37.1	24.7	-	12.4	-
BE-024-FG	Flower Garden (FG)	58	55	77	22	27	117	128	74	237	-	-	-	-	-	-
BE-024-FY	Front Yard (FY)	683	18	22	25	17	313	335	228	50	-	-	-	-	-	-
BE-024-RG	Rock Garden (RG)	70	17	26	27	18	420	540	629	77	-	2.6	2.6	-	-	-
	TOTALS	2,838										49.4	37.0	525	12.4	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

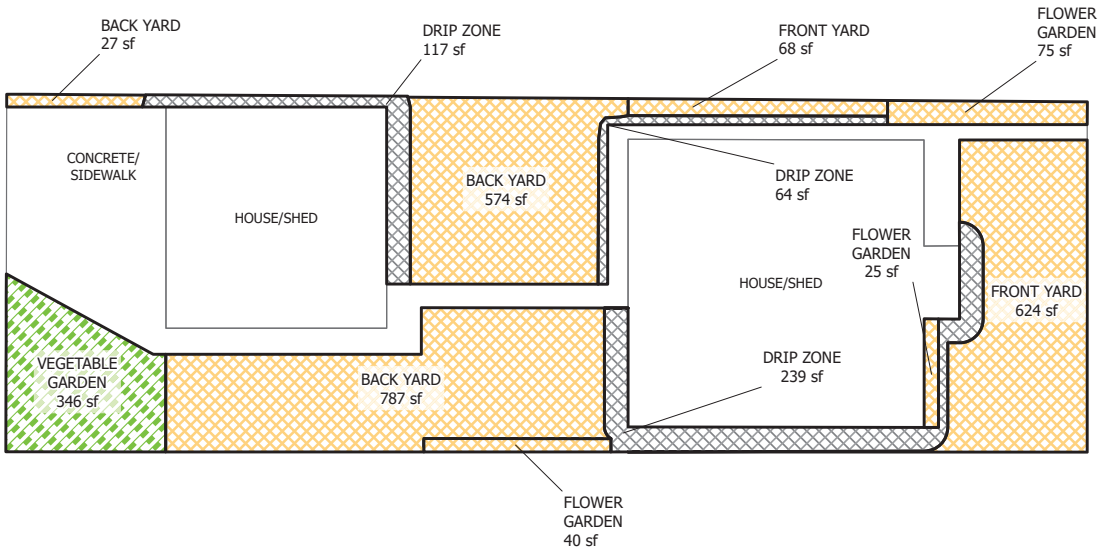
Legend
- No Action
- 6" RA
- 12" RA
- 18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-025

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-025			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-025-BY	Back Yard (BY)	1,388	23	20	26	17	481	131	55	16	-	25.7	25.7	1,388	-	-
BE-025-DZ	Drip Zone (DZ)	420	25	23	37	16	1180	438	135	426	-	23.3	23.3	420	-	-
BE-025-FG	Flower Garden (FG)	140	20	22	42	39	891	602	80	39	-	2.6	2.6	140	-	-
BE-025-FY	Front Yard (FY)	692	43	24	37	61	75	568	111	152	-	12.8	12.8	692	-	-
BE-025-VG	Vegetable Garden (VG)	346	19	19	15	9	222	206	129	14	-	-	-	-	-	-
	TOTALS	2,986										64.4	64.4	2,640		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

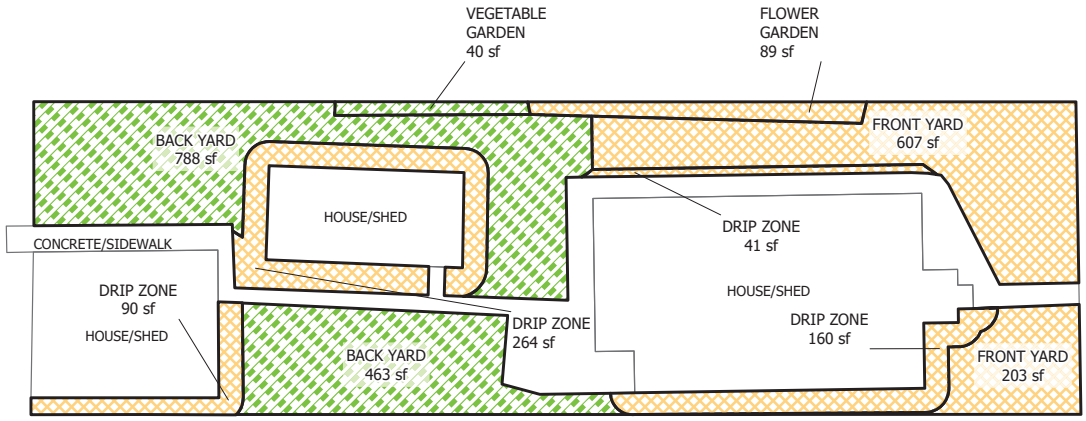
Legend
No Action
6" RA
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-026

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-026			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-026-BY	Back Yard (BY)	1,251	31	30	36	25	399	220	89	19	-	-	-	-	-	-
BE-026-DZ	Drip Zone (DZ)	555	44	59	56	53	877	465	191	114	-	10.3	10.3	555	-	-
BE-026-FG	Flower Garden (FG)	89	33	39	52	41	527	184	121	50	-	1.6	1.6	89	-	-
BE-026-FY	Front Yard (FY)	810	33	34	36	61	810	160	118	79	-	15.0	15.0	810	-	-
BE-026-VG	Vegetable Garden (VG)	40	7	8	10	12	44	56	46	73	-	-	-	-	-	-
	TOTALS	2,745										26.9	26.9	1,454		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

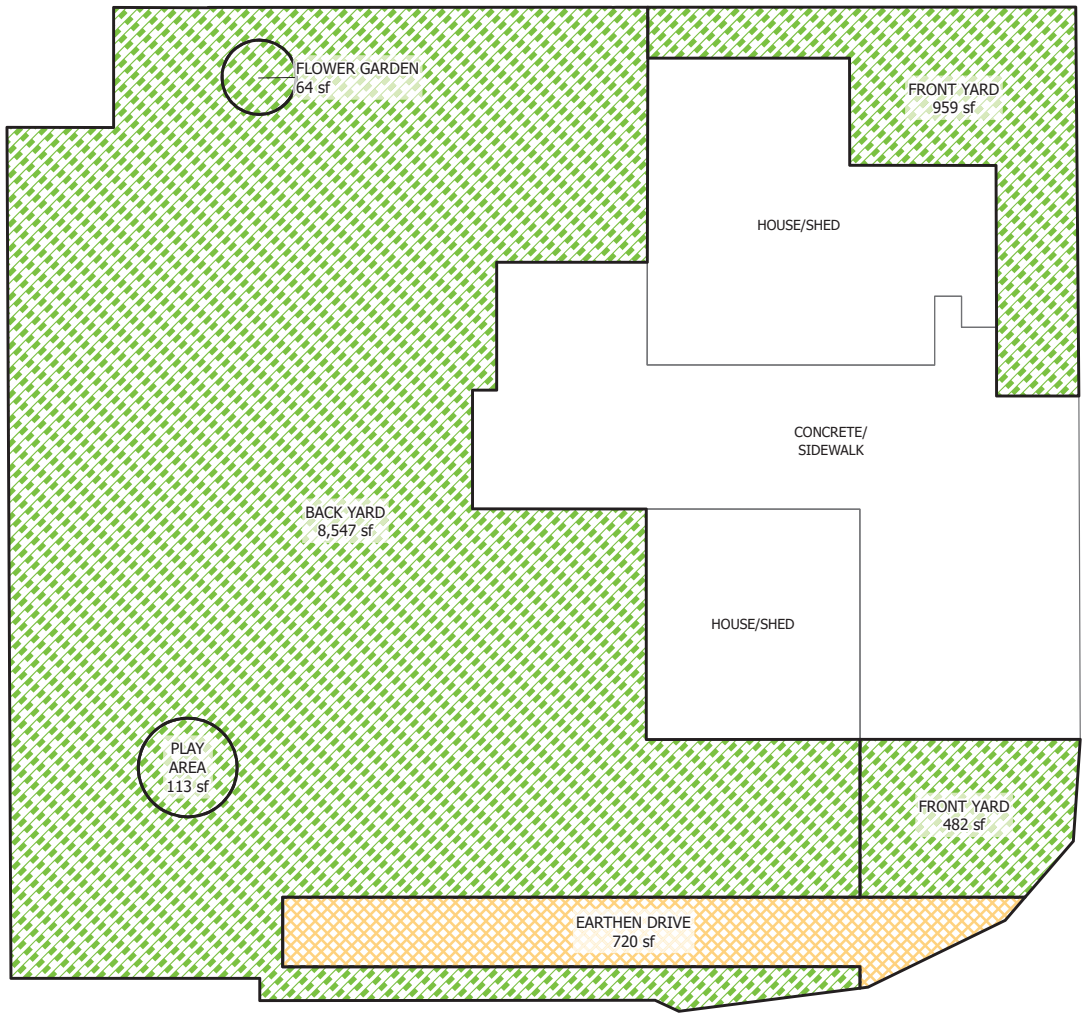
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-027

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-027			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-027-BY	Back Yard (BY)	8,547	21	19	47	49	160	93	33	20	-	-	-	-	-	-
BE-027-DZ	Drip Zone (DZ)	220	19	18	33	21	311	91	43	69	-	-	-	-	-	-
BE-027-ED	Earthen Drive (ED)	720	36	39	37	51	219	444	383	292	-	13.3	-	-	13.3	-
BE-027-FG	Flower Garden (FG)	64	21	16	61	75	230	136	341	213	-	-	-	-	-	-
BE-027-FY	Front Yard (FY)	1,441	18	21	31	47	219	173	133	124	-	-	-	-	-	-
BE-027-PA	Play Area (PA)	113	44	68	112	104	279	264	307	173	-	-	-	-	-	-
	TOTALS	11,105										13.3			13.3	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

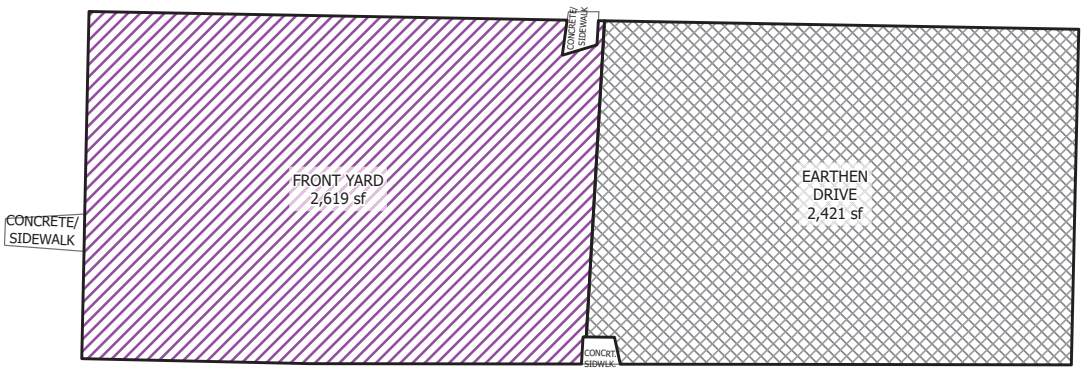
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-028

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-028			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-028-ED	Earthen Drive (ED)	2,421	8	15	32	52	25	327	362	804	-	134.5	89.7	-	44.8	-
BE-028-FY	Front Yard (FY)	2,619	29	38	57	19	348	788	877	125	-	97.0	97.0	2,619	-	-
	TOTALS	5,040										231.5	186.7	2,619	44.8	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

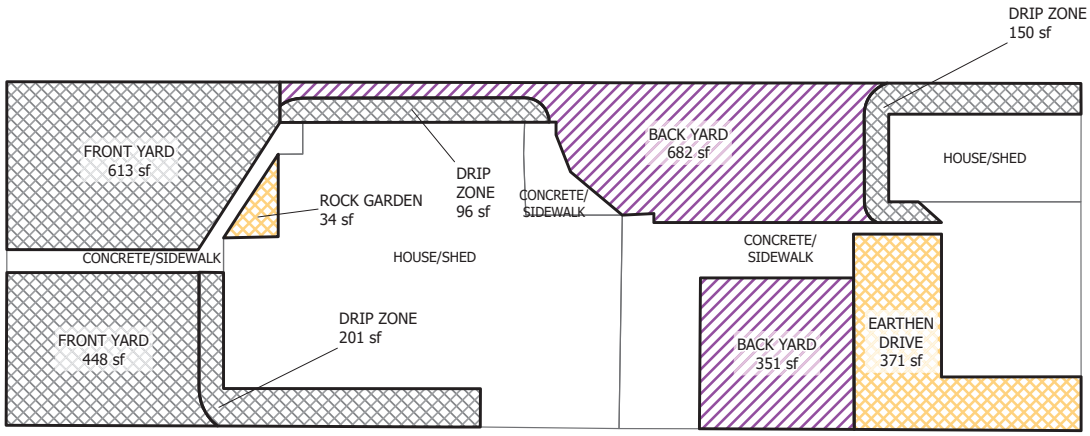
Legend
12" RA
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-029

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-029			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-029-BY	Back Yard (BY)	1,033	25	23	55	45	522	405	507	215	-	38.3	38.3	1,033	-	-
BE-029-DZ	Drip Zone (DZ)	447	29	28	30	29	896	586	263	453	-	24.8	24.8	447	-	-
BE-029-ED	Earthen Drive (ED)	371	13	19	24	36	359	1900	250	225	-	6.9	-	-	6.9	-
BE-029-FY	Front Yard (FY)	1,061	23	27	43	98	483	634	307	466	-	58.9	58.9	1,061	-	-
BE-029-RG	Rock Garden (RG)	34	21	34	45	30	1030	792	127	58	-	0.6	0.6	-	-	-
	TOTALS	2,946										129.5	122.6	2,541	6.9	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

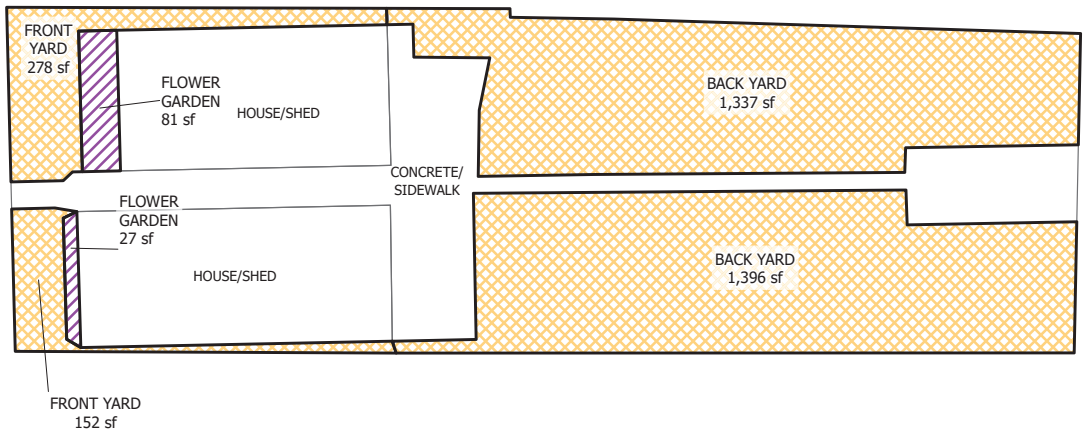
Legend
6" RA
12" RA
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-030

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-030			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-030-BY	Back Yard (BY)	2,733	31	50	59	88	530	587	335	254	-	50.6	50.6	2,733	-	-
BE-030-FG	Flower Garden (FG)	108	18	18	66	42	657	391	434	135	-	4.0	4.0	108	-	-
BE-030-FY	Front Yard (FY)	430	20	41	49	77	456	417	175	259	-	8.0	8.0	430	-	-
	TOTALS	3,271										62.6	62.6	3,271		

Component Arsenic Concentration is > 253 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

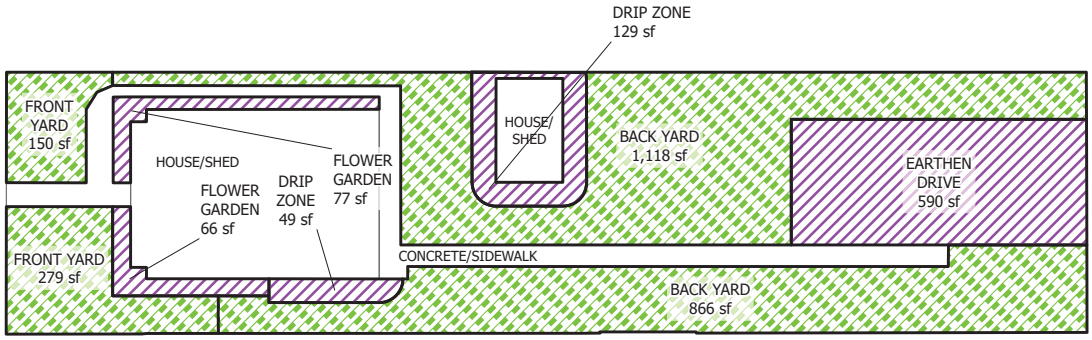
Legend
6" RA
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-031

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-031			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-031-BY	Back Yard (BY)	1,984	28	39	48	29	367	389	201	13	-	-	-	-	-	-
BE-031-DZ	Drip Zone (DZ)	178	30	34	24	15	970	1210	460	151	-	6.6	6.6	178	-	-
BE-031-ED	Earthen Drive (ED)	590	41	80	103	97	432	569	509	384	-	21.9	10.9	-	10.9	-
BE-031-FG	Flower Garden (FG)	143	15	27	31	36	23	785	582	292	-	5.3	5.3	143	-	-
BE-031-FY	Front Yard (FY)	429	29	26	75	87	221	185	231	88	-	-	-	-	-	-
	TOTALS	3,324										33.8	22.8	321	10.9	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

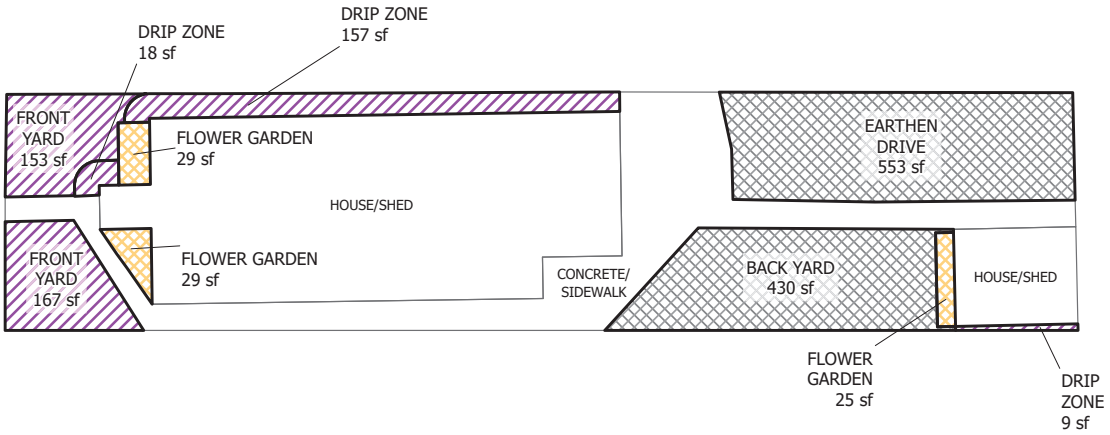
Legend
No Action
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-032

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-032			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-032-BY	Back Yard (BY)	430	25	31	23	40	185	229	292	621	-	23.9	23.9	430	-	-
BE-032-DZ	Drip Zone (DZ)	184	32	51	56	30	595	1120	710	297	-	6.8	6.8	184	-	-
BE-032-ED	Earthen Drive (ED)	553	23	71	31	59	681	653	438	638	-	30.7	20.5	-	10.2	-
BE-032-FG	Flower Garden (FG)	83	40	2	9	10	513	4	39	240	-	1.5	1.5	83	-	-
BE-032-FY	Front Yard (FY)	324	53	85	45	17	734	577	429	68	-	12.0	12.0	324	-	-
	TOTALS	1,574										74.9	64.7	1,021	10.2	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

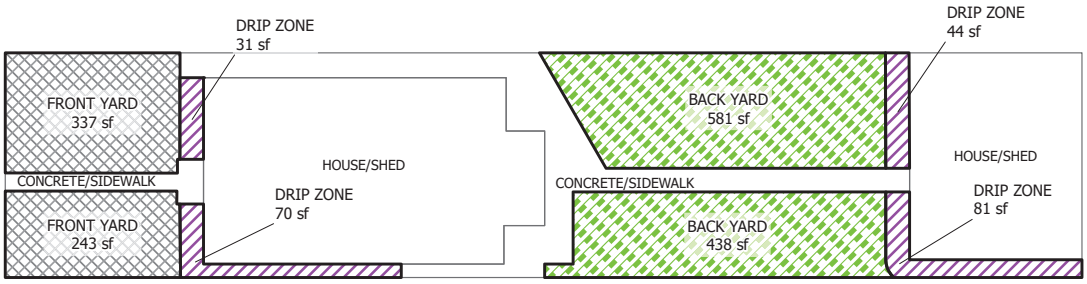
Legend
6" RA
12" RA
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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NOTE: BY Unable to sample due to tree and power line hazard. Additional sampling will be attempted.

Resident ID
BE-033

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-033			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-033-BY	Back Yard (BY)	1,019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	-	-	-	-	-
BE-033-DZ	Drip Zone (DZ)	226	41	27	27	37	217	187	861	163	-	8.4	8.4	226	-	-
BE-033-FY	Front Yard (FY)	580	22	15	15	25	425	76	74	59:	-	32.2	32.2	580	-	-
	TOTALS	1,825										40.6	40.6	806		

Component Arsenic Concentration is > 25) mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

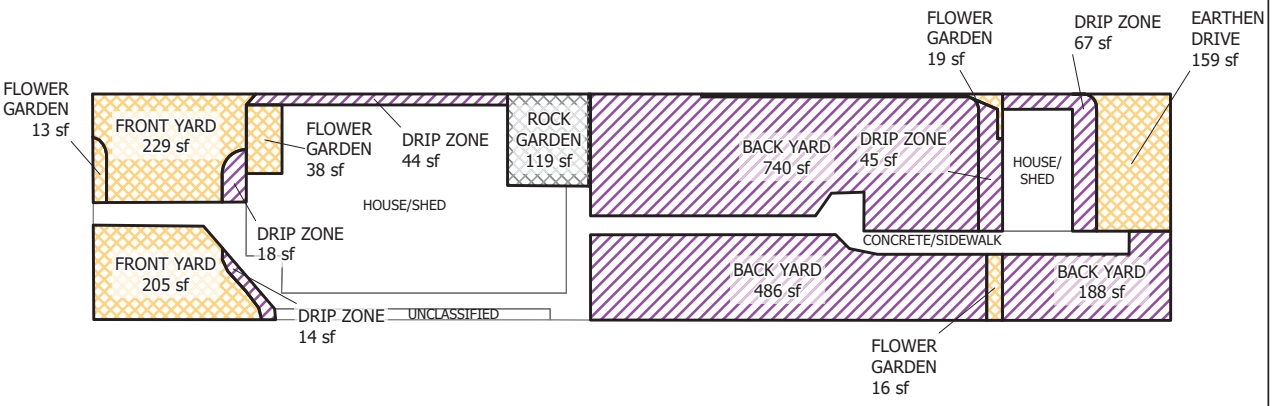
Legend
No Action
12" RA
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
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Resident ID
BE-034

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-034			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-034-BY	Back Yard (BY)	1,414	42	36	53	42	289	333	426	199	-	52.4	52.4	1,414	-	-
BE-034-DZ	Drip Zone (DZ)	188	15	60	50	86	17	633	675	237	-	7.0	7.0	188	-	-
BE-034-ED	Earthen Drive (ED)	159	28	54	46	52	306	743	375	345	-	2.9	-	-	2.9	-
BE-034-FG	Flower Garden (FG)	86	46	39	42	30	437	387	268	79	-	1.6	1.6	86	-	-
BE-034-FY	Front Yard (FY)	434	60	37	41	65	405	418	302	293	-	8.0	8.0	434	-	-
BE-034-RG	Rock Garden (RG)	119	49	59	82	87	466	481	316	601	-	6.6	6.6	-	-	-
	TOTALS	2,400										78.5	75.6	2,122	2.9	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
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Atlantic Richfield Company

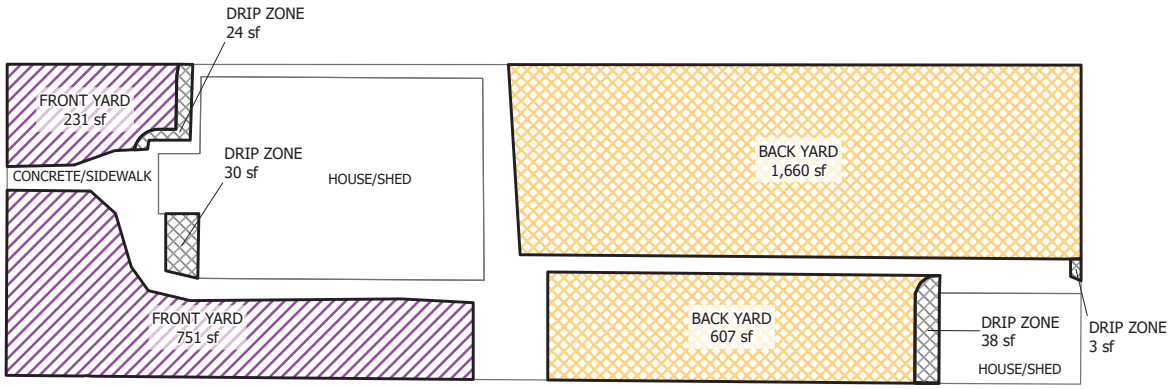
Legend
6" RA
12" RA
18" RA

0 10 20 Feet

N

Woodard & Curran
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Resident ID
BE-035

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-035			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-035-BY	Back Yard (BY)	2,267	46	59	43	24	581	653	356	78	-	42.0	42.0	2,267	-	-
BE-035-DZ	Drip Zone (DZ)	95	32	88	49	50	837	687	595	434	-	5.3	5.3	95	-	-
BE-035-FY	Front Yard (FY)	982	32	30	38	40	553	594	448	334	-	36.4	36.4	982	-	-
	TOTALS	3,344										83.7	83.7	3,344		

Component Arsenic Concentration is > 253 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

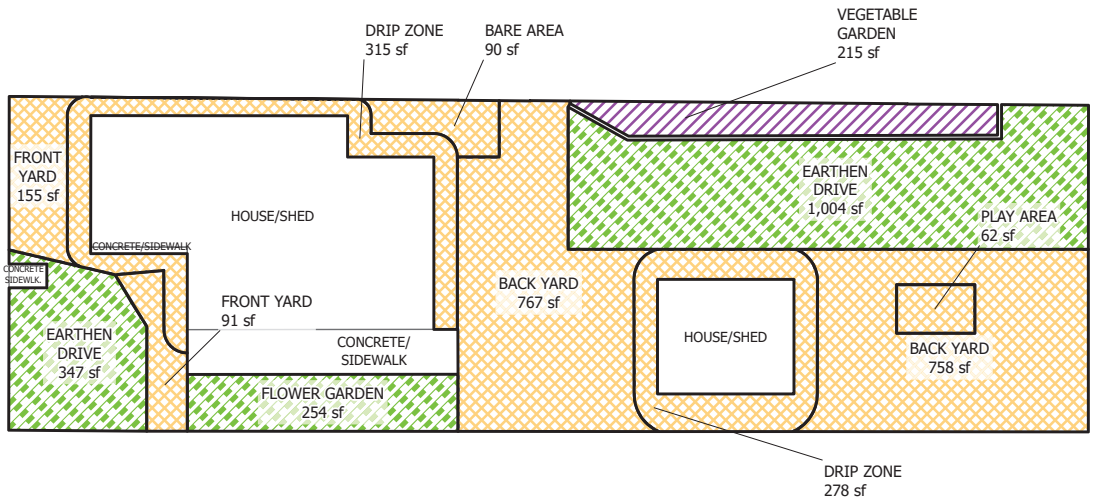
Legend
6" RA
12" RA
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-036

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-036			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-036-BA	Bare Area (BA)	90	54	38	68	36	308	405	164	75	-	1.7	1.7	90	-	-
BE-036-BY	Back Yard (BY)	1,525	43	48	43	41	546	433	192	180	-	28.2	28.2	1,525	-	-
BE-036-DZ	Drip Zone (DZ)	593	31	49	35	45	255	409	152	90	-	11.0	11.0	593	-	-
BE-036-ED	Earthen Drive (ED)	1,351	31	77	46	24	365	363	85	10	-	-	-	-	-	-
BE-036-FG	Flower Garden (FG)	254	23	26	32	50	315	297	267	214	-	-	-	-	-	-
BE-036-FY	Front Yard (FY)	246	39	40	39	51	472	634	168	159	-	4.6	4.6	246	-	-
BE-036-PA	Play Area (PA)	62	58	91	49	58	538	401	67	9	-	1.1	1.1	62	-	-
BE-036-VG	Vegetable Garden (VG)	215	29	37	42	40	424	372	467	343	-	8.0	8.0	215	-	-
	TOTALS	4,336										54.6	54.6	2,731		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

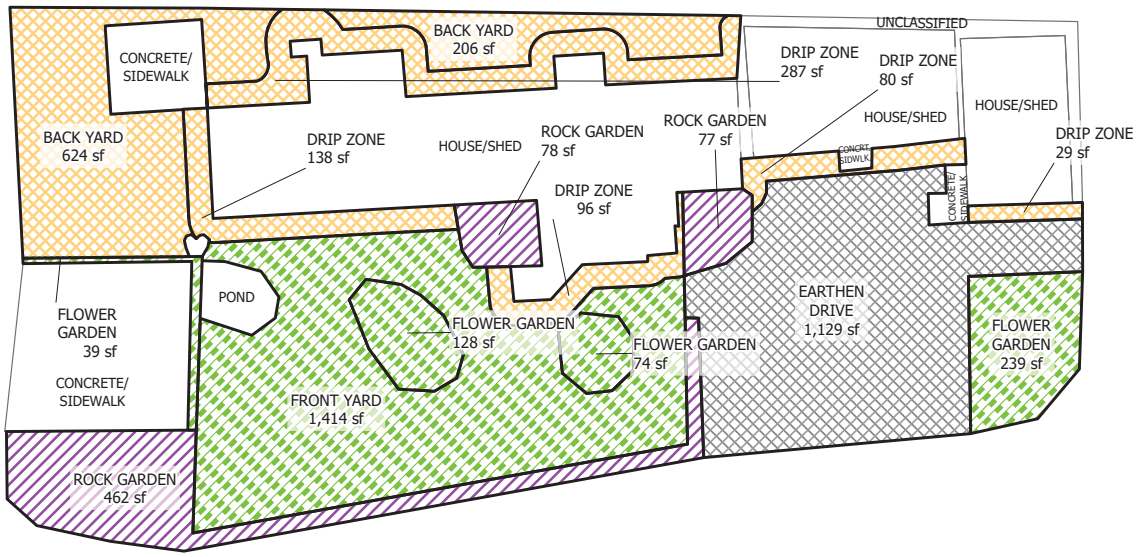
Legend
No Action
6" RA
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-037

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-037			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-037-BY	Back Yard (BY)	830	37	14	20	34	408	112	168	162	-	15.4	15.4	830	-	-
BE-037-DZ	Drip Zone (DZ)	630	26	37	23	21	270	573	194	83	-	11.7	11.7	630	-	-
BE-037-ED	Earthen Drive (ED)	1,129	49	11	25	68	441	39	252	826	-	62.7	41.8	-	20.9	-
BE-037-FG	Flower Garden (FG)	480	28	8	7	8	226	41	55	44	-	-	-	-	-	-
BE-037-FY	Front Yard (FY)	1,414	7	7	9	7	15	11	309	149	-	-	-	-	-	-
BE-037-RG	Rock Garden (RG)	617	27	31	52	56	290	303	465	265	-	22.9	-	-	-	-
	TOTALS	5,100										112.7	91.8	1,460	20.9	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

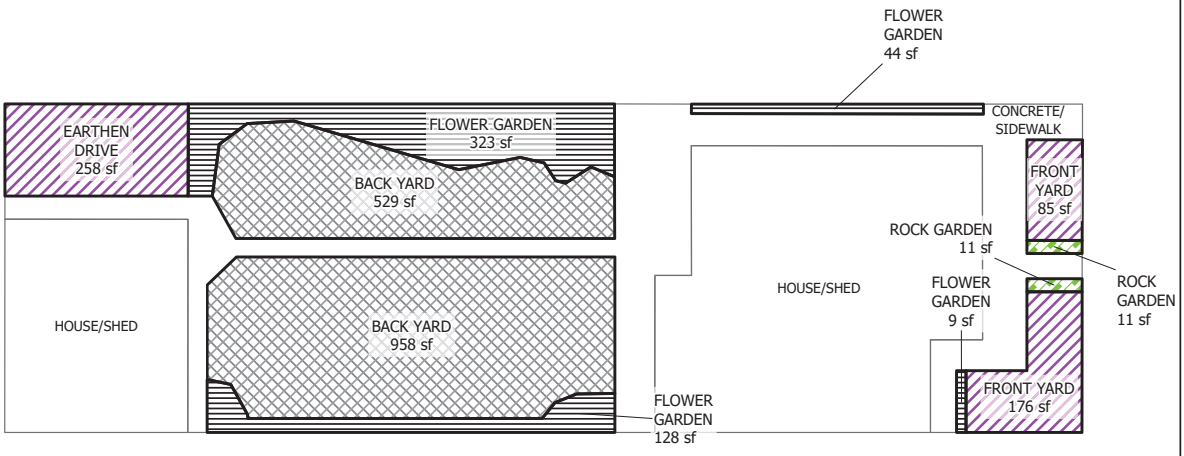
Legend
- No Action
- 6" RA
- 12" RA
- 18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-039

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-039			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-039-BY	Back Yard (BY)	1,487	27	36	61	88	297	361	552	414	-	82.6	82.6	1,487	-	-
BE-039-ED	Earthen Drive (ED)	258	46	66	141	82	457	579	580	225	-	9.6	4.8	-	4.8	-
BE-039-FG	Flower Garden (FG)	504	31	70	45	163	377	410	233	632	-	37.3	37.3	504	-	-
BE-039-FY	Front Yard (FY)	261	14	13	36	15	223	130	428	312	-	9.7	9.7	261	-	-
BE-039-RG	Rock Garden (RG)	22	20	31	13	6	249	317	17	7	-	-	-	-	-	-
	TOTALS	2,532										139.2	134.4	2,252	4.8	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

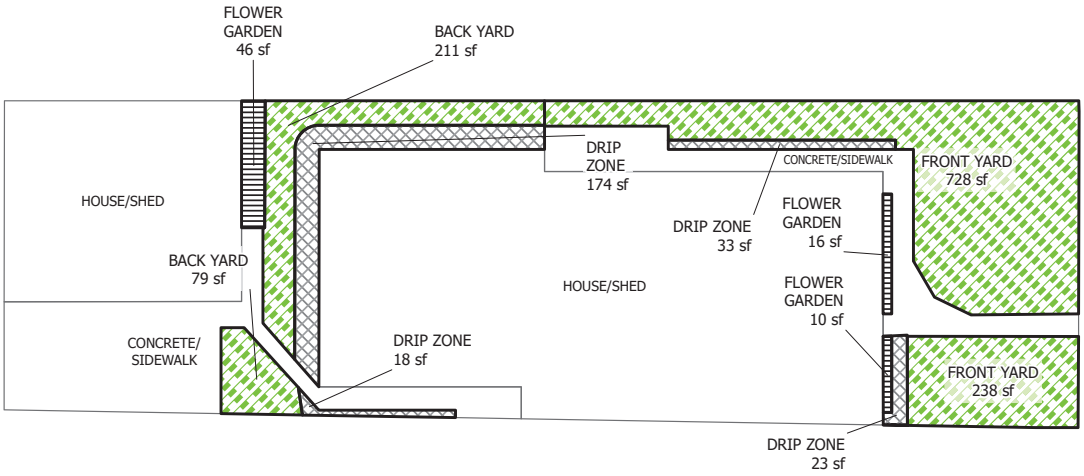
Legend
- No Action
- 12" RA
- 18" RA
- 24" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-040

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-040			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-040-BY	Back Yard (BY)	290	21	36	62	126	116	354	368	350	-	-	-	-	-	-
BE-040-DZ	Drip Zone (DZ)	248	18	21	28	39	206	191	313	496	-	13.8	13.8	248	-	-
BE-040-FG	Flower Garden (FG)	72	16	16	26	41	234	262	357	509	-	5.3	5.3	72	-	-
BE-040-FY	Front Yard (FY)	966	12	9	18	31	160	26	145	79	-	-	-	-	-	-
	TOTALS	1,576										19.1	19.1	320		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

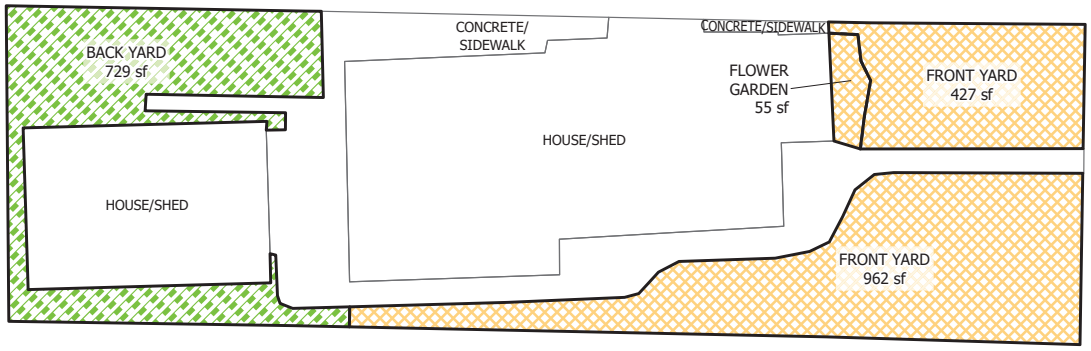
Legend
- No Action
- 18" RA
- 24" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-041

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-041			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-041-BY	Back Yard (BY)	729	21	29	37	41	281	315	323	92	-	-	-	-	-	-
BE-041-FG	Flower Garden (FG)	55	23	41	40	32	439	444	188	96	-	1.0	1.0	55	-	-
BE-041-FY	Front Yard (FY)	1,389	35	51	38	30	534	679	193	34	-	25.7	25.7	1,389	-	-
	TOTALS	2,173										26.7	26.7	1,444		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

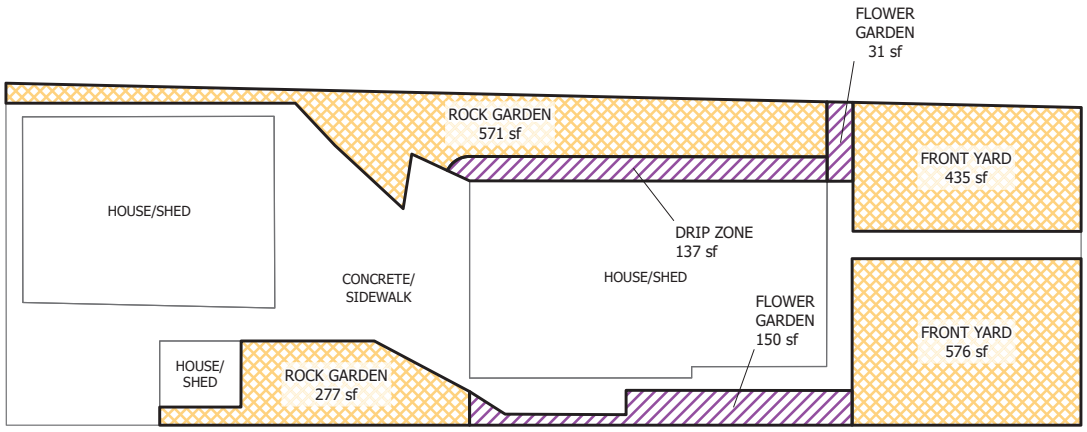
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6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-042

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-042			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-042-DZ	Drip Zone (DZ)	137	24	36	53	36	787	771	1030	91	-	5.1	5.1	137	-	-
BE-042-FG	Flower Garden (FG)	181	33	39	47	24	695	729	415	97	-	6.7	6.7	181	-	-
BE-042-FY	Front Yard (FY)	1,011	28	35	43	26	313	604	285	36	-	18.7	18.7	1,011	-	-
BE-042-RG	Rock Garden (RG)	848	47	69	71	51	365	400	320	172	Yes	15.7	15.7	-	-	-
	TOTALS	2,177										46.2	46.2	1,329		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

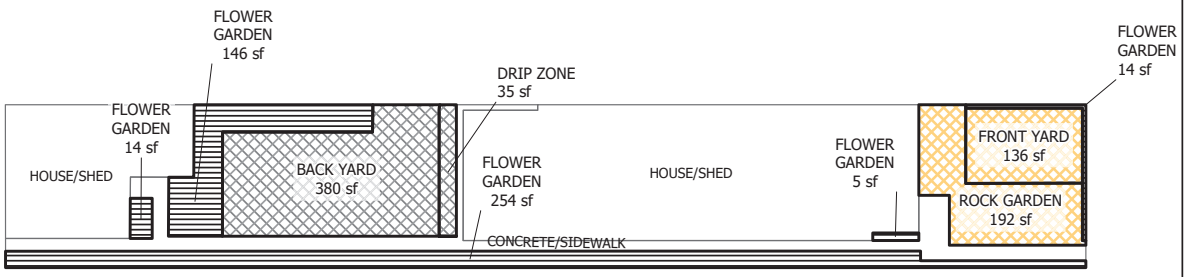
Legend
6" RA
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-043

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-043			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-043-BY	Back Yard (BY)	380	47	40	53	71	819	630	436	456	-	21.1	21.1	380	-	-
BE-043-DZ	Drip Zone (DZ)	35	52	61	86	57	6270	1110	400	586	-	1.9	1.9	35	-	-
BE-043-FG	Flower Garden (FG)	433	46	42	56	46	1130	459	362	768	-	32.1	32.1	433	-	-
BE-043-FY	Front Yard (FY)	136	57	61	80	47	2090	453	116	35	-	2.5	2.5	136	-	-
BE-043-RG	Rock Garden (RG)	192	52	53	43	26	1010	547	47	14	-	3.6	3.6	-	-	-
	TOTALS	1,176										61.2	61.2	984		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

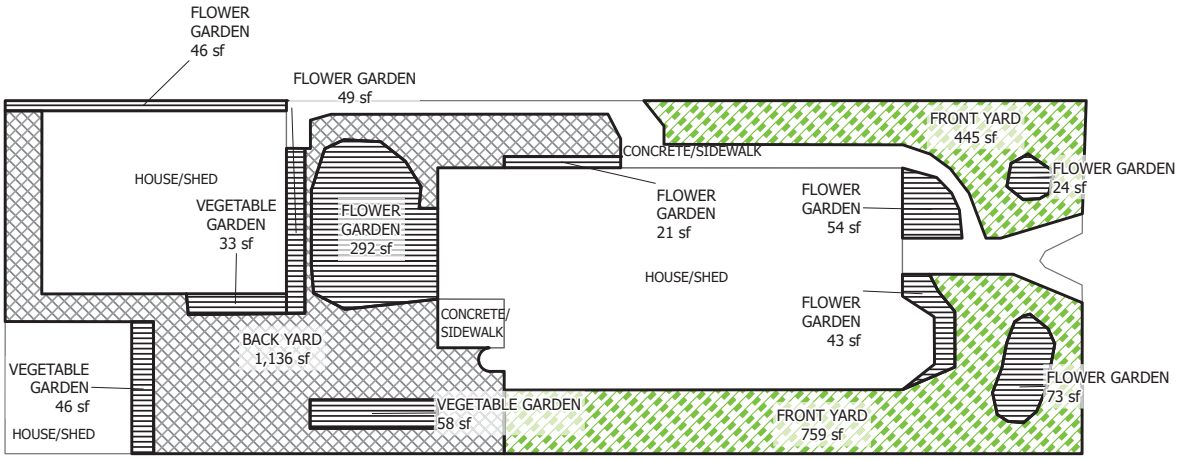
Legend
6" RA
18" RA
24" RA

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0 10 20 Feet

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-044

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-044			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-044-BY	Back Yard (BY)	1,136	37	52	64	84	432	478	460	722	-	63.1	63.1	1,136	-	-
BE-044-DZ	Drip Zone (DZ)	220	18	18	28	27	129	110	179	199	-	-	-	-	-	-
BE-044-FG	Flower Garden (FG)	602	51	40	69	68	492	343	409	416	-	44.6	44.6	602	-	-
BE-044-FY	Front Yard (FY)	1,204	18	18	54	23	187	129	111	128	-	-	-	-	-	-
BE-044-VG	Vegetable Garden (VG)	137	108	81	50	45	715	641	579	467	-	10.1	10.1	137	-	-
	TOTALS	3,299										117.8	117.8	1,875		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

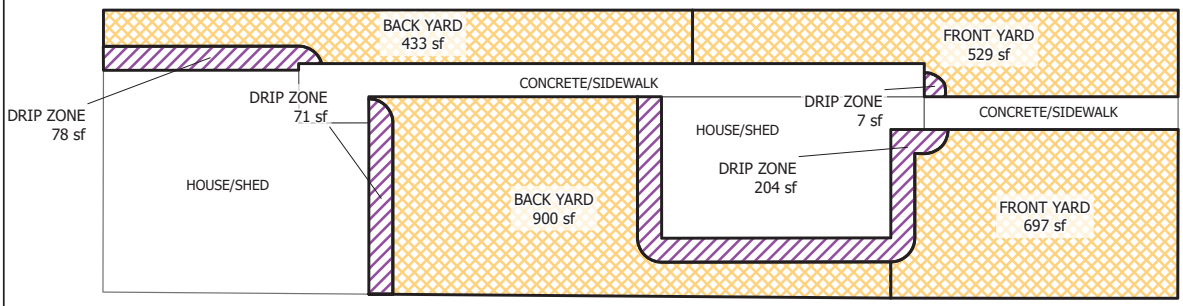
Legend
- No Action
- 18" RA
- 24" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-045

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-045			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-045-BY	Back Yard (BY)	1,333	39	44	51	50	1070	865	339	252	-	24.7	24.7	1,333	-	-
BE-045-DZ	Drip Zone (DZ)	360	28	46	32	25	699	764	501	235	-	13.3	13.3	360	-	-
BE-045-FY	Front Yard (FY)	1,226	37	47	88	92	489	509	351	167	-	22.7	22.7	1,226	-	-
	TOTALS	2,919										60.7	60.7	2,919		

Component Arsenic Concentration is > 253 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

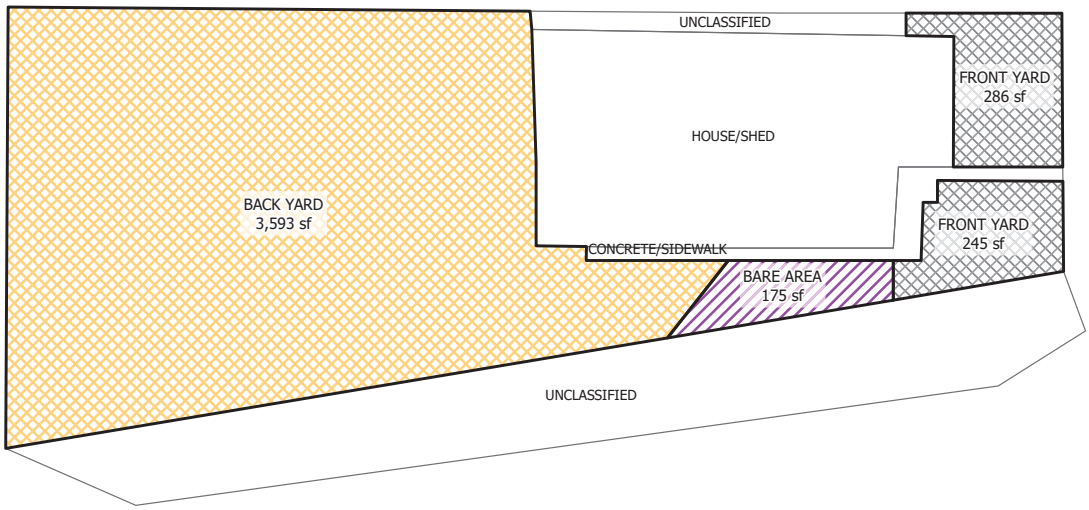
Legend
6" RA
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-046

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-046			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-046-BA	Bare Area (BA)	175	77	64	67	63	799	805	504	244	-	6.5	6.5	175	-	-
BE-046-BY	Back Yard (BY)	3,593	121	91	77	71	845	691	290	196	-	66.5	66.5	3,593	-	-
BE-046-DZ	Drip Zone (DZ)	220	11	27	40	50	135	346	218	123	-	-	-	-	-	-
BE-046-FY	Front Yard (FY)	531	96	145	140	255	1360	1160	118	1480	-	29.5	29.5	531	-	-
	TOTALS	4,519										102.5	102.5	4,299		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

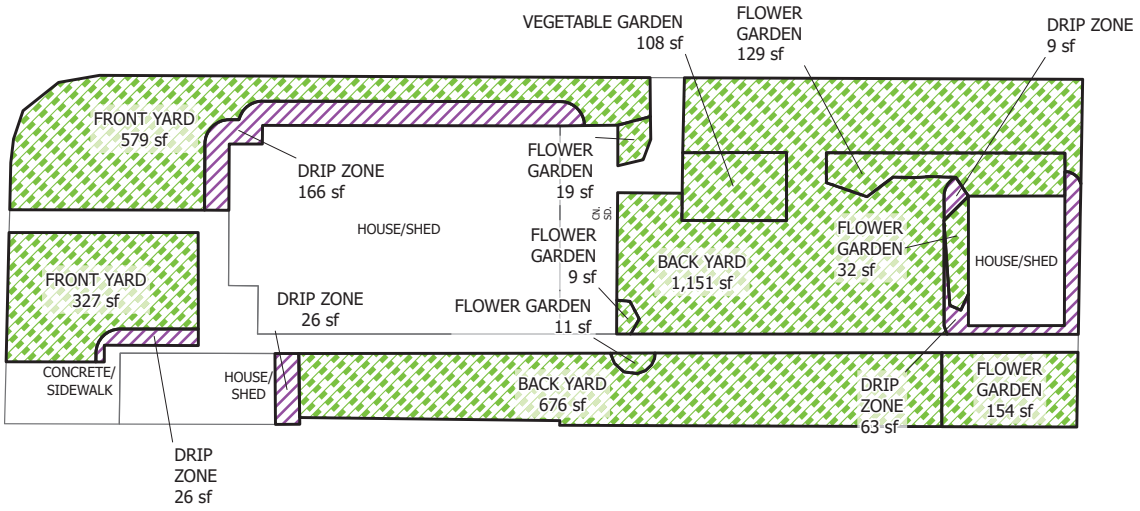
Legend
6" RA
12" RA
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-047

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-047			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-047-BY	Back Yard (BY)	1,827	18	20	23	59	242	234	165	260	-	-	-	-	-	-
BE-047-DZ	Drip Zone (DZ)	290	76	100	99	29	1580	1260	1220	124	-	10.7	10.7	290	-	-
BE-047-FG	Flower Garden (FG)	354	18	20	21	29	208	222	176	164	-	-	-	-	-	-
BE-047-FY	Front Yard (FY)	906	12	21	33	47	140	325	369	186	-	-	-	-	-	-
BE-047-VG	Vegetable Garden (VG)	108	25	25	34	57	207	194	157	190	-	-	-	-	-	-
	TOTALS	3,485										10.7	10.7	290		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

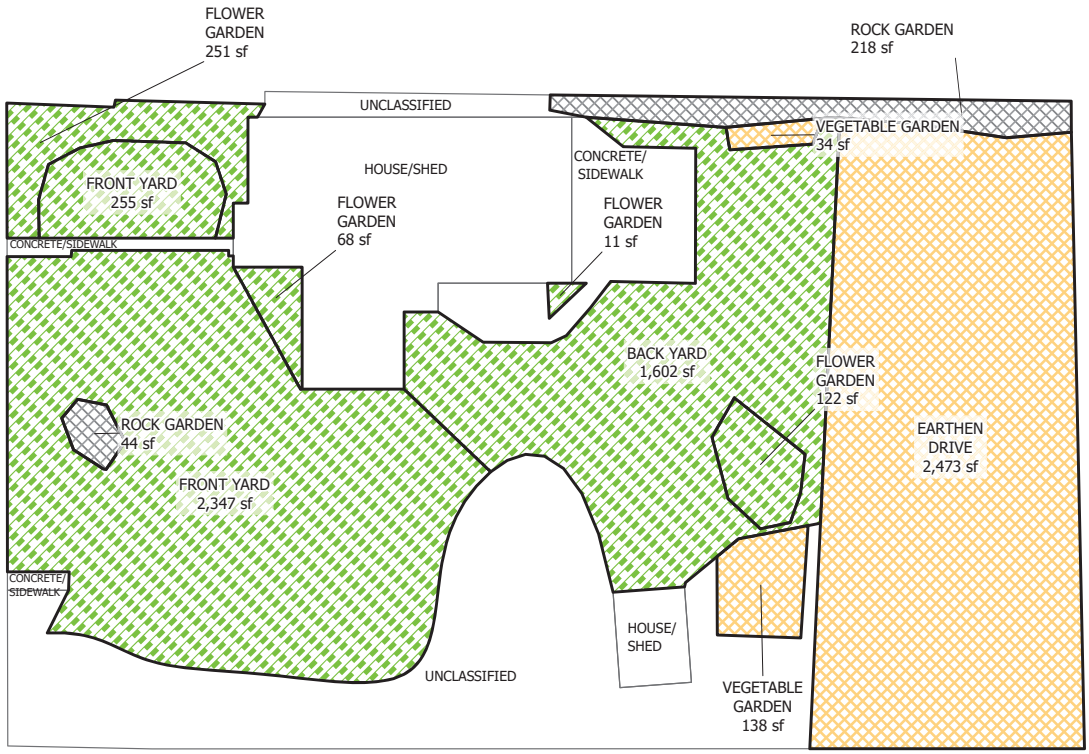
Legend
No Action
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-048

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-048			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-048-BY	Back Yard (BY)	1,602	23	27	50	128	193	104	18	22	-	-	-	-	-	-
BE-048-DZ	Drip Zone (DZ)	220	39	40	35	32	90	81	75	35	-	-	-	-	-	-
BE-048-ED	Earthen Drive (ED)	2,473	30	214	73	64	259	165	164	104	Yes	45.8	-	-	45.8	-
BE-048-FG	Flower Garden (FG)	452	25	34	80	77	39	4	79	51	-	-	-	-	-	-
BE-048-FY	Front Yard (FY)	2,602	30	40	38	19.1	334	330	143	53	-	-	-	-	-	-
BE-048-RG	Rock Garden (RG)	262	18	36	65	104	244	626	587	46:	-	14.6	14.6	-	-	-
BE-048-VG	Vegetable Garden (VG)	172	30	33	50	86	438	431	309	237	-	3.2	3.2	172	-	-
	TOTALS	7,783										63.6	17.8	172	45.8	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

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ACM Smelter and Refinery site
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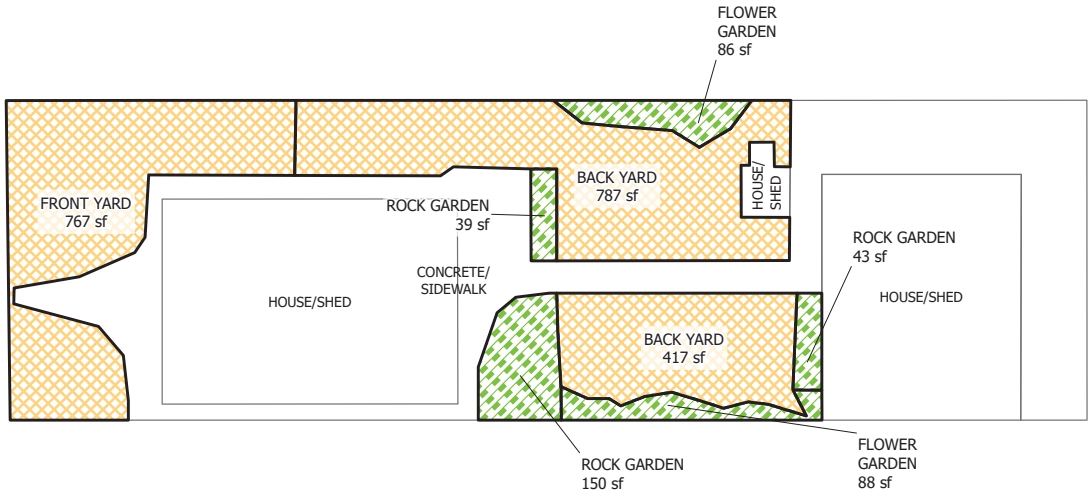
Legend
- No Action
- 6" RA
- 18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-049

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-049			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-049-BY	Back Yard (BY)	1,204	21	25	36	69	512	206	175	257	-	22.3	22.3	1,204	-	-
BE-049-FG	Flower Garden (FG)	174	11	28	40	56	57	254	223	235	-	-	-	-	-	-
BE-049-FY	Front Yard (FY)	767	22	39	20	22	770	338	26	300	-	14.2	14.2	767	-	-
BE-049-RG	Rock Garden (RG)	232	15	26	43	85	12	291	375	382	-	-	-	-	-	-
TOTALS		2,377										36.5	36.5	1,971		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

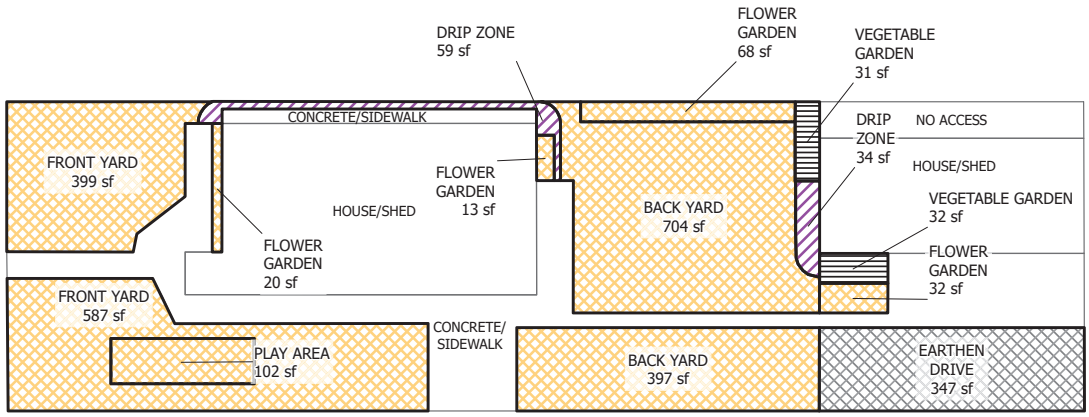
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-050

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-050			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-050-BY	Back Yard (BY)	1,101	26	54	47	34	333	576	302	117	-	20.4	20.4	1,101	-	-
BE-050-DZ	Drip Zone (DZ)	93	33	21	32	85	829	161	939	296	-	3.4	3.4	93	-	-
BE-050-ED	Earthen Drive (ED)	347	29	41	54	216	150	177	631	3100	-	19.3	12.9	-	6.4	-
BE-050-FG	Flower Garden (FG)	133	37	43	38	31	495	414	186	65	-	2.5	2.5	133	-	-
BE-050-FY	Front Yard (FY)	986	19	41	36	15	246	489	267	26	-	18.3	18.3	986	-	-
BE-050-PA	Play Area (PA)	102	29	35	52	57	394	407	332	387	-	1.9	1.9	102	-	-
BE-050-VG	Vegetable Garden (VG)	63	57	61	104	48	955	1150	679	427	-	4.7	4.7	63	-	-
	TOTALS	2,825										70.5	64.1	2,478	6.4	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

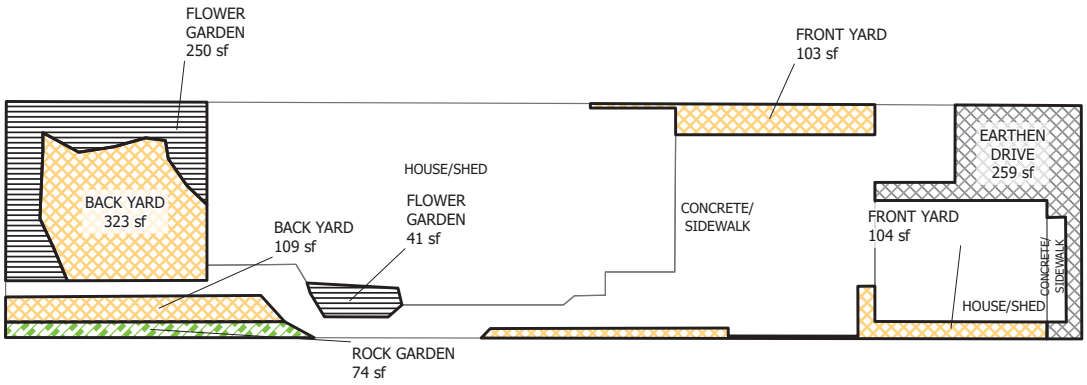
Legend
6" RA
12" RA
18" RA
24" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-052

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-052			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-052-BY	Back Yard (BY)	432	83	42	55	62	392	465	288	239	-	8.0	8.0	432	-	-
BE-052-DZ	Drip Zone (DZ)	220	110	16	17	14	262	38	40	39	-	-	-	-	-	-
BE-052-ED	Earthen Drive (ED)	259	31	195	170	88	306	293	1220	49:	-	14.4	9.6	-	4.8	-
BE-052-FG	Flower Garden (FG)	291	47	99	247	43	312	484	154	524	-	21.6	21.6	291	-	-
BE-052-FY	Front Yard (FY)	207	61	61	16	45	612	591	43	387	-	3.8	3.8	207	-	-
BE-052-RG	Rock Garden (RG)	74	17	17	41	64	32	124	37	279	-	-	-	-	-	-
	TOTALS	1,483										47.8	43.0	930	4.8	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

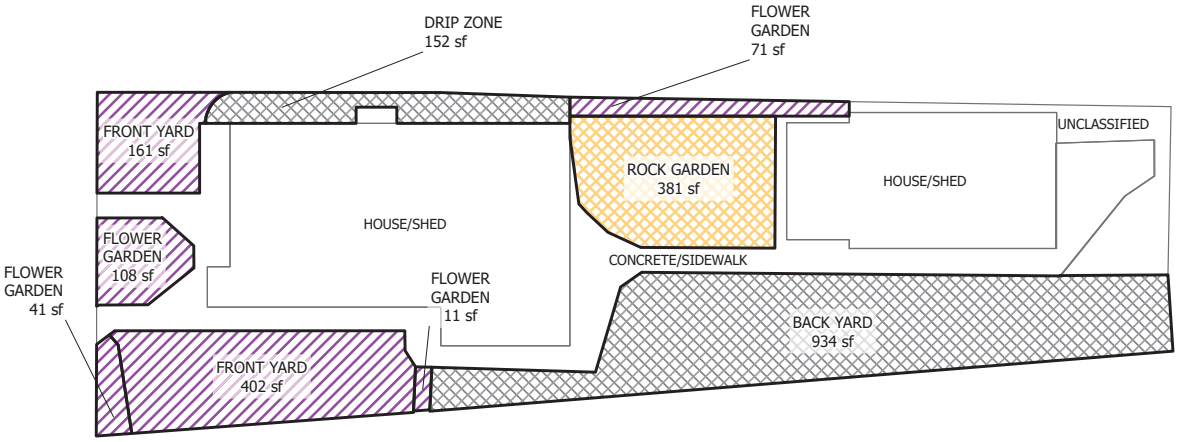
Legend
- No Action
- 6" RA
- 18" RA
- 24" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-053

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-053			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-053-BY	Back Yard (BY)	934	21	28	51	42	288	346	441	550	-	51.9	51.9	934	-	-
BE-053-DZ	Drip Zone (DZ)	152	41	57	71	80	445	710	483	689	-	8.4	8.4	152	-	-
BE-053-FG	Flower Garden (FG)	231	46	61	46	108	402	437	505	338	-	8.6	8.6	231	-	-
BE-053-FY	Front Yard (FY)	563	40	38	49	43	380	352	434	276	-	20.9	20.9	563	-	-
BE-053-RG	Rock Garden (RG)	381	32	20	27	32	548	235	299	313	-	7.1	7.1	-	-	-
	TOTALS	2,261										96.9	96.9	1,880		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

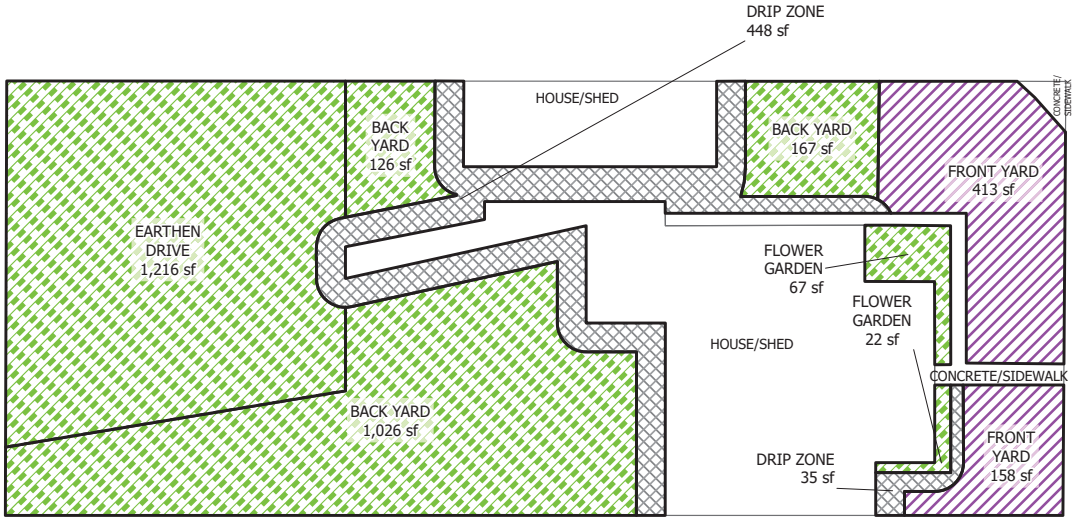
Legend
6" RA
12" RA
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-055

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-055			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-055-BY	Back Yard (BY)	1,319	30	32	49	52	338	331	290	228	-	-	-	-	-	-
BE-055-DZ	Drip Zone (DZ)	483	58	116	40	45	401	664	500	534	-	26.8	26.8	483	-	-
BE-055-ED	Earthen Drive (ED)	1,216	40	18	18	10	184	18	17	16	-	-	-	-	-	-
BE-055-FG	Flower Garden (FG)	89	21	29	34	38	236	230	193	134	-	-	-	-	-	-
BE-055-FY	Front Yard (FY)	571	581	774	382	120	2040	2110	994	393	-	21.1	21.1	571	-	-
	TOTALS	3,678										47.9	47.9	1,054		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

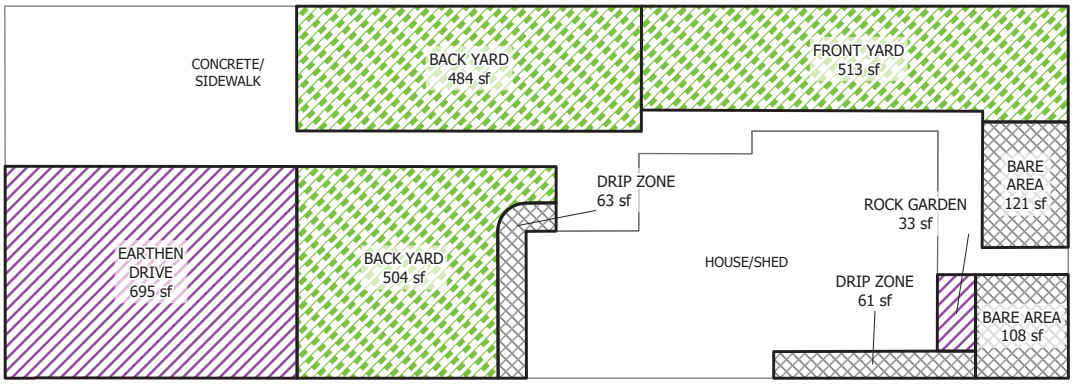
Legend
No Action
12" RA
18" RA

N

0 10 20 Feet

Woodard & Curran
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MAP CREATED: APR 2023

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Resident ID
BE-056

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-056			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-056-BA	Bare Area (BA)	229	35	38	66	105	408	388	230	439	-	12.7	12.7	229	-	-
BE-056-BY	Back Yard (BY)	988	29	46	54	75	357	307	292	211	-	-	-	-	-	-
BE-056-DZ	Drip Zone (DZ)	124	51	55	78	89	886	668	3280	657	-	6.9	6.9	124	-	-
BE-056-ED	Earthen Drive (ED)	695	12	8	15	21	41	9	601	367	-	25.7	12.9	-	12.9	-
BE-056-FY	Front Yard (FY)	513	24	42	60	43	299	249	346	358	-	-	-	-	-	-
BE-056-RG	Rock Garden (RG)	33	33	30	61	123	606	524	683	382	-	1.2	1.2	-	-	-
	TOTALS	2,582										46.5	33.7	353	12.9	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

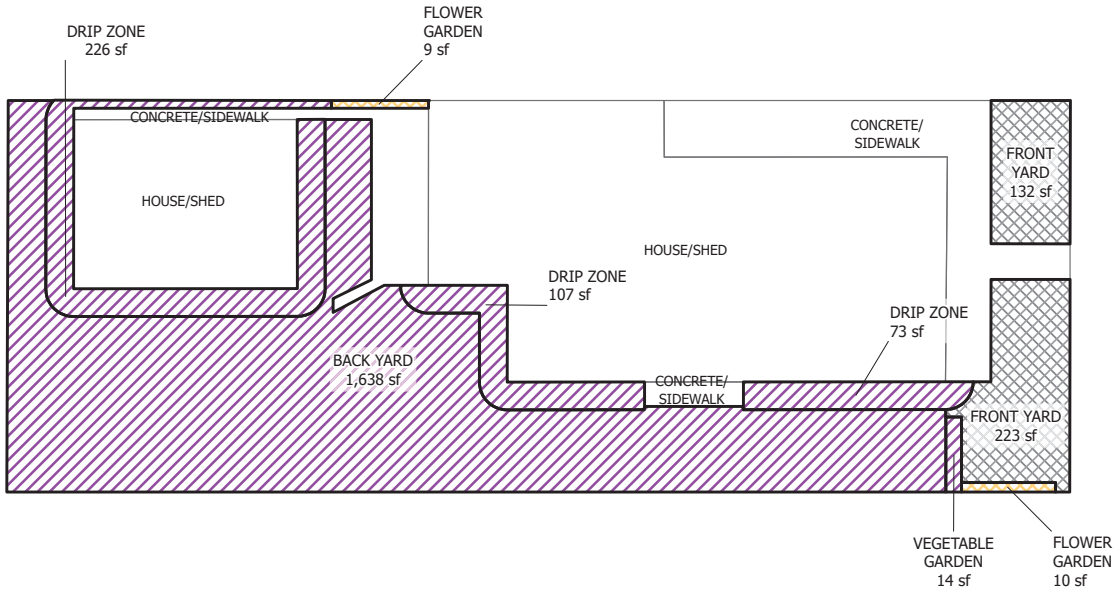
Legend
- No Action
- 12" RA
- 18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-057

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)									
BE-057			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-057-BY	Back Yard (BY)	1,638	36	52	47	45	634	563	508	228	-	60.7	60.7	1,638	-	-
BE-057-DZ	Drip Zone (DZ)	406	32	34	40	59	1390	1080	502	384	-	15.0	15.0	406	-	-
BE-057-FG	Flower Garden (FG)	19	28	37	60	30	394	674	258	130	-	0.4	0.4	19	-	-
BE-057-FY	Front Yard (FY)	355	36	35	37	106	125	37	41	1150	-	19.7	19.7	355	-	-
BE-057-VG	Vegetable Garden (VG)	14	22	31	29	28	377	416	507	346	-	0.5	0.5	14	-	-
	TOTALS	2,432										96.3	96.3	2,432		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

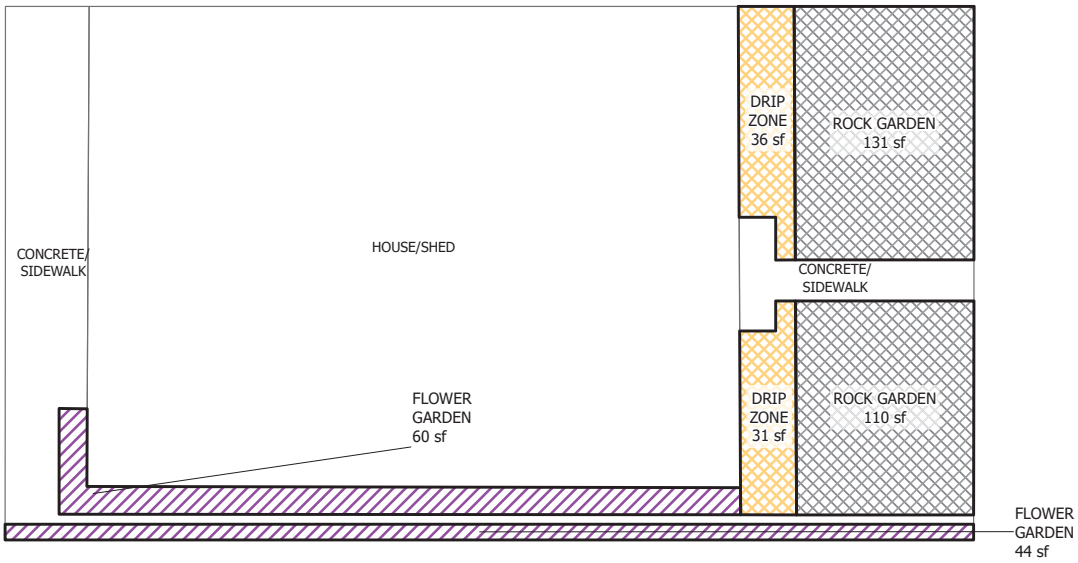
Legend
6" RA
12" RA
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-058A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-058A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-058A-DZ	Drip Zone (DZ)	67	54	67	54	49	976	1450	312	267	-	1.2	1.2	67	-	-
BE-058A-FG	Flower Garden (FG)	104	60	55	72	107	591	473	623	276	-	3.9	3.9	104	-	-
BE-058A-RG	Rock Garden (RG)	241	23	29	46	85	253	302	319	510	-	13.4	13.4	-	-	-
	TOTALS	412										18.5	18.5	171		

Component Arsenic Concentration is > 253 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

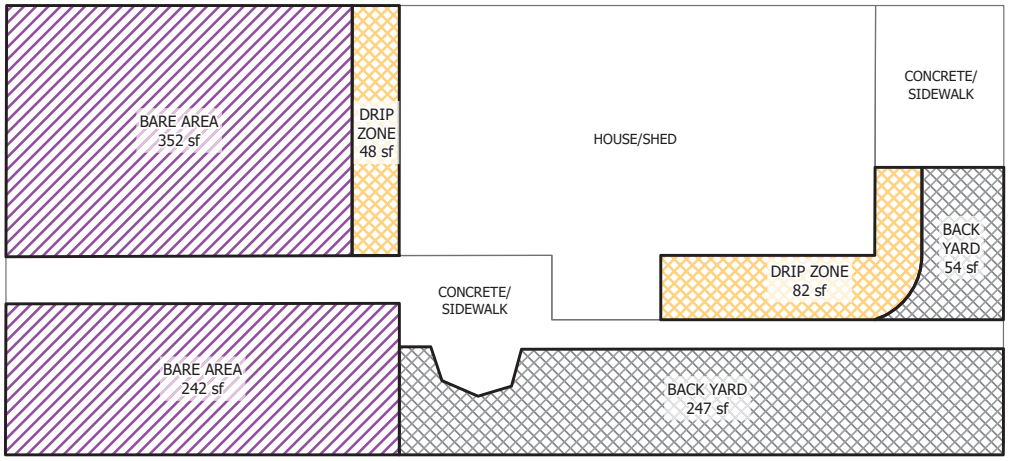
Legend
6" RA
12" RA
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-058B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-058B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-058B-BA	Bare Area (BA)	594	20	26	29	30	199	313	433	350	-	22.0	22.0	594	-	-
BE-058B-BY	Back Yard (BY)	301	48	54	71	87	452	482	552	407	-	16.7	16.7	301	-	-
BE-058B-DZ	Drip Zone (DZ)	130	55	109	30	135	1020	761	247	285	-	2.4	2.4	130	-	-
	TOTALS	1,025										41.1	41.1	1,025		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

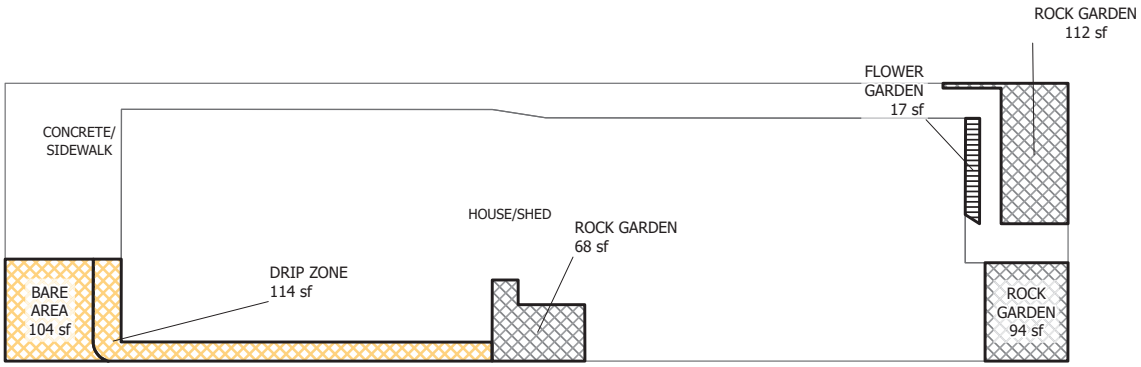
Legend
6" RA
12" RA
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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NOTE: FG Sampling refusal at 6 inches during sampling. Exceedance to 24 inches assumed based upon the 0 to 6 inch samples.

Resident ID
BE-059

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-059			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-059-BA	Bare Area (BA)	104	66	62	88	84	575	387	291	246	-	1.9	1.9	104	-	-
BE-059-DZ	Drip Zone (DZ)	114	44	67	106	37	606	664	347	60	-	2.1	2.1	114	-	-
BE-059-FG	Flower Garden (FG)	17	43	43	N/A	N/A	461	461	N/A	N/A	-	1.3	1.3	17	-	-
BE-059-RG	Rock Garden (RG)	274	66	82	97	107	745	764	494	427	-	15.2	15.2	-	-	-
	TOTALS	509										20.5	20.5	235		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

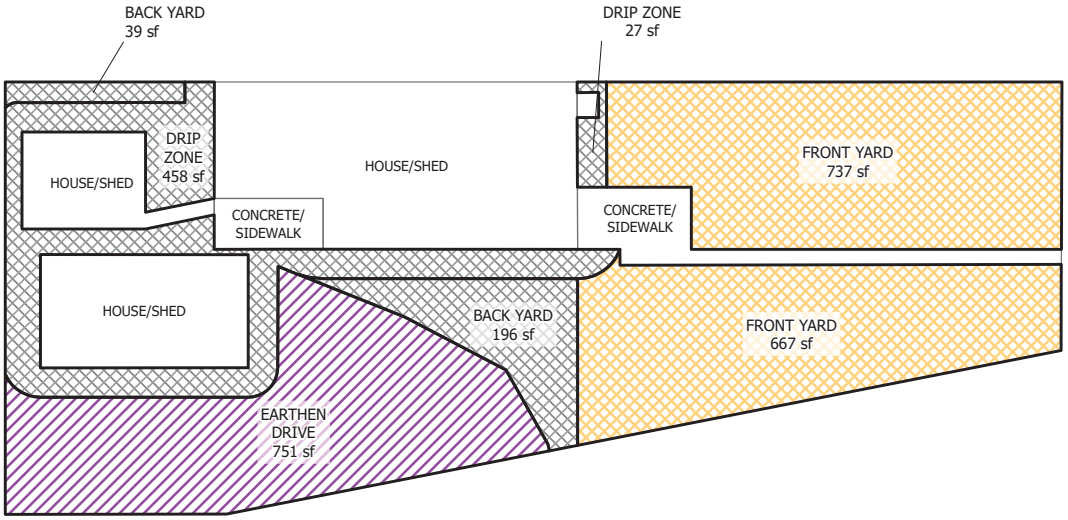
Legend
6" RA
18" RA
24" RA

0 10 20 Feet

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Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-060

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-060			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-060-BY	Back Yard (BY)	235	18	18	66	110	162	124	461	3610	-	13.1	13.1	235	-	-
BE-060-DZ	Drip Zone (DZ)	485	30	44	47	106	319	518	546	775	-	26.9	26.9	485	-	-
BE-060-ED	Earthen Drive (ED)	751	22	22	66	116	268	236	532	312	-	27.8	13.9	-	13.9	-
BE-060-FY	Front Yard (FY)	1,404	30	41	51	84	380	442	275	376	-	26.0	26.0	1,404	-	-
	TOTALS	2,875										93.8	79.9	2,124	13.9	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

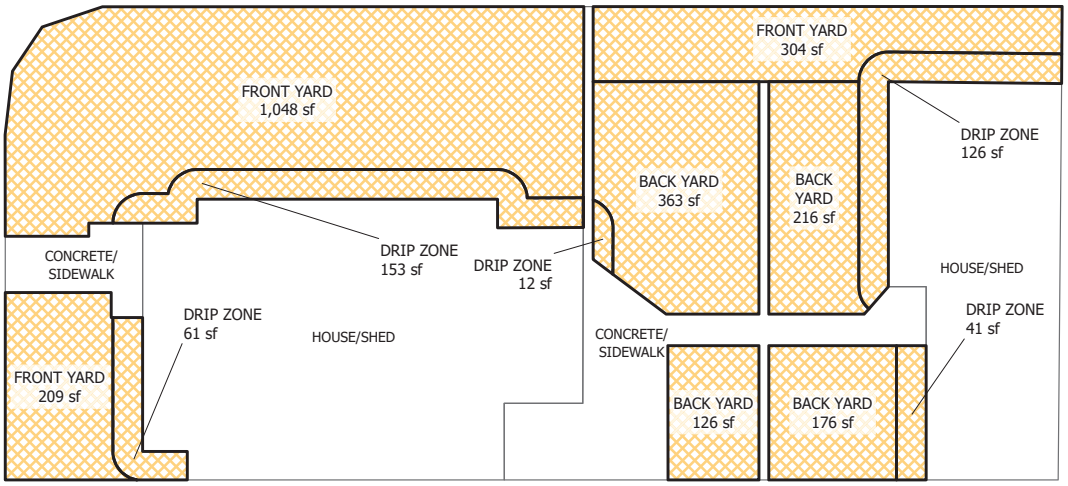
Legend
6" RA
12" RA
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-061

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-061			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-061-BY	Back Yard (BY)	881	23	35	44	23	451	350	255	51	-	16.3	16.3	881	-	-
BE-061-DZ	Drip Zone (DZ)	393	26	31	24	7	1230	759	204	42	-	7.3	7.3	393	-	-
BE-061-FY	Front Yard (FY)	1,561	22	15	15	37	846	60	61	56	-	28.9	28.9	1,561	-	-
	TOTALS	2,835										52.5	52.5	2,835		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

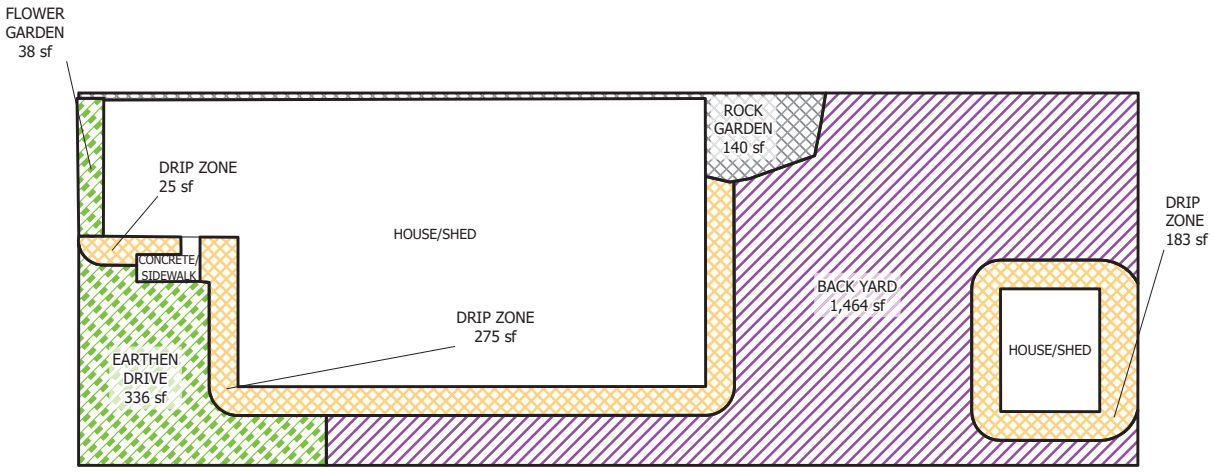
Legend
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-062

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-062			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-062-BY	Back Yard (BY)	1,464	33	60	82	102	461	398	430	285	-	54.2	54.2	1,464	-	-
BE-062-DZ	Drip Zone (DZ)	483	20	32	49	22	715	460	324	78	-	8.9	8.9	483	-	-
BE-062-ED	Earthen Drive (ED)	336	11	11	20	21	26	61	189	218	-	-	-	-	-	-
BE-062-FG	Flower Garden (FG)	38	24	30	45	105	203	253	212	327	-	-	-	-	-	-
BE-062-RG	Rock Garden (RG)	140	35	34	27	64	763	480	301	455	-	7.8	7.8	-	-	-
	TOTALS	2,461										70.9	70.9	1,947		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

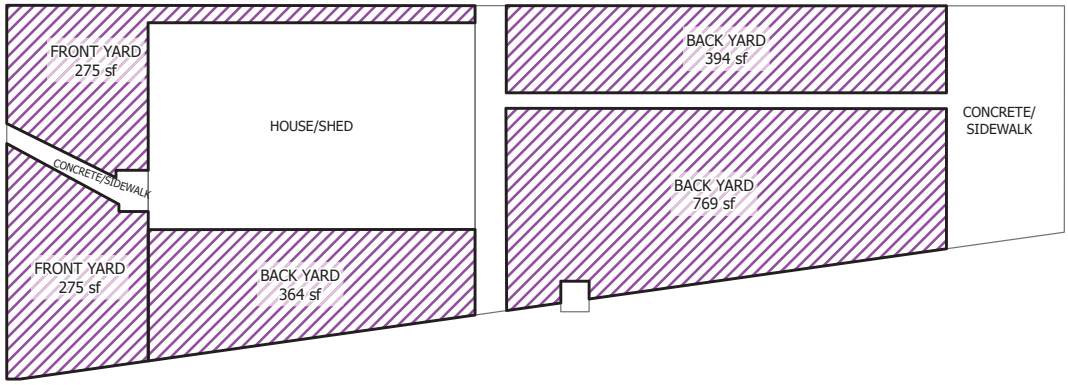
Legend
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- 6" RA
- 12" RA
- 18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-064

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-064			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-064-BY	Back Yard (BY)	1,527	53	134	323	26	470	598	327	17	-	56.6	56.6	1,527	-	-
BE-064-DZ	Drip Zone (DZ)	220	34	40	45	20	301	267	46	14	-	-	-	-	-	-
BE-064-FY	Front Yard (FY)	550	53	130	307	33	452	1040	708	60	-	20.4	20.4	550	-	-
	TOTALS	2,297										77.0	77.0	2,077		

Component Arsenic Concentration is > 253 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

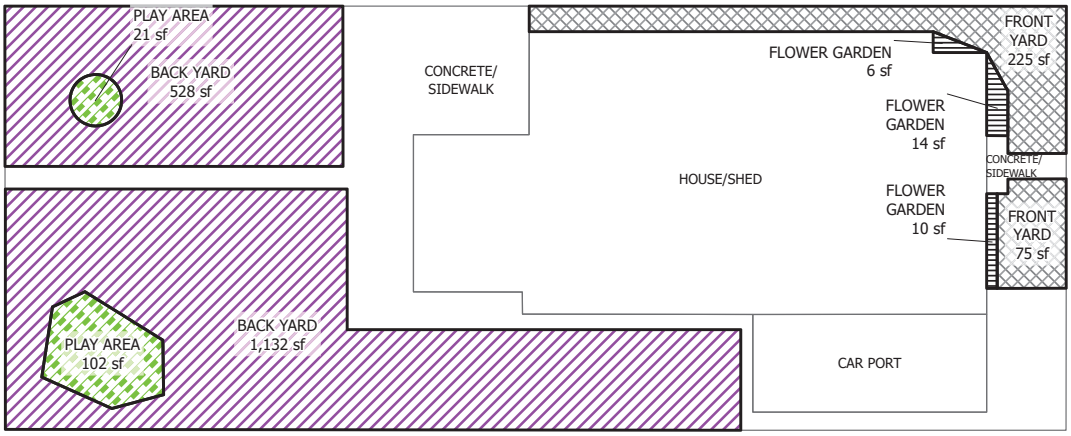
Legend
12" RA

0 10 20 Feet

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Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-066

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-066			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-066-BY	Back Yard (BY)	1,660	30	43	62	91	279	304	404	132	-	61.5	61.5	1,660	-	-
BE-066-DZ	Drip Zone (DZ)	220	16	17	23	34	266	252	320	309	-	-	-	-	-	-
BE-066-FG	Flower Garden (FG)	30	15	22	31	76	437	518	430	835	-	2.2	2.2	30	-	-
BE-066-FY	Front Yard (FY)	300	10	8	42	113	97	55	167	1090	-	16.7	16.7	300	-	-
BE-066-PA	Play Area (PA)	123	34	52	71	114	284	349	329	184	-	-	-	-	-	-
	TOTALS	2,333										80.4	80.4	1,990		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

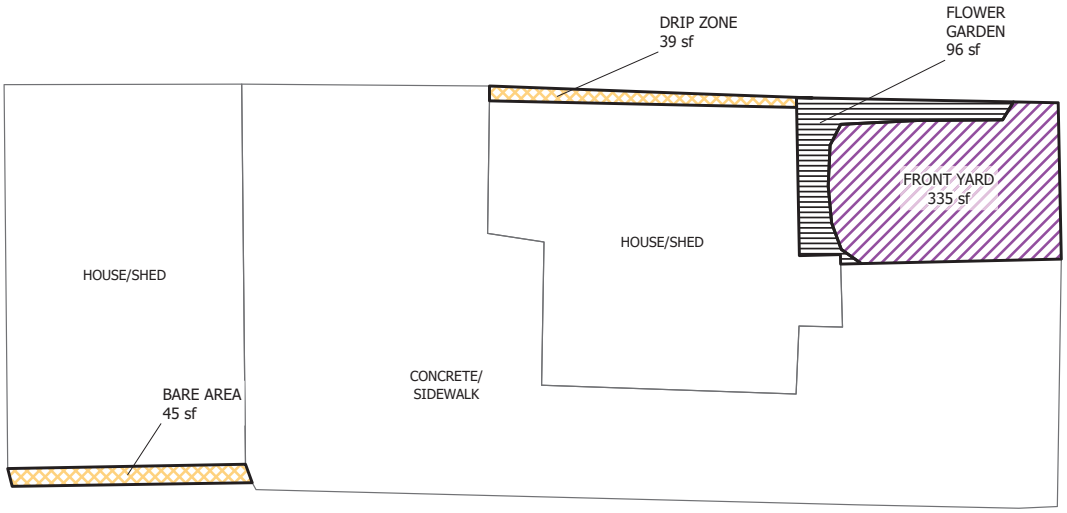
Legend
- No Action
- 12" RA
- 18" RA
- 24" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-067

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-067			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-067-BA	Bare Area (BA)	45	70	102	91	23	818	757	355	27	-	0.8	0.8	45	-	-
BE-067-DZ	Drip Zone (DZ)	39	56	68	59	77	578	788	379	353	-	0.7	0.7	39	-	-
BE-067-FG	Flower Garden (FG)	96	39	50	87	167	350	408	705	458	-	7.1	7.1	96	-	-
BE-067-FY	Front Yard (FY)	335	23	48	70	69	224	431	445	185	-	12.4	12.4	335	-	-
	TOTALS	515										21.0	21.0	515		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

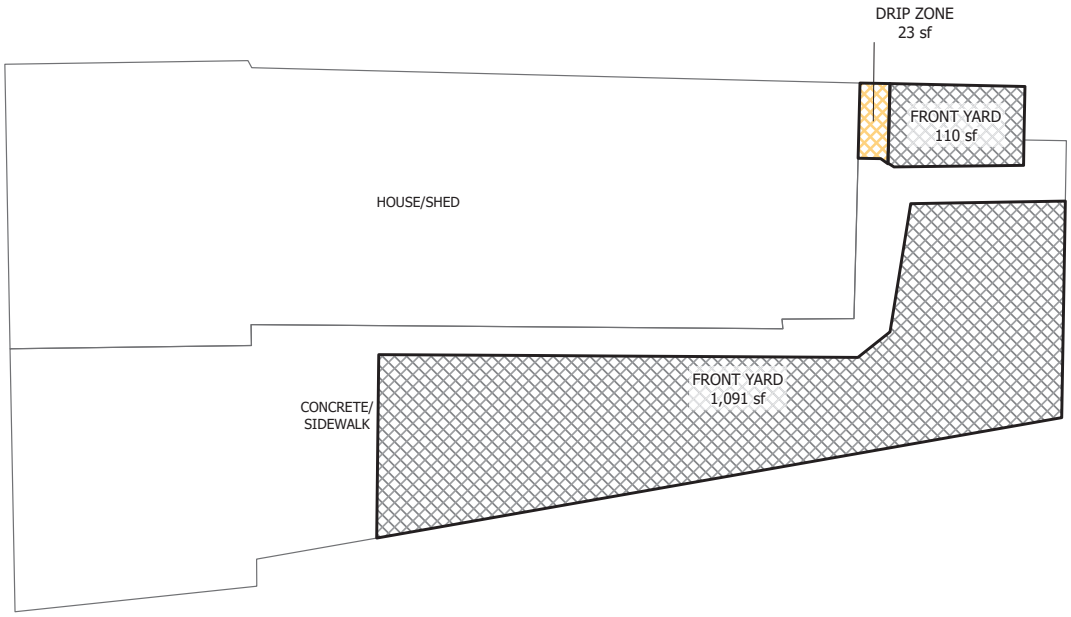
Legend
6" RA
12" RA
24" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-068

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-068			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-068-DZ	Drip Zone (DZ)	23	17	47	48	44	110	481	318	47	-	0.4	0.4	23	-	-
BE-068-FY	Front Yard (FY)	1,201	69	86	110	449	601	948	277	655	-	66.7	66.7	1,201	-	-
	TOTALS	1,224										67.1	67.1	1,224		

Component Arsenic Concentration is > 253 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

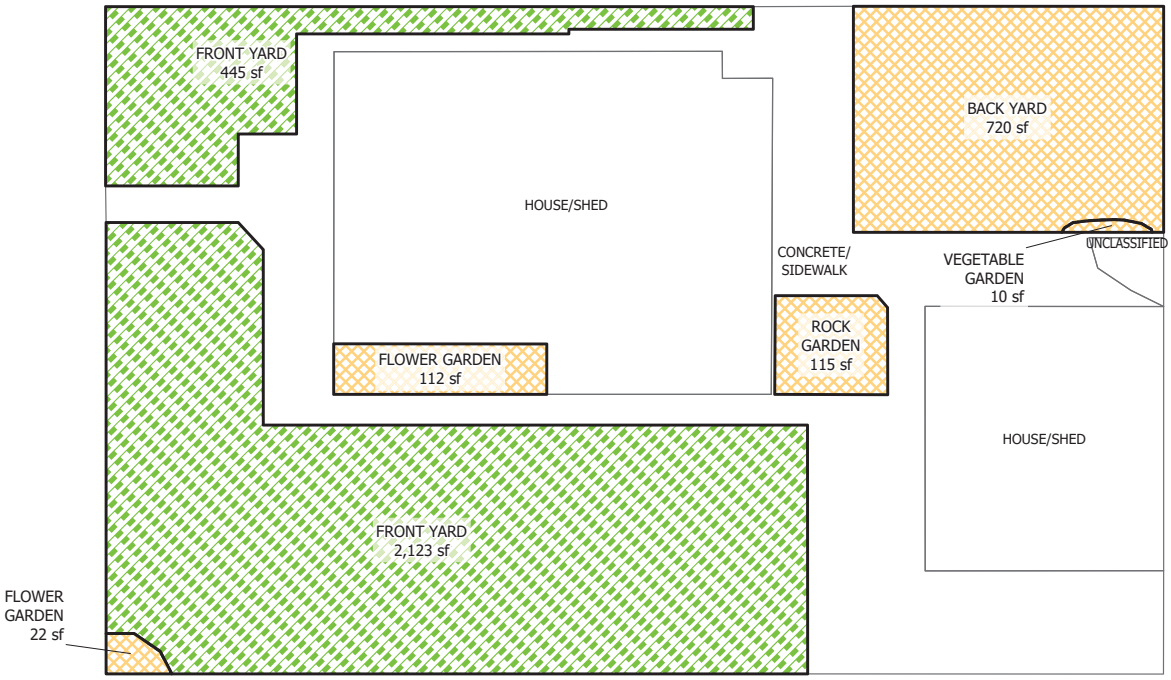
Legend
6" RA
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-069

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-069			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-069-BY	Back Yard (BY)	720	36	62	80	73	222	264	265	252	Yes	13.3	13.3	720	-	-
BE-069-DZ	Drip Zone (DZ)	220	41	41	47	54	283	291	260	39	-	-	-	-	-	-
BE-069-FG	Flower Garden (FG)	134	49	71	60	17	406	488	395	76	-	2.5	2.5	134	-	-
BE-069-FY	Front Yard (FY)	2,568	37	46	51	98	322	386	319	146	-	-	-	-	-	-
BE-069-RG	Rock Garden (RG)	115	42	51	75	102	330	327	362	163	Yes	2.1	2.1	-	-	-
BE-069-VG	Vegetable Garden (VG)	10	69	69	84	76	441	399	253	226	-	0.2	0.2	10	-	-
	TOTALS	3,767										18.1	18.1	864		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

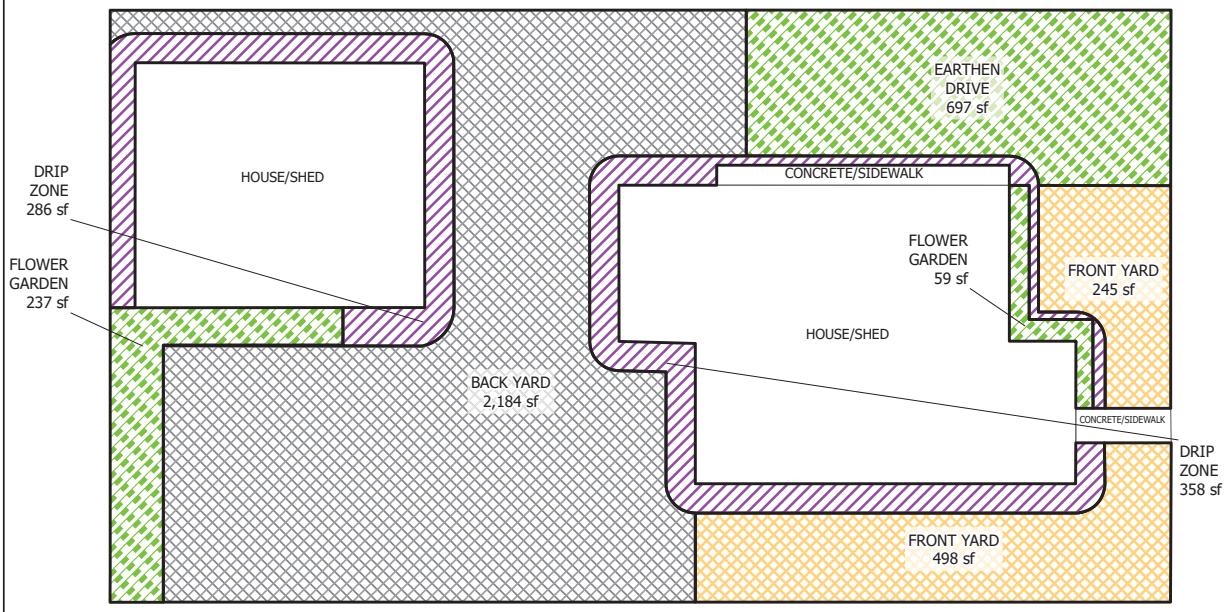
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-070

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-070			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-070-BY	Back Yard (BY)	2,184	50	81	140	101	295	412	385	433	-	121.3	121.3	2,184	-	-
BE-070-DZ	Drip Zone (DZ)	644	31	30	81	88	571	167	565	359	-	23.9	23.9	644	-	-
BE-070-ED	Earthen Drive (ED)	697	28	37	85	66	171	207	248	73	-	-	-	-	-	-
BE-070-FG	Flower Garden (FG)	296	24	22	18	12	194	184	154	53	-	-	-	-	-	-
BE-070-FY	Front Yard (FY)	743	40	39	73	85	433	163	187	200	-	13.8	13.8	743	-	-
	TOTALS	4,564										159.0	159.0	3,571		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

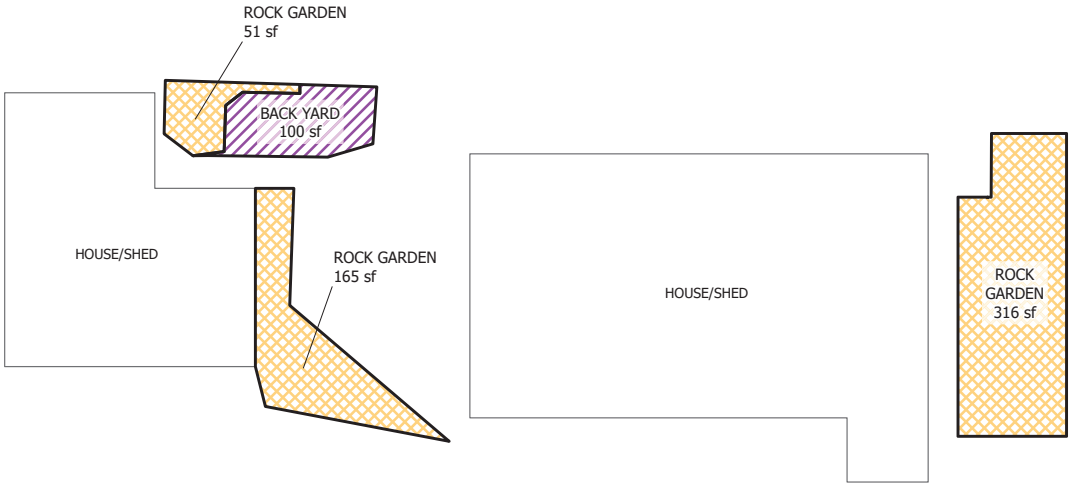
Legend
- No Action
- 6" RA
- 12" RA
- 18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-071

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-071			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-071-BY	Back Yard (BY)	100	9	13	46	38	52	83	611	260	-	3.7	3.7	100	-	-
BE-071-RG	Rock Garden (RG)	532	4	47	49	74	37	709	179	297	-	9.9	9.9	-	-	-
	TOTALS	632										13.6	13.6	100		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

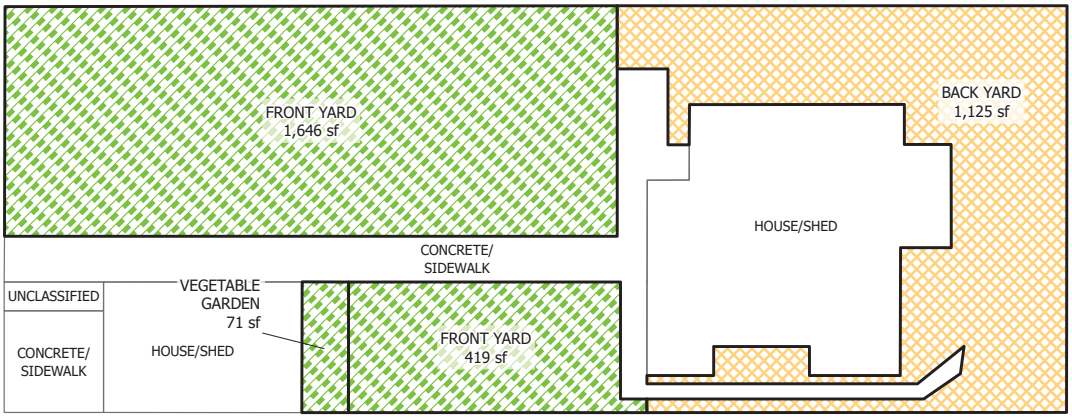
Legend
6" RA
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-072A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-072A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-072A-BY	Back Yard (BY)	1,125	42	52	39	15	396	369	124	29	Yes	20.8	20.8	1,125	-	-
BE-072A-DZ	Drip Zone (DZ)	220	23	29	23	14	301	260	107	35	-	-	-	-	-	-
BE-072A-FY	Front Yard (FY)	2,065	29	30	33	36	289	265	156	82	-	-	-	-	-	-
BE-072A-VG	Vegetable Garden (VG)	71	24	30	29	13	207	219	107	9	-	-	-	-	-	-
	TOTALS	3,481										20.8	20.8	1,125		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal
N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

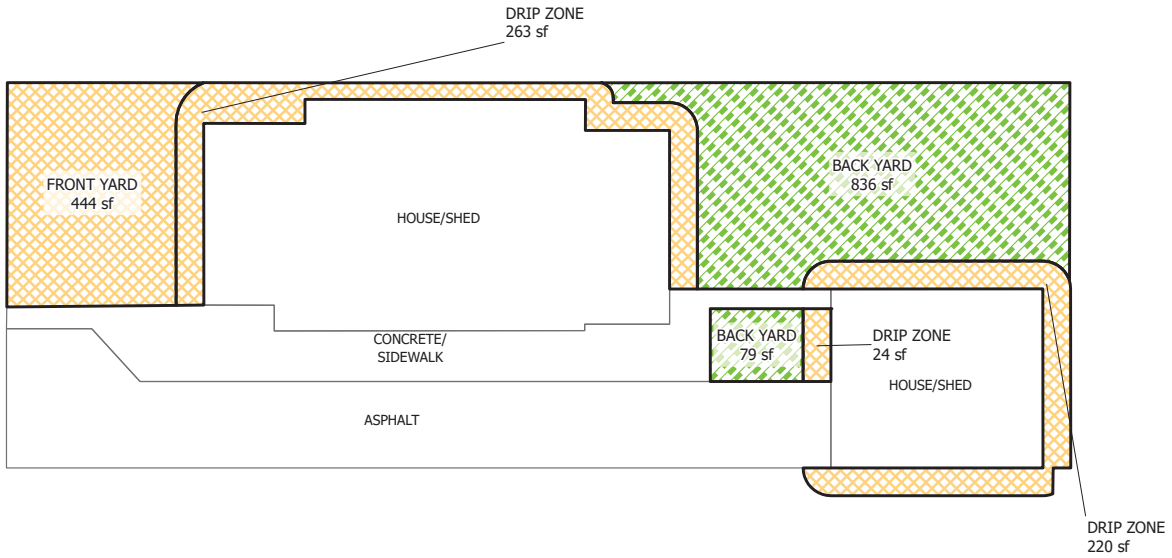
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-072B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-072B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-072B-BY	Back Yard (BY)	915	35	36	53	83	283	322	88	72	-	-	-	-	-	-
BE-072B-DZ	Drip Zone (DZ)	507	27	29	25	16	447	227	116	50	-	9.4	9.4	507	-	-
BE-072B-FY	Front Yard (FY)	444	34	25	13	11	542	90	20	39	-	8.2	8.2	444	-	-
	TOTALS	1,866										17.6	17.6	951		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

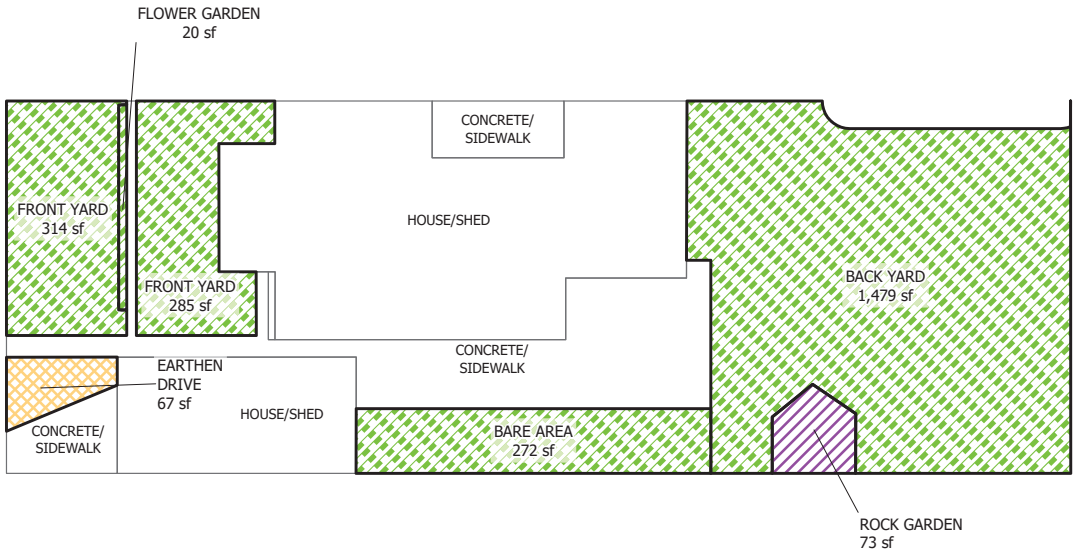
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-073

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-073			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-073-BA	Bare Area (BA)	272	36	46	38	59	267	282	23	154	-	-	-	-	-	-
BE-073-BY	Back Yard (BY)	1,479	42	105	48	64	326	346	203	215	-	-	-	-	-	-
BE-073-DZ	Drip Zone (DZ)	220	14	22	25	14	89	161	124	12	-	-	-	-	-	-
BE-073-ED	Earthen Drive (ED)	67	76	70	16	21	632	642	67	89	-	1.2	-	-	1.2	-
BE-073-FG	Flower Garden (FG)	20	14	31	21	7	123	127	28	10	-	-	-	-	-	-
BE-073-FY	Front Yard (FY)	599	14	16	8	5	79	43	19	6	-	-	-	-	-	-
BE-073-RG	Rock Garden (RG)	73	26	31	62	117	227	249	501	390	-	2.7	2.7	-	-	-
	TOTALS	2,730										3.9	2.7		1.2	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

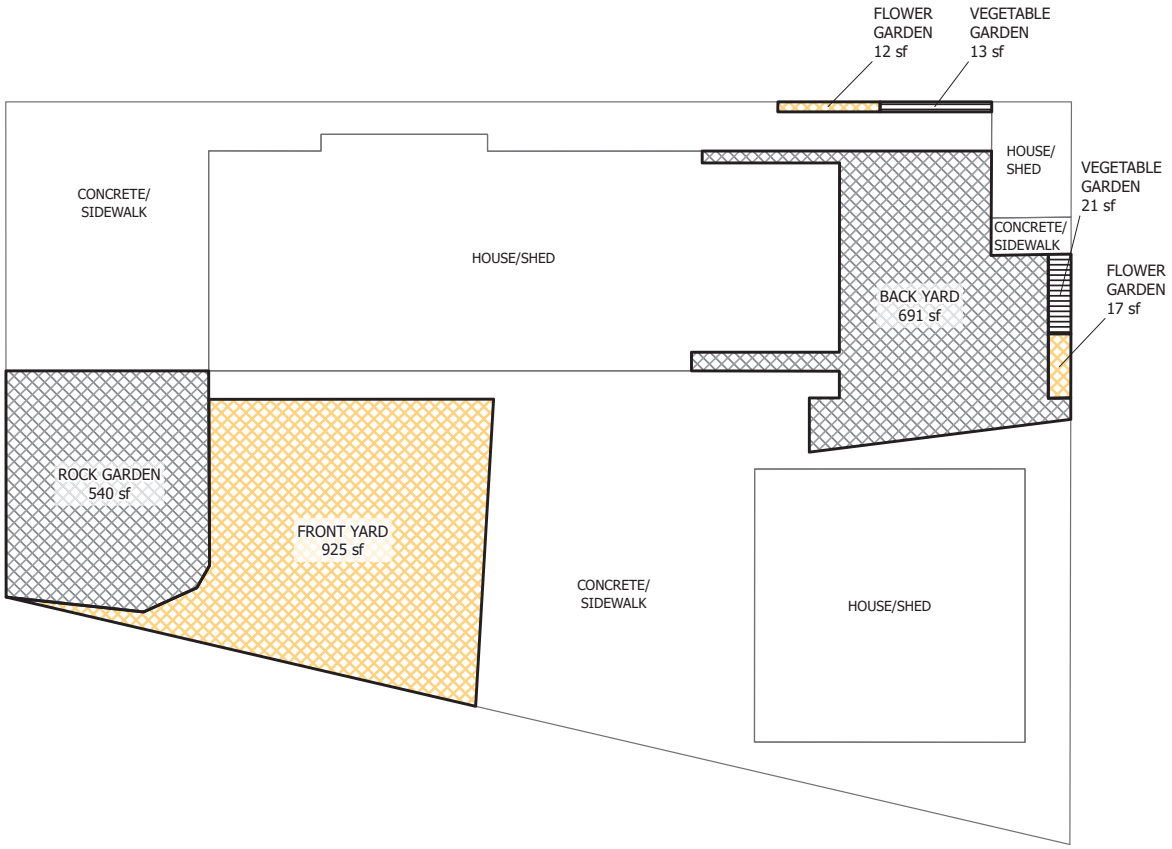
Legend
- No Action
- 6" RA
- 12" RA

N

0 10 20 Feet

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-074

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-074			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-074-BY	Back Yard (BY)	691	10	46	53	58	43	501	455	409	-	38.4	38.4	691	-	-
BE-074-FG	Flower Garden (FG)	29	47	39	24	55	475	227	31	36	-	0.5	0.5	29	-	-
BE-074-FY	Front Yard (FY)	925	52	54	25	9	467	114	14	9	-	17.1	17.1	925	-	-
BE-074-RG	Rock Garden (RG)	540	26	30	39	8	394	389	32	464	-	30.0	30.0	-	-	-
BE-074-VG	Vegetable Garden (VG)	34	49	50	77	120	373	396	479	507	-	2.5	2.5	34	-	-
	TOTALS	2,219										88.5	88.5	1,679		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

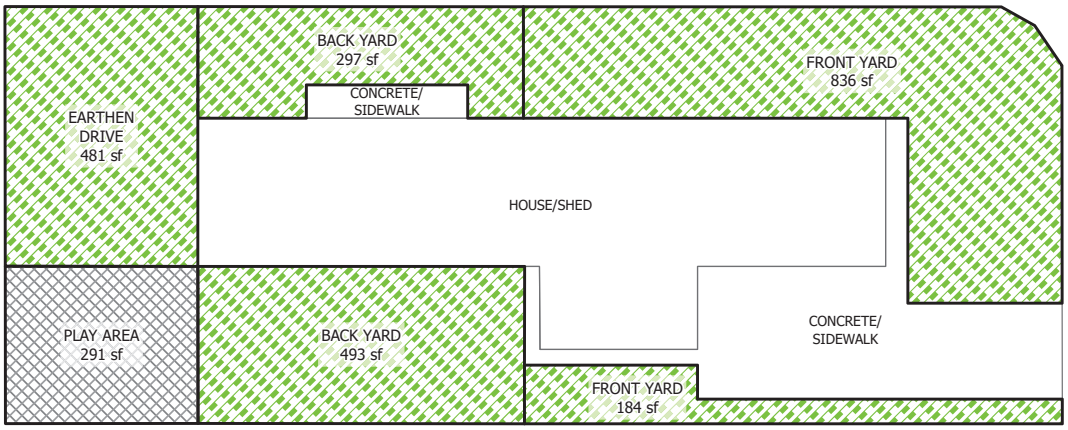
Legend
6" RA
18" RA
24" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-075

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-075			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-075-BY	Back Yard (BY)	790	32	17	17	16	148	82	74	13	-	-	-	-	-	-
BE-075-DZ	Drip Zone (DZ)	220	22	24	24	26	72	82	72	65	-	-	-	-	-	-
BE-075-ED	Earthen Drive (ED)	481	33	43	30	32	313	302	165	262	-	-	-	-	-	-
BE-075-FY	Front Yard (FY)	1,020	25	31	24	18	148	105	122	77	-	-	-	-	-	-
BE-075-PA	Play Area (PA)	291	17	11	20	24	46	41	351	713	-	16.2	16.2	291	-	-
	TOTALS	2,802										16.2	16.2	291		

Component Arsenic Concentration is > 253 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

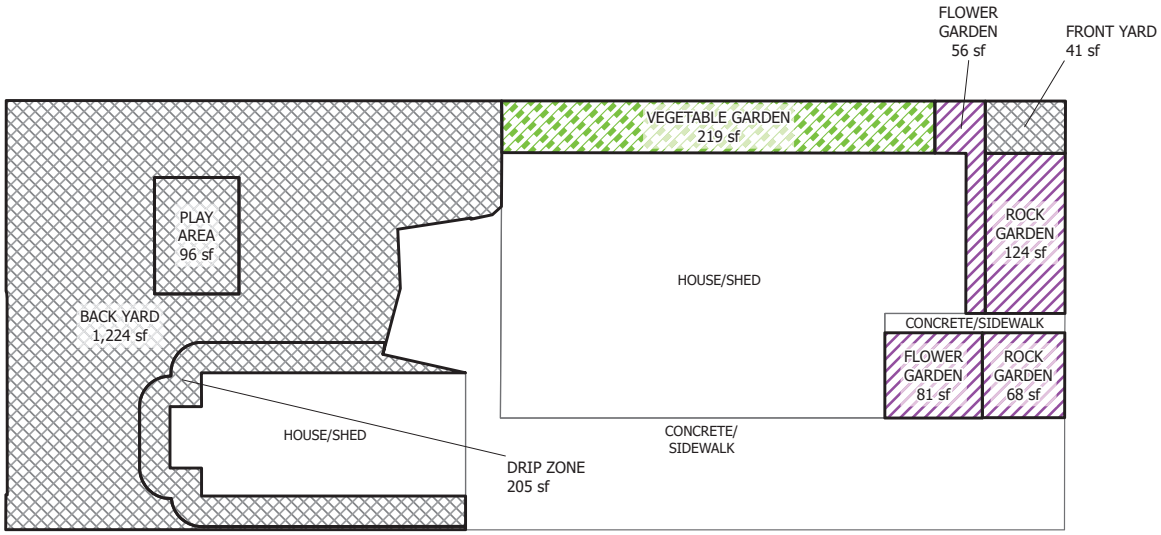
Legend
No Action
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-076

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-076			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-076-BY	Back Yard (BY)	1,224	42	43	35	66	729	722	658	614	-	68.0	68.0	1,224	-	-
BE-076-DZ	Drip Zone (DZ)	205	32	38	41	44	524	661	735	418	-	11.4	11.4	205	-	-
BE-076-FG	Flower Garden (FG)	137	38	43	71	59	455	848	533	175	-	5.1	5.1	137	-	-
BE-076-FY	Front Yard (FY)	41	28	35	21	324	148	243	14	49	-	2.3	2.3	41	-	-
BE-076-PA	Play Area (PA)	96	36	38	44	48	829	736	682	429	-	5.3	5.3	96	-	-
BE-076-RG	Rock Garden (RG)	192	45	48	48	28	494	532	456	69	-	7.1	7.1	-	-	-
BE-076-VG	Vegetable Garden (VG)	219	33	29	25	19	360	228	69	36	-	-	-	-	-	-
	TOTALS	2,114										99.2	99.2	1,703		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

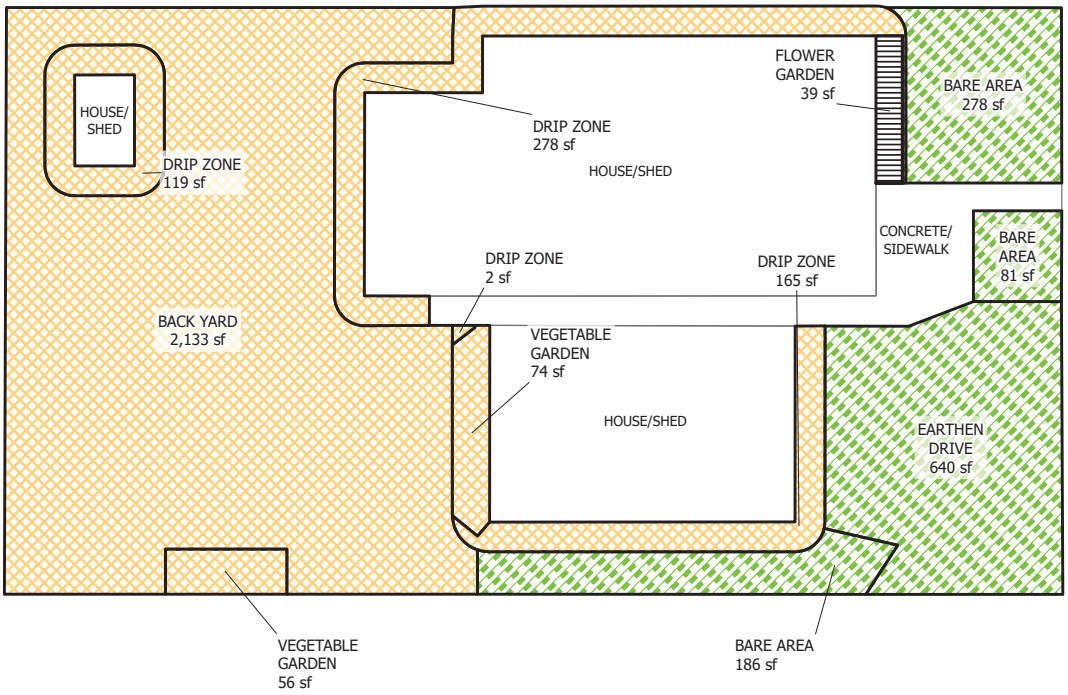
Legend
No Action
12" RA
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-077

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-077			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-077-BA	Bare Area (BA)	545	60	49	9	9	362	290	14	12	-	-	-	-	-	-
BE-077-BY	Back Yard (BY)	2,133	41	77	77	70	392	435	371	190	-	39.5	39.5	2,133	-	-
BE-077-DZ	Drip Zone (DZ)	564	75	85	91	131	478	641	351	200	-	10.4	10.4	564	-	-
BE-077-ED	Earthen Drive (ED)	640	12	14	61	104	91	130	235	54	-	-	-	-	-	-
BE-077-FG	Flower Garden (FG)	39	39	33	78	160	530	333	478	586	-	2.9	2.9	39	-	-
BE-077-VG	Vegetable Garden (VG)	130	58	96	151	97	364	507	372	127	-	2.4	2.4	130	-	-
	TOTALS	4,051										55.2	55.2	2,866		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

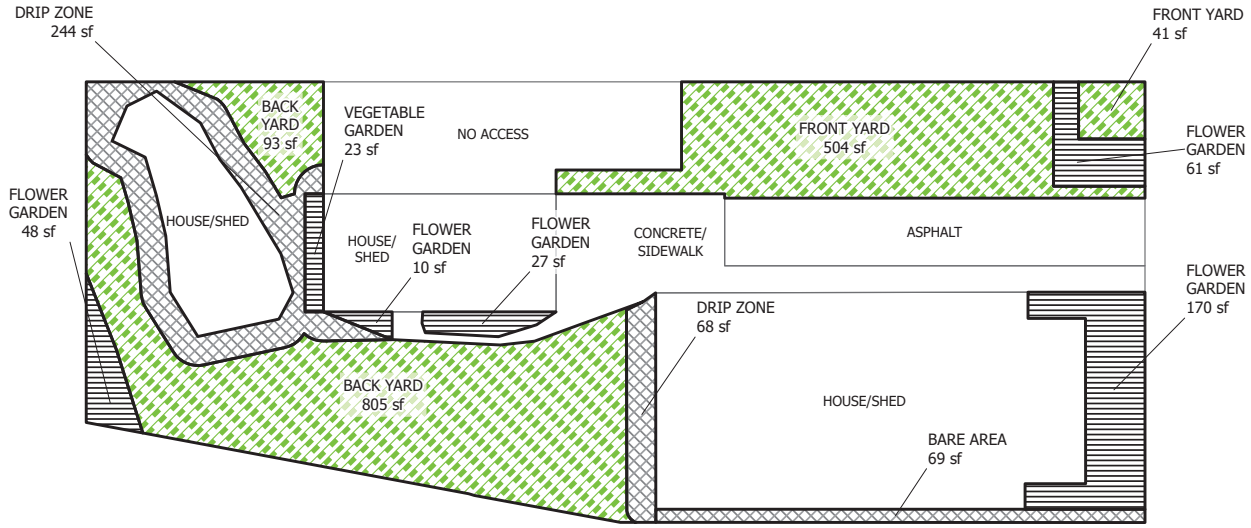
Legend
- No Action
- 6" RA
- 24" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-078

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-078			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-078-BA	Bare Area (BA)	69	68	48	49	116	776	787	447	749	-	3.8	3.8	69	-	-
BE-078-BY	Back Yard (BY)	898	20	49	52	60	56	183	181	155	-	-	-	-	-	-
BE-078-DZ	Drip Zone (DZ)	312	52	58	68	91	436	450	464	679	-	17.3	17.3	312	-	-
BE-078-FG	Flower Garden (FG)	316	27	43	61	91	205	468	369	485	-	23.4	23.4	316	-	-
BE-078-FY	Front Yard (FY)	545	42	62	54	75	238	343	221	93	-	-	-	-	-	-
BE-078-VG	Vegetable Garden (VG)	23	8	23	81	184	53	177	452	529	-	1.7	1.7	23	-	-
	TOTALS	2,163										46.2	46.2	720		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

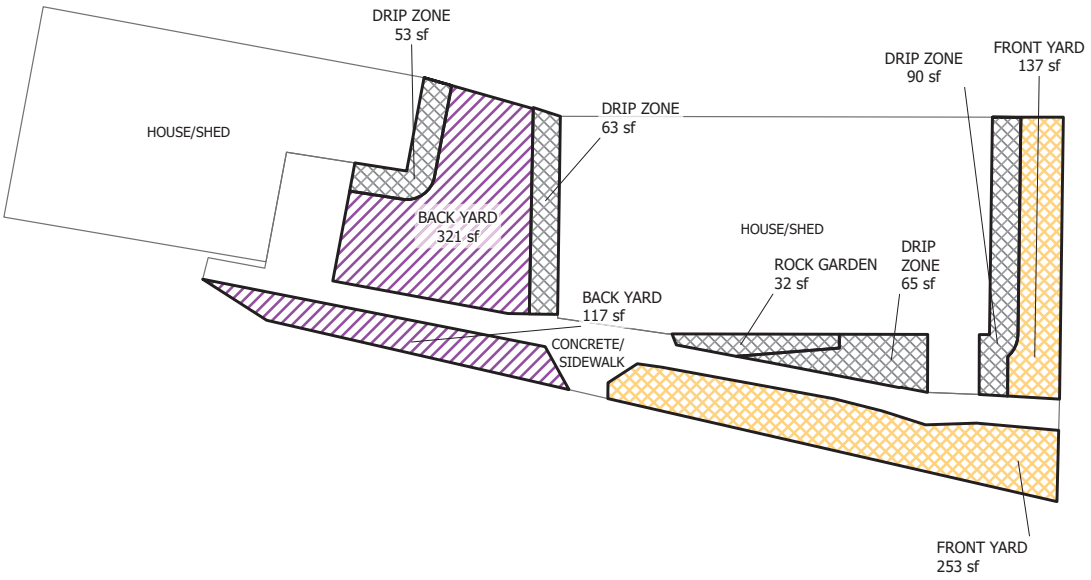
Legend
No Action
18" RA
24" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-079

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-079			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-079-BY	Back Yard (BY)	438	11	33	40	39	321	398	405	264	-	16.2	16.2	438	-	-
BE-079-DZ	Drip Zone (DZ)	271	21	28	27	61	332	438	413	697	-	15.1	15.1	271	-	-
BE-079-FY	Front Yard (FY)	390	28	39	68	57	352	562	132	279	-	7.2	7.2	390	-	-
BE-079-RG	Rock Garden (RG)	32	17	32	47	43	247	667	1000	793	-	1.8	1.8	-	-	-
	TOTALS	1,131										40.3	40.3	1,099		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

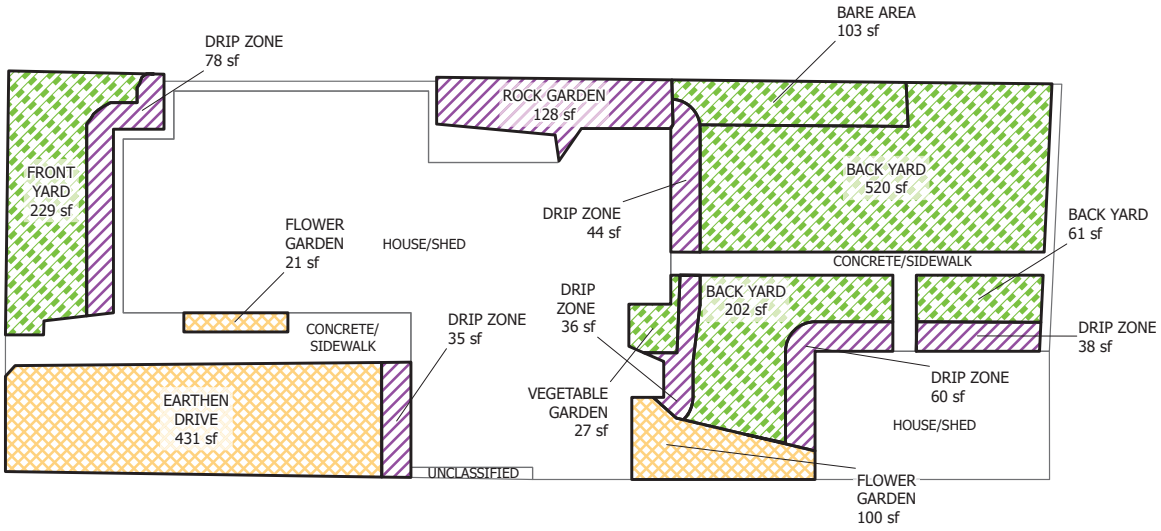
Legend
6" RA
12" RA
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-081

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-081			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-081-BA	Bare Area (BA)	103	33	55	70	48	203	325	302	88	-	-	-	-	-	-
BE-081-BY	Back Yard (BY)	783	30	103	163	60	323	337	249	50	-	-	-	-	-	-
BE-081-DZ	Drip Zone (DZ)	291	48	159	430	57	443	562	521	36	-	10.8	10.8	291	-	-
BE-081-ED	Earthen Drive (ED)	431	48	85	56	48	455	377	102	206	-	8.0	-	-	8.0	-
BE-081-FG	Flower Garden (FG)	121	66	42	95	49	489	270	336	348	-	2.2	2.2	121	-	-
BE-081-FY	Front Yard (FY)	229	20	36	35	30	192	356	197	38	-	-	-	-	-	-
BE-081-RG	Rock Garden (RG)	128	36	398	755	107	388	570	921	63	-	4.7	4.7	-	-	-
BE-081-VG	Vegetable Garden (VG)	27	6	21	49	74	33	289	395	148	-	-	-	-	-	-
	TOTALS	2,113										25.7	17.7	412	8.0	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

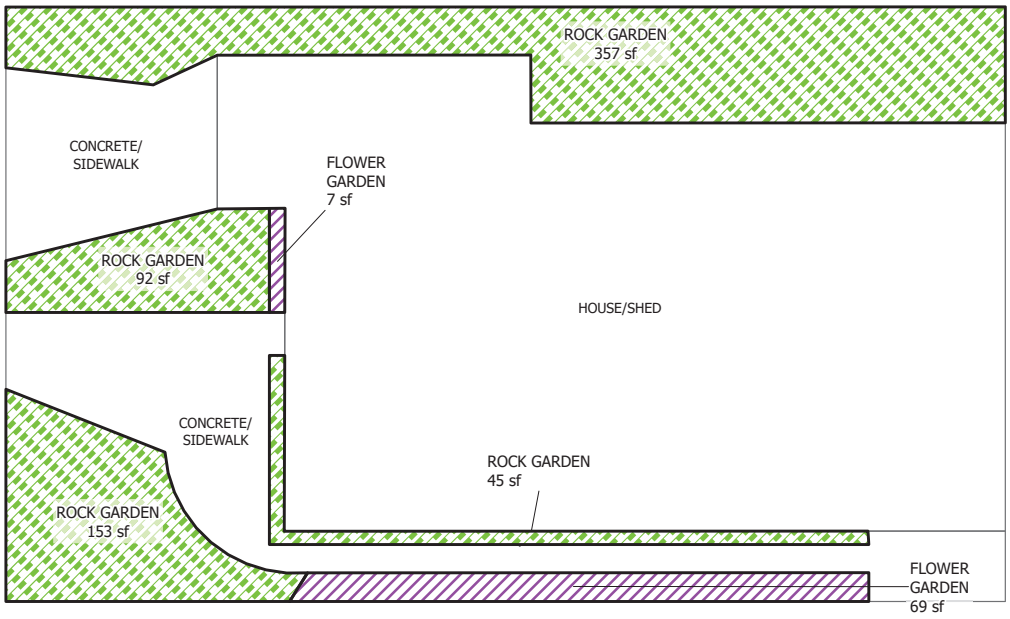
Legend
- No Action
- 6" RA
- 12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-082A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-082A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-082A-DZ	Drip Zone (DZ)	220	27	41	65	60	429	324	275	50	-	4.1	4.1	220	-	-
BE-082A-FG	Flower Garden (FG)	76	40	54	80	18	465	535	493	205	-	2.8	2.8	76	-	-
BE-082A-RG	Rock Garden (RG)	647	26	35	28	68	244	180	94	66	-	-	-	-	-	-
	TOTALS	943										6.9	6.9	296		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

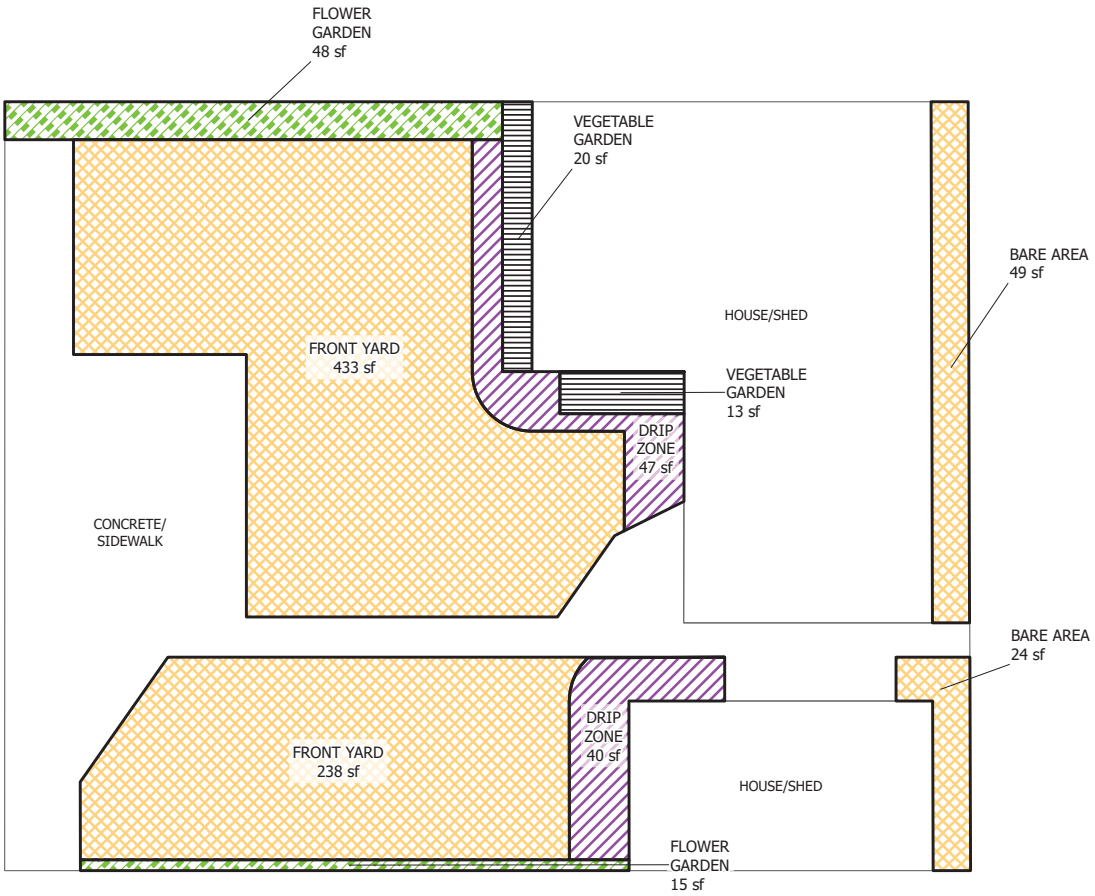
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12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-082B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-082B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-082B-BA	Bare Area (BA)	73	70	66	15	10	378	288	51	24	Yes	1.4	1.4	73	-	-
BE-082B-DZ	Drip Zone (DZ)	87	41	51	38	18	513	497	453	73	-	3.2	3.2	87	-	-
BE-082B-FG	Flower Garden (FG)	63	32	47	59	37	233	335	352	90	-	-	-	-	-	-
BE-082B-FY	Front Yard (FY)	671	48	57	79	42	379	371	316	91	Yes	12.4	12.4	671	-	-
BE-082B-VG	Vegetable Garden (VG)	33	12	17	30	40	112	172	402	484	-	2.4	2.4	33	-	-
	TOTALS	927										19.4	19.4	864		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

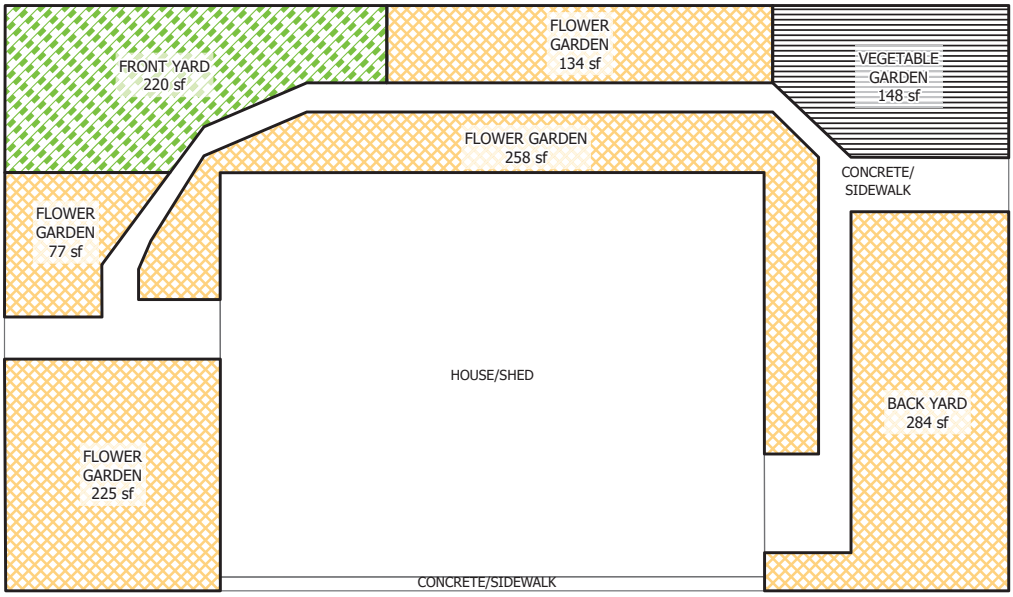
Legend
- No Action
- 6" RA
- 12" RA
- 24" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-083A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-083A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-083A-BY	Back Yard (BY)	284	50	61	86	41	358	367	256	72	Yes	5.3	5.3	284	-	-
BE-083A-DZ	Drip Zone (DZ)	220	34	40	58	23	352	396	281	31	-	-	-	-	-	-
BE-083A-FG	Flower Garden (FG)	694	43	63	74	55	374	453	354	260	-	12.9	12.9	694	-	-
BE-083A-FY	Front Yard (FY)	220	23	47	111	96	230	333	201	109	-	-	-	-	-	-
BE-083A-VG	Vegetable Garden (VG)	148	64	51	92	85	475	361	365	437	-	11.0	11.0	148	-	-
	TOTALS	1,566										29.2	29.2	1,126		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

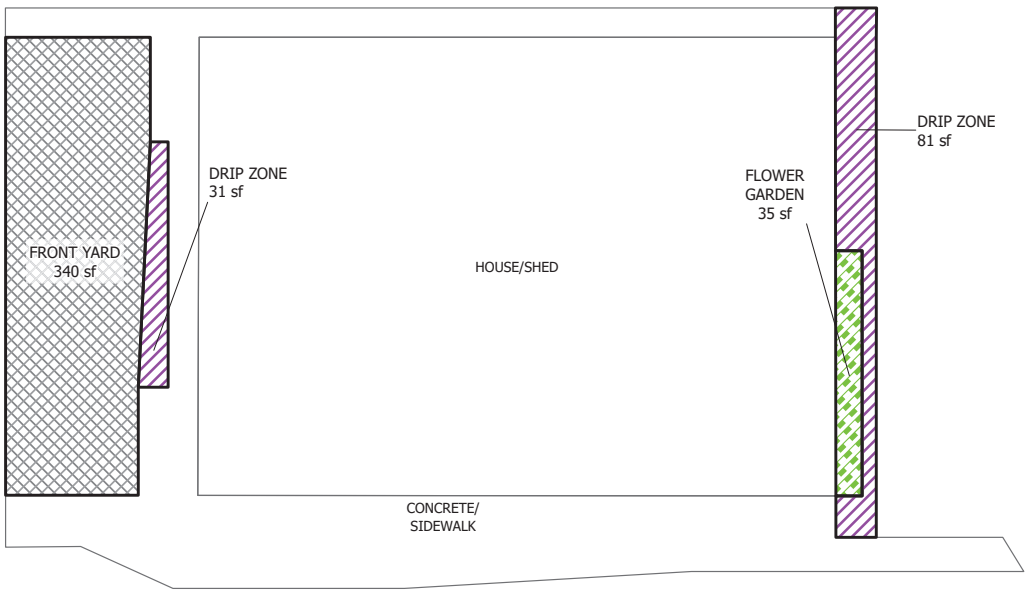
Legend
No Action
6" RA
24" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-084A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-084A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-084A-DZ	Drip Zone (DZ)	112	6	35	44	40	31	316	418	305	-	4.1	4.1	112	-	-
BE-084A-FG	Flower Garden (FG)	35	4	33	49	53	23	239	335	293	-	-	-	-	-	-
BE-084A-FY	Front Yard (FY)	340	49	79	126	468	408	475	204	95	-	18.9	18.9	340	-	-
	TOTALS	487										23.0	23.0	452		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

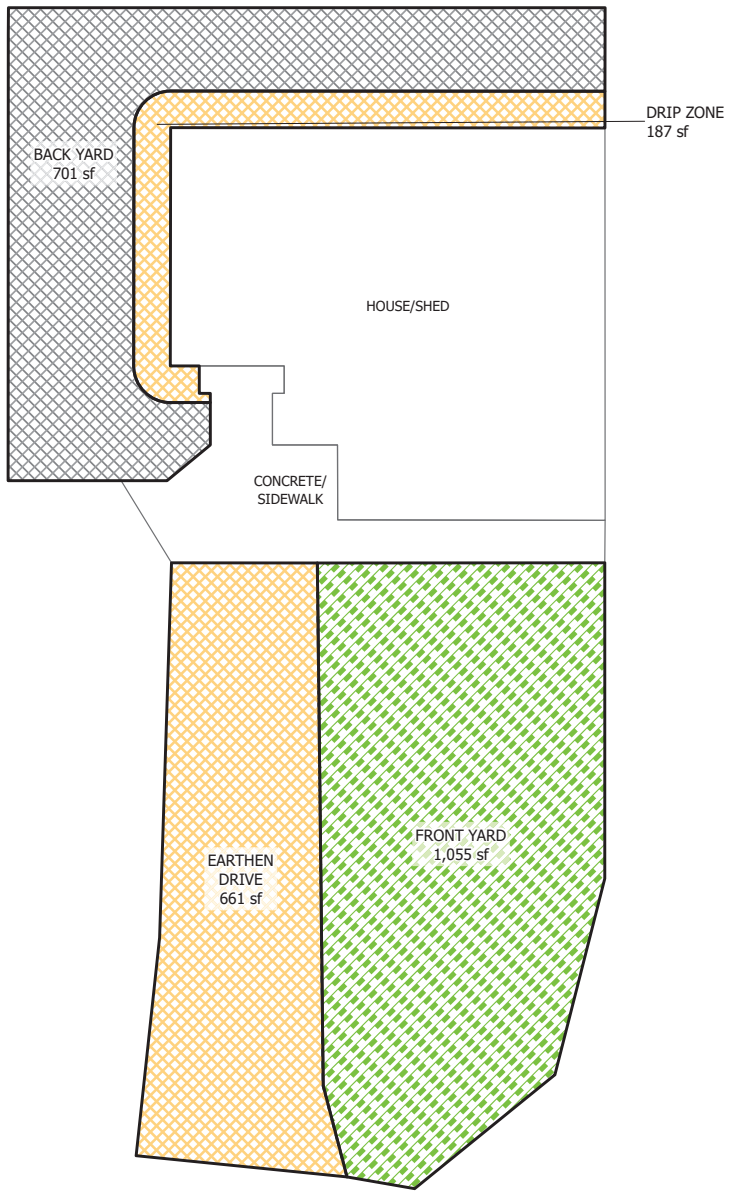
Legend
- No Action
- 12" RA
- 18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-084B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-084B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-084B-BY	Back Yard (BY)	701	77	104	156	132	410	364	629	778	-	38.9	38.9	701	-	-
BE-084B-DZ	Drip Zone (DZ)	187	45	183	111	72	256	235	54	34	Yes	3.5	3.5	187	-	-
BE-084B-ED	Earthen Drive (ED)	661	50	58	67	48	549	404	304	95	-	12.2	-	-	12.2	-
BE-084B-FY	Front Yard (FY)	1,055	47	56	87	110	305	311	314	152	-	-	-	-	-	-
	TOTALS	2,604										54.6	42.4	888	12.2	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

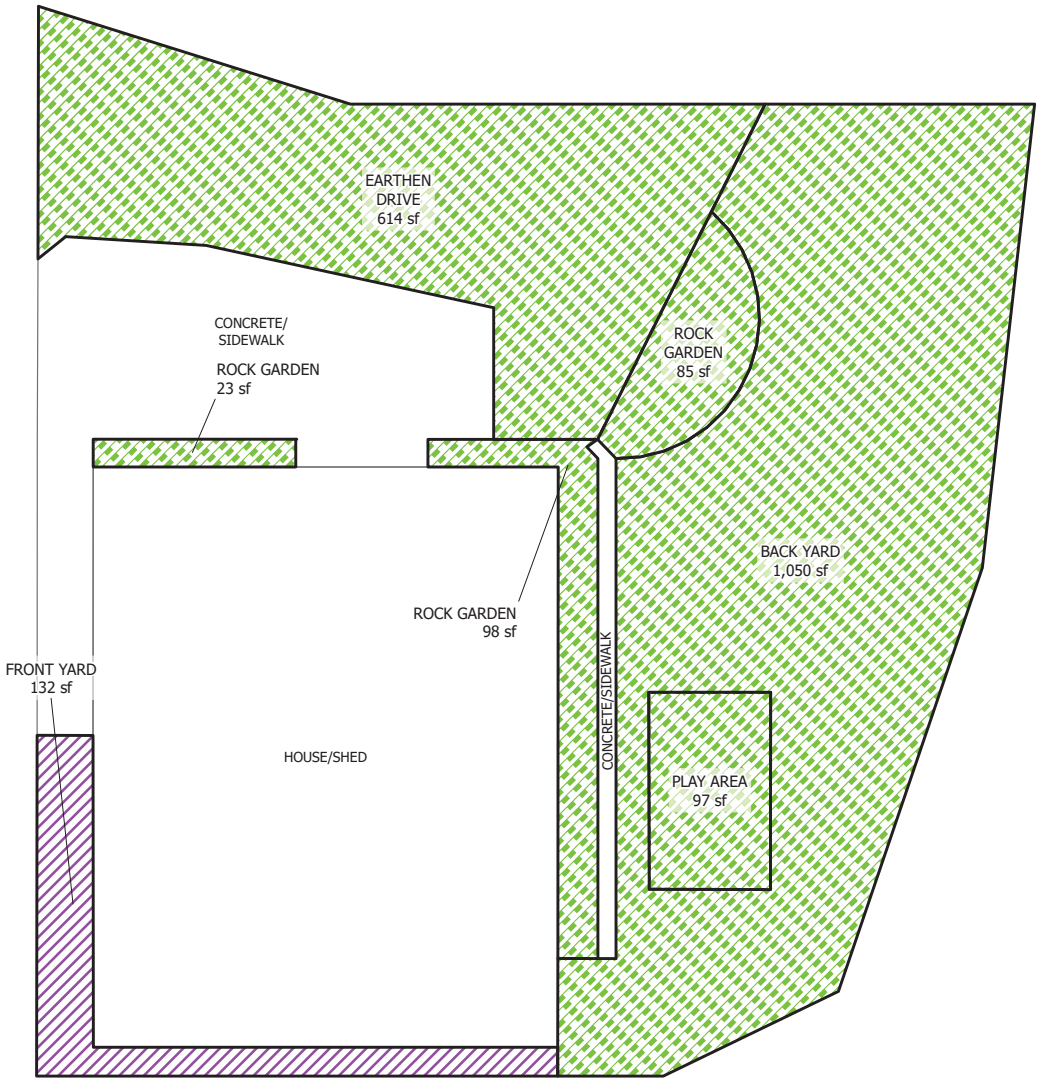
Legend
- No Action
- 6" RA
- 18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-087

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-087			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-087-BY	Back Yard (BY)	1,050	12	31	78	66	98	165	369	165	-	-	-	-	-	-
BE-087-DZ	Drip Zone (DZ)	220	18	26	36	26	201	362	194	108	-	-	-	-	-	-
BE-087-ED	Earthen Drive (ED)	614	17	36	44	70	163	287	133	71	-	-	-	-	-	-
BE-087-FY	Front Yard (FY)	132	28	81	119	45	200	739	408	142	-	4.9	4.9	132	-	-
BE-087-PA	Play Area (PA)	97	7	19	21	24	50	227	346	168	-	-	-	-	-	-
BE-087-RG	Rock Garden (RG)	206	8	7	16	14	54	39	110	50	-	-	-	-	-	-
	TOTALS	2,319										4.9	4.9	132		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

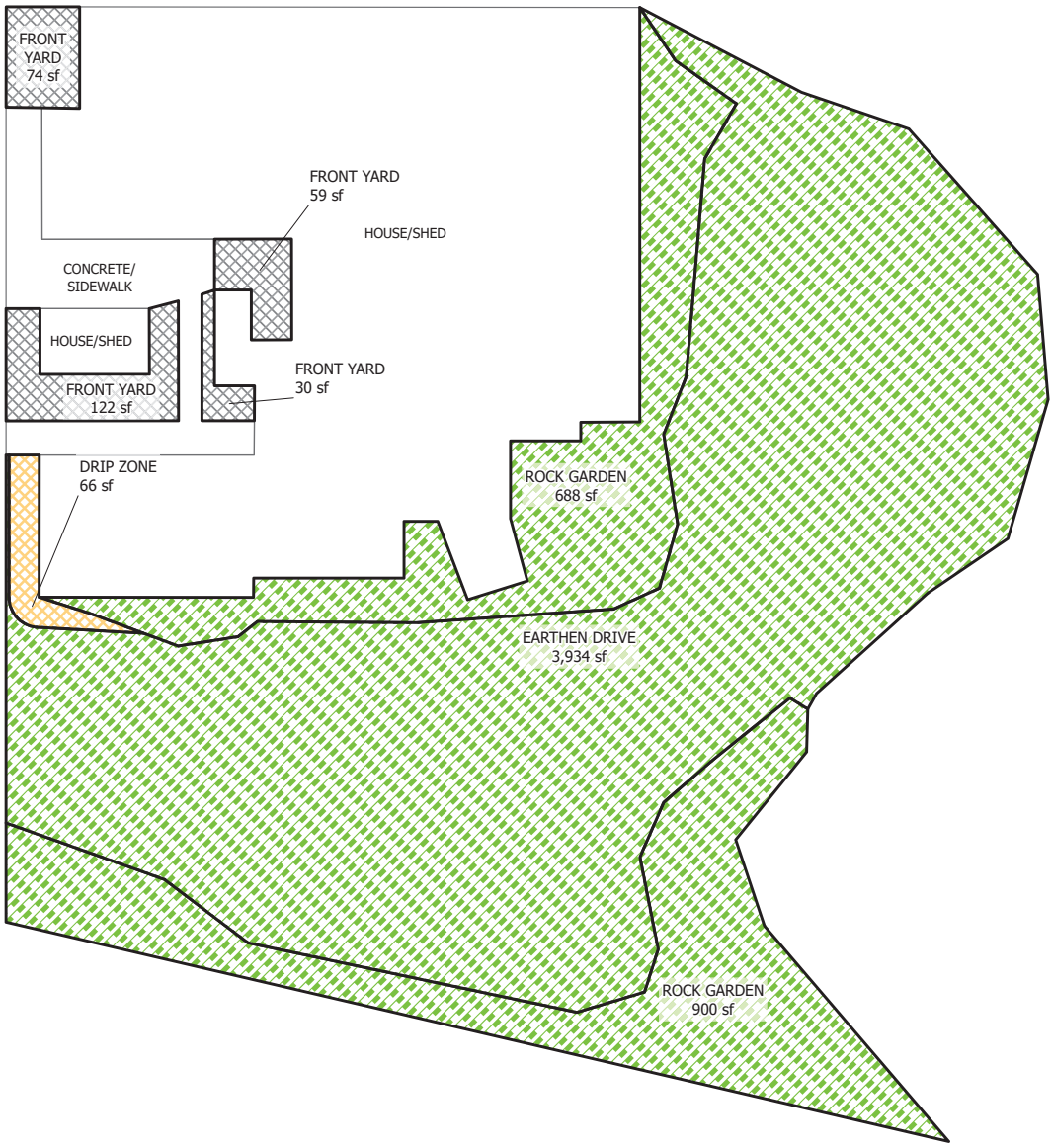
Legend
No Action
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-088

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-088			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-088-DZ	Drip Zone (DZ)	66	61	40	50	38	418	250	223	227	-	1.2	1.2	66	-	-
BE-088-ED	Earthen Drive (ED)	3,934	13	23	22	27	50	118	85	103	-	-	-	-	-	-
BE-088-FY	Front Yard (FY)	285	54	88	136	123	668	595	1240	1590	-	15.8	15.8	285	-	-
BE-088-RG	Rock Garden (RG)	1,588	19	21	41	12	160	148	108	49	-	-	-	-	-	-
	TOTALS	5,873										17.0	17.0	351		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

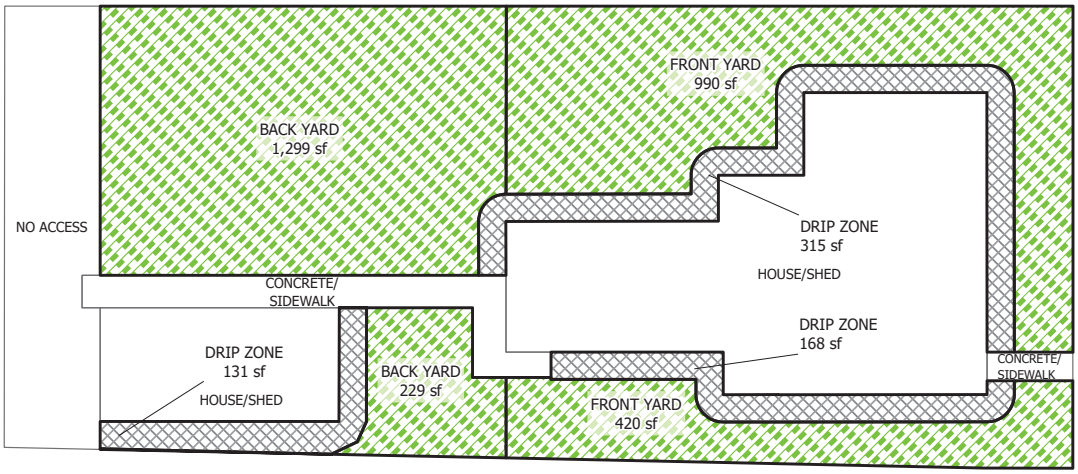
Legend
- No Action
- 6" RA
- 18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-090

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-090			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-090-BY	Back Yard (BY)	1,528	13	18	15	40	146	141	81	288	-	-	-	-	-	-
BE-090-DZ	Drip Zone (DZ)	614	19	28	65	77	256	234	452	407	-	34.1	34.1	614	-	-
BE-090-FY	Front Yard (FY)	1,410	13	20	72	45	112	311	273	224	-	-	-	-	-	-
	TOTALS	3,552										34.1	34.1	614		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

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ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

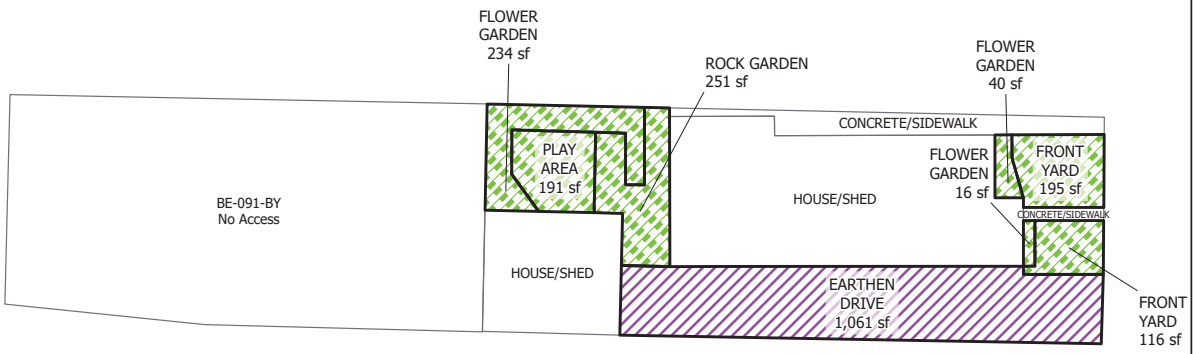
Legend
No Action
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-091

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-091			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-091-DZ	Drip Zone (DZ)	220	34	53	115	100	134	171	237	239	-	-	-	-	-	-
BE-091-ED	Earthen Drive (ED)	1,061	13	30	45	19	113	337	415	38	-	39.3	19.6	-	19.6	-
BE-091-FG	Flower Garden (FG)	290	12	6	18	66	24	24	132	207	-	-	-	-	-	-
BE-091-FY	Front Yard (FY)	311	6	19.1	21	42	31	165	134	90	-	-	-	-	-	-
BE-091-PA	Play Area (PA)	191	18	14	27	29	137	100	98	168	-	-	-	-	-	-
BE-091-RG	Rock Garden (RG)	251	15	13	34	17	59	106	64	106	-	-	-	-	-	-
	TOTALS	2,324										39.3	19.6		19.6	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

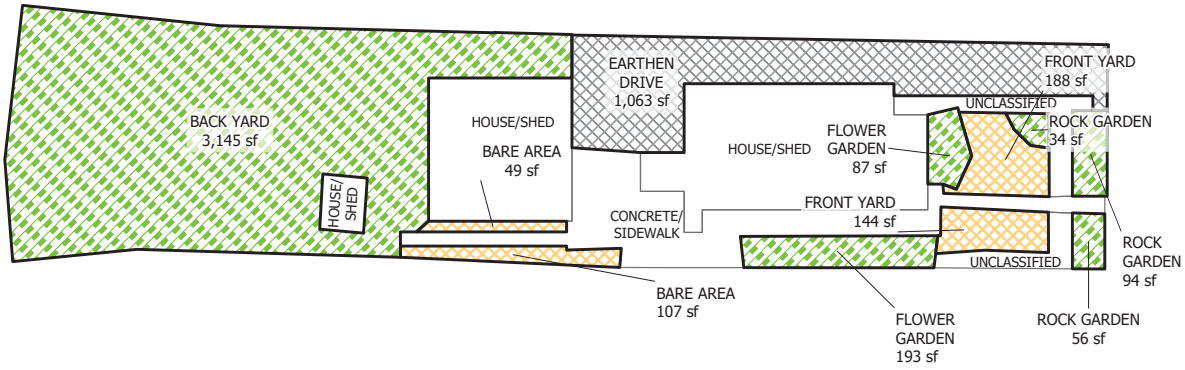
Legend
No Action
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-092

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-092			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-092-BA	Bare Area (BA)	156	31	44	51	47	474	439	174	168	-	2.9	2.9	156	-	-
BE-092-BY	Back Yard (BY)	3,145	27	28	41	33	252	257	104	377	-	-	-	-	-	-
BE-092-DZ	Drip Zone (DZ)	220	16	22	32	35	211	231	180	114	-	-	-	-	-	-
BE-092-ED	Earthen Drive (ED)	1,063	14	25	42	47	143	194	590	965	-	59.1	39.4	-	19.7	-
BE-092-FG	Flower Garden (FG)	280	32	41	64	53	374	368	247	96	-	-	-	-	-	-
BE-092-FY	Front Yard (FY)	332	26	27	56	71	659	190	190	110	-	6.1	6.1	332	-	-
BE-092-RG	Rock Garden (RG)	184	30	27	18	16	173	220	68	33	-	-	-	-	-	-
	TOTALS	5,380										68.1	48.4	488	19.7	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

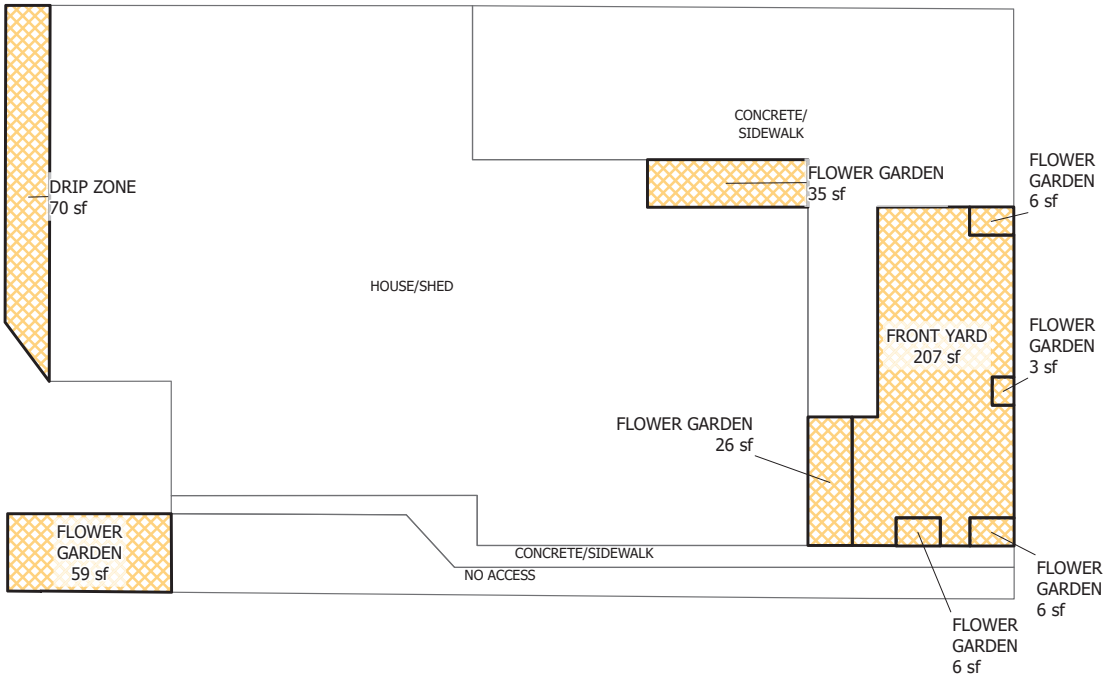
Legend
- No Action
- 6" RA
- 18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-093A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-093A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-093A-DZ	Drip Zone (DZ)	70	32	23	24	19	593	447	259	368	-	1.3	1.3	70	-	-
BE-093A-FG	Flower Garden (FG)	141	28	33	40	20	777	410	206	102	-	2.6	2.6	141	-	-
BE-093A-FY	Front Yard (FY)	207	160	25	26	13	287	186	112	51	Yes	3.8	3.8	207	-	-
	TOTALS	418										7.7	7.7	418		

Component Arsenic Concentration is > 253 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

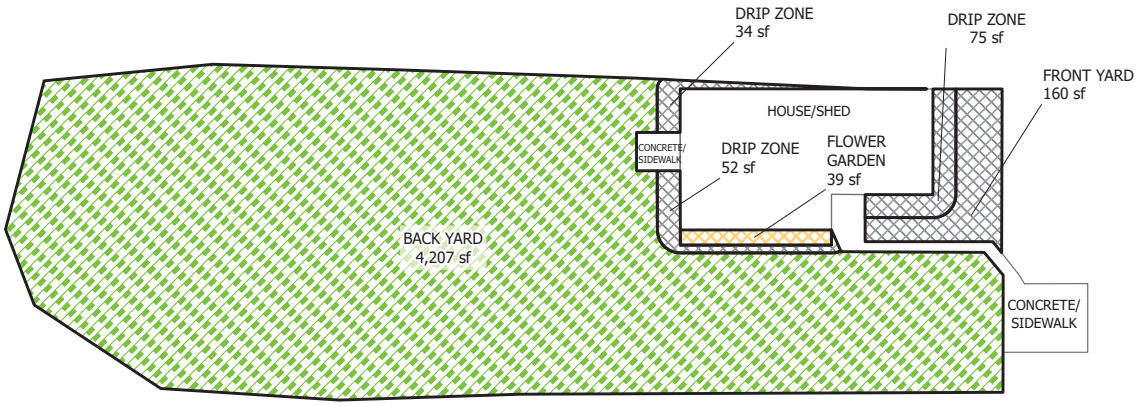
Legend
6" RA

N

0 10 20 Feet

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-093B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-093B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-093B-BY	Back Yard (BY)	4,207	31	62	81	180	339	276	230	292	-	-	-	-	-	-
BE-093B-DZ	Drip Zone (DZ)	161	49	79	155	27	693	537	382	727	-	8.9	8.9	161	-	-
BE-093B-FG	Flower Garden (FG)	39	32	76	167	162	306	246	318	265	Yes	0.7	0.7	39	-	-
BE-093B-FY	Front Yard (FY)	160	41	58	535	1560	534	680	1060	1590	-	8.9	8.9	160	-	-
	TOTALS	4,567										18.5	18.5	360		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

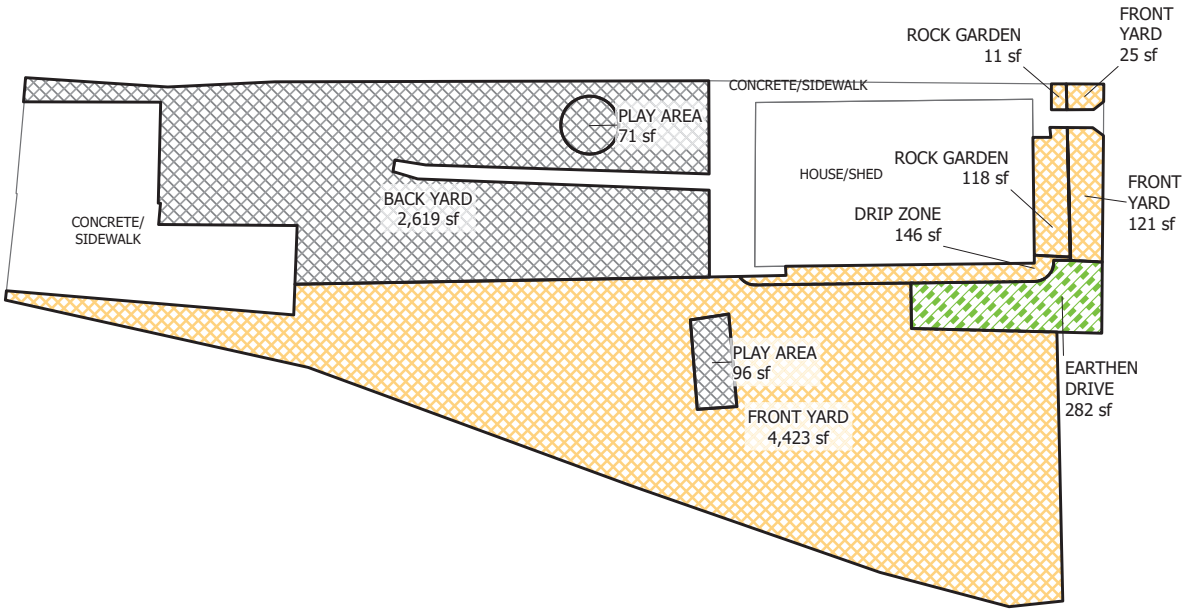
Legend
- No Action
- 6" RA
- 18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-094

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-094			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-094-BY	Back Yard (BY)	2,619	50	78	98	127	406	336	349	606	-	145.5	145.5	2,619	-	-
BE-094-DZ	Drip Zone (DZ)	146	28	40	44	13	440	650	271	44	-	2.7	2.7	146	-	-
BE-094-ED	Earthen Drive (ED)	282	31	43	116	31	250	211	388	76	-	-	-	-	-	-
BE-094-FY	Front Yard (FY)	4,569	37	89	133	166	503	773	294	211	-	84.6	84.6	4,569	-	-
BE-094-PA	Play Area (PA)	167	58	98	167	313	684	399	364	316	-	9.3	9.3	167	-	-
BE-094-RG	Rock Garden (RG)	129	44	45	47	26	495	409	147	113	-	2.4	2.4	-	-	-
	TOTALS	7,912										244.5	244.5	7,501		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

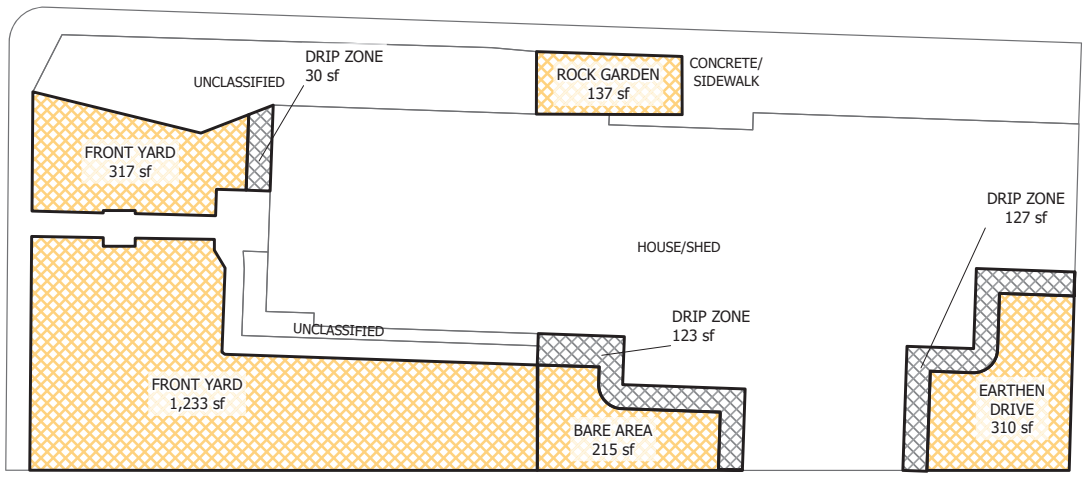
Legend
- No Action
- 6" RA
- 18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-203

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-203			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-203-BA	Bare Area (BA)	215	28	35	44	103	585	342	147	56	-	4.0	4.0	215	-	-
BE-203-DZ	Drip Zone (DZ)	280	30	42	48	62	733	755	120	48	-	15.6	15.6	280	-	-
BE-203-ED	Earthen Drive (ED)	310	16	30	0	26	432	23	3	28	-	5.7	-	-	5.7	-
BE-203-FY	Front Yard (FY)	1,550	26	38	41	37	578	316	43	39	-	28.7	28.7	1,550	-	-
BE-203-RG	Rock Garden (RG)	137	31	44	186	147	691	631	138	65	-	2.5	2.5	-	-	-
	TOTALS	2,492										56.5	50.8	2,045	5.7	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

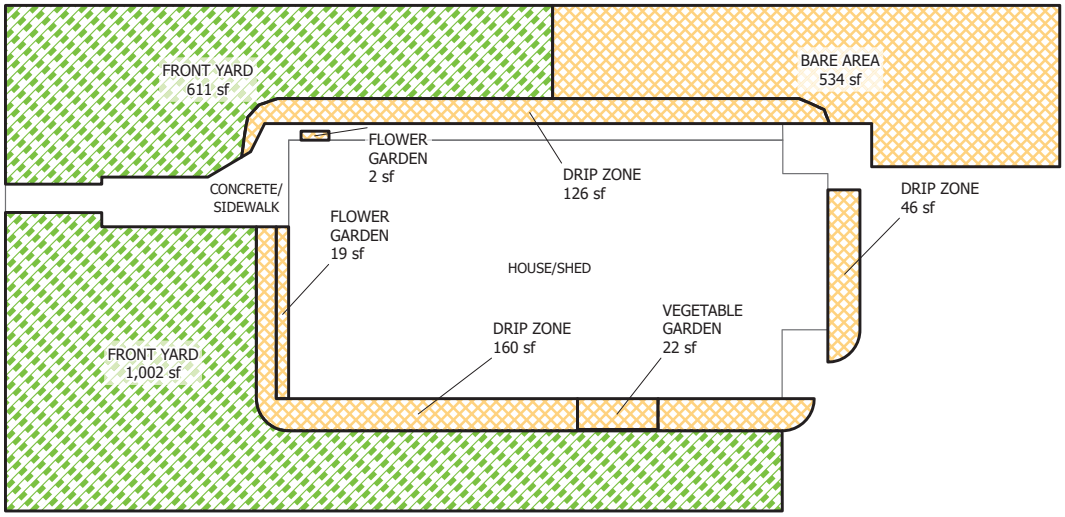
Legend
6" RA
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-204A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-204A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-204A-BA	Bare Area (BA)	534	27	46	45	30	446	361	131	14	-	9.9	9.9	534	-	-
BE-204A-DZ	Drip Zone (DZ)	332	18	21	20	19.1	671	621	194	52	-	6.1	6.1	332	-	-
BE-204A-FG	Flower Garden (FG)	21	17	22	21	16	401	456	156	29	-	0.4	0.4	21	-	-
BE-204A-FY	Front Yard (FY)	1,613	21	23	29	23	365	329	186	24	-	-	-	-	-	-
BE-204A-VG	Vegetable Garden (VG)	22	21	23	24	45	636	836	269	67	-	0.4	0.4	22	-	-
	TOTALS	2,522										16.8	16.8	909		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

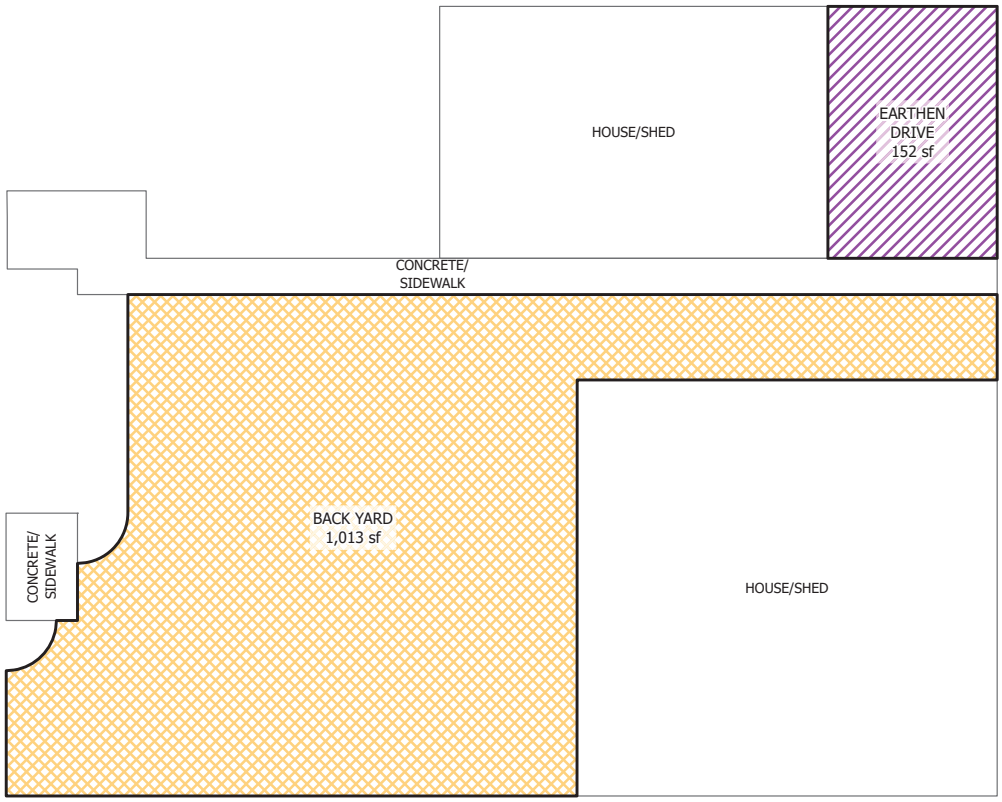
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-204B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-204B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-204B-BY	Back Yard (BY)	1,013	32	26	44	96	531	375	373	315	-	18.8	18.8	1,013	-	-
BE-204B-DZ	Drip Zone (DZ)	220	22	49	29	35	291	268	302	97	-	-	-	-	-	-
BE-204B-ED	Earthen Drive (ED)	152	18	60	62	23	523	388	403	135	-	5.6	2.8	-	2.8	-
	TOTALS	1,385										24.4	21.6	1,013	2.8	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

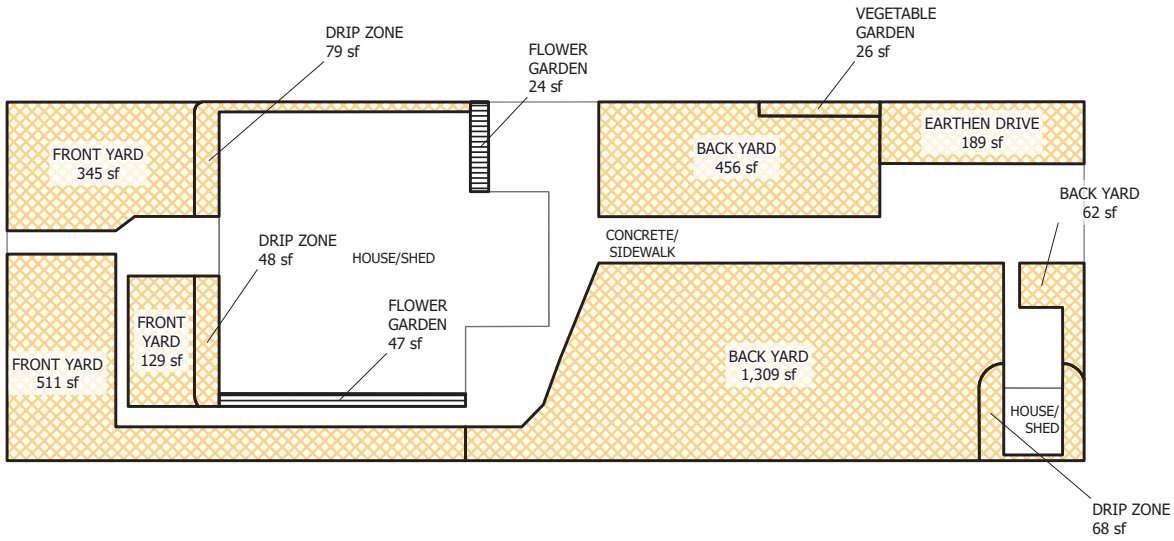
Legend
6" RA
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
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NOTE: ED Sampling refusal at 6 or 12 inches during sampling. Concentrations to 18 inches assumed based upon the 0 to 6 inch samples. No further sampling planned.

Resident ID
BE-205

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-205			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-205-BY	Back Yard (BY)	1,827	18	27	41	44	716	387	264	89	-	33.8	33.8	1,827	-	-
BE-205-DZ	Drip Zone (DZ)	195	23	33	71	41	1110	434	208	62	-	3.6	3.6	195	-	-
BE-205-ED	Earthen Drive (ED)	189	23	16	N/A	N/A	853	2770	N/A	N/A	-	3.5	-	-	3.5	-
BE-205-FG	Flower Garden (FG)	71	28	37	51	34	1120	583	464	476	-	5.3	5.3	71	-	-
BE-205-FY	Front Yard (FY)	985	23	32	38	44	469	304	62	18	-	18.2	18.2	985	-	-
BE-205-VG	Vegetable Garden (VG)	26	23	29	32	27	418	304	172	42	-	0.5	0.5	26	-	-
	TOTALS	3,293										64.9	61.4	3,104	3.5	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

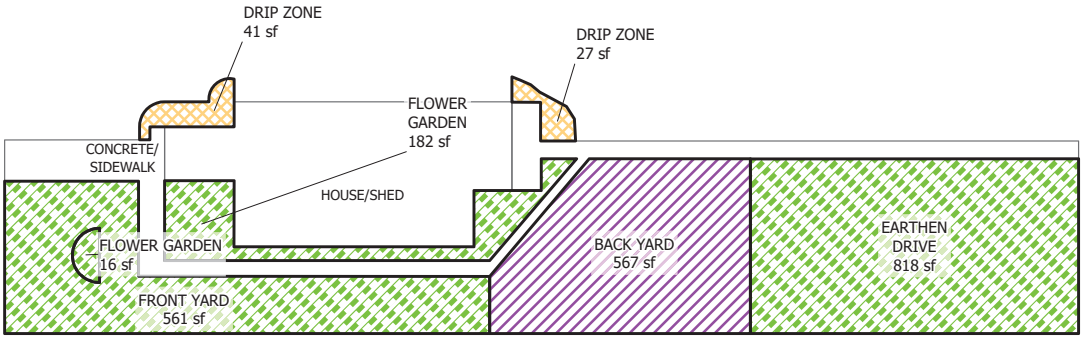
Legend
6" RA
24" RA

N

0 10 20 Feet

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-206A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-206A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-206A-BY	Back Yard (BY)	567	21	41	71	45	217	337	501	37	-	21.0	21.0	567	-	-
BE-206A-DZ	Drip Zone (DZ)	68	22	30	29	22	356	407	181	92	-	1.3	1.3	68	-	-
BE-206A-ED	Earthen Drive (ED)	818	29	41	73	104	308	200	184	60	-	-	-	-	-	-
BE-206A-FG	Flower Garden (FG)	198	16	21	30	34	108	148	139	146	-	-	-	-	-	-
BE-206A-FY	Front Yard (FY)	561	44	65	34	76	233	88	43	34	-	-	-	-	-	-
	TOTALS	2,212										22.3	22.3	635		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

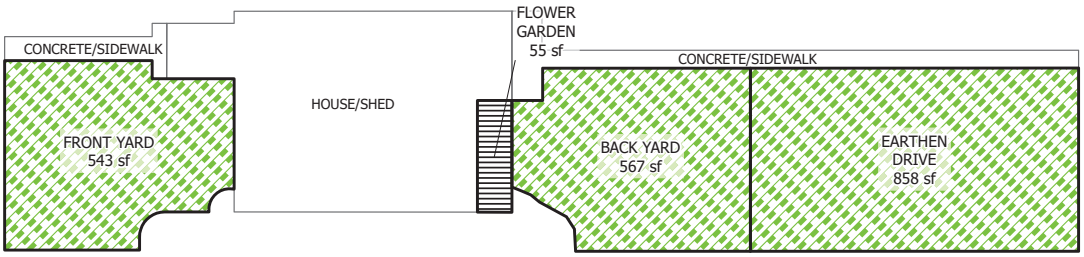
Legend
No Action
6" RA
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-206B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-206B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-206B-BY	Back Yard (BY)	567	29	33	58	76	356	352	324	349	-	-	-	-	-	-
BE-206B-DZ	Drip Zone (DZ)	220	23	28	23	25	321	300	225	345	-	-	-	-	-	-
BE-206B-ED	Earthen Drive (ED)	858	52	65	79	57	222	110	104	58	-	-	-	-	-	-
BE-206B-FG	Flower Garden (FG)	55	25	26	27	32	332	295	342	418	-	4.1	4.1	55	-	-
BE-206B-FY	Front Yard (FY)	543	22	23	41	27	251	233	150	263	-	-	-	-	-	-
	TOTALS	2,243										4.1	4.1	55		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

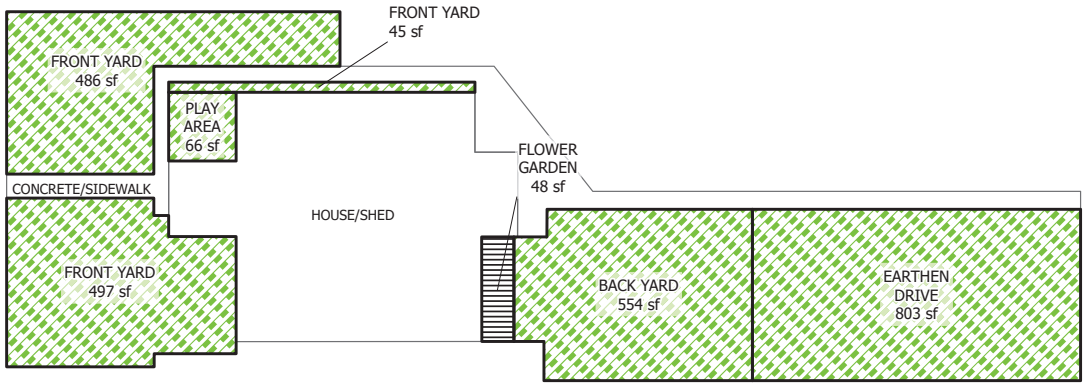
Legend
No Action
24" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-206C

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-206C			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-206C-BY	Back Yard (BY)	554	20	43	46	35	278	150	56	52	-	-	-	-	-	-
BE-206C-DZ	Drip Zone (DZ)	220	24	17	24	28	351	183	155	239	-	-	-	-	-	-
BE-206C-ED	Earthen Drive (ED)	803	22	40	66	61	199	301	326	104	-	-	-	-	-	-
BE-206C-FG	Flower Garden (FG)	48	26	14	22	43	303	175	310	405	-	3.6	3.6	48	-	-
BE-206C-FY	Front Yard (FY)	1,028	23	29	41	49	271	266	285	132	-	-	-	-	-	-
BE-206C-PA	Play Area (PA)	66	23	26	25	35	307	365	105	21	-	-	-	-	-	-
	TOTALS	2,719										3.6	3.6	48		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

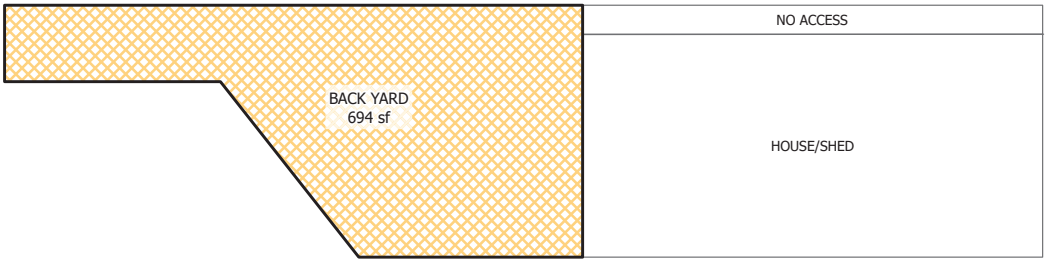
Legend
No Action
24" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-206D

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-206D			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-206D-BY	Back Yard (BY)	694	21	39	56	50	384	1490	336	118	-	12.9	12.9	694	-	-
BE-206D-DZ	Drip Zone (DZ)	220	19	33	38	87	261	289	124	288	-	-	-	-	-	-
	TOTALS	914										12.9	12.9	694		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
6" RA

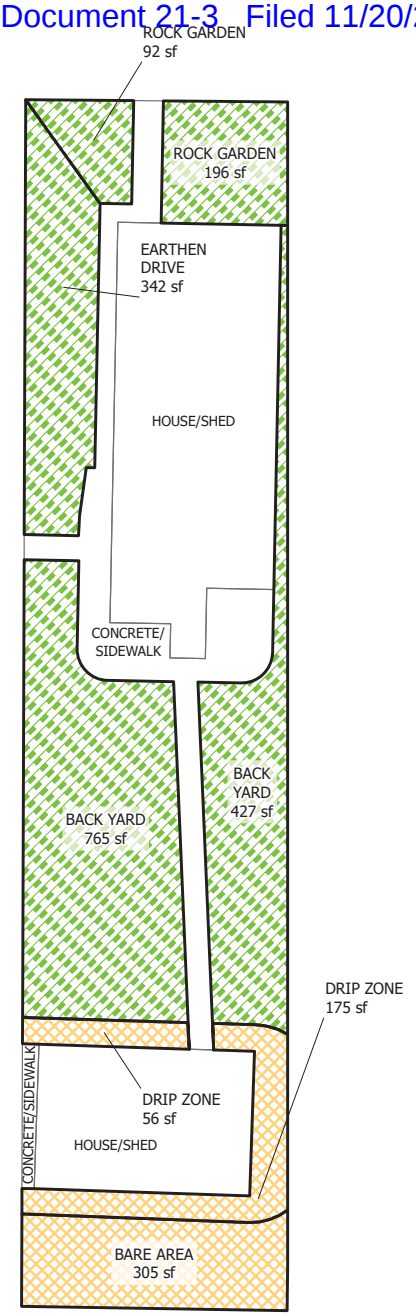
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0 10 20 Feet

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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PROPERTY ADDRESS: 1508 COLORADO AVE
RESIDENT ID: BE-207



Resident ID
BE-207

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-207			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-207-BA	Bare Area (BA)	305	23	35	55	24	340	675	270	118	-	5.6	5.6	305	-	-
BE-207-BY	Back Yard (BY)	1,192	27	34	44	38	290	236	226	115	-	-	-	-	-	-
BE-207-DZ	Drip Zone (DZ)	231	18	31	54	33	839	427	72	17	-	4.3	4.3	231	-	-
BE-207-ED	Earthen Drive (ED)	342	15	93	23	4	167	206	13	4	-	-	-	-	-	-
BE-207-RG	Rock Garden (RG)	288	12	32	42	28	288	362	77	6	-	-	-	-	-	-
	TOTALS	2,358										9.9	9.9	536		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

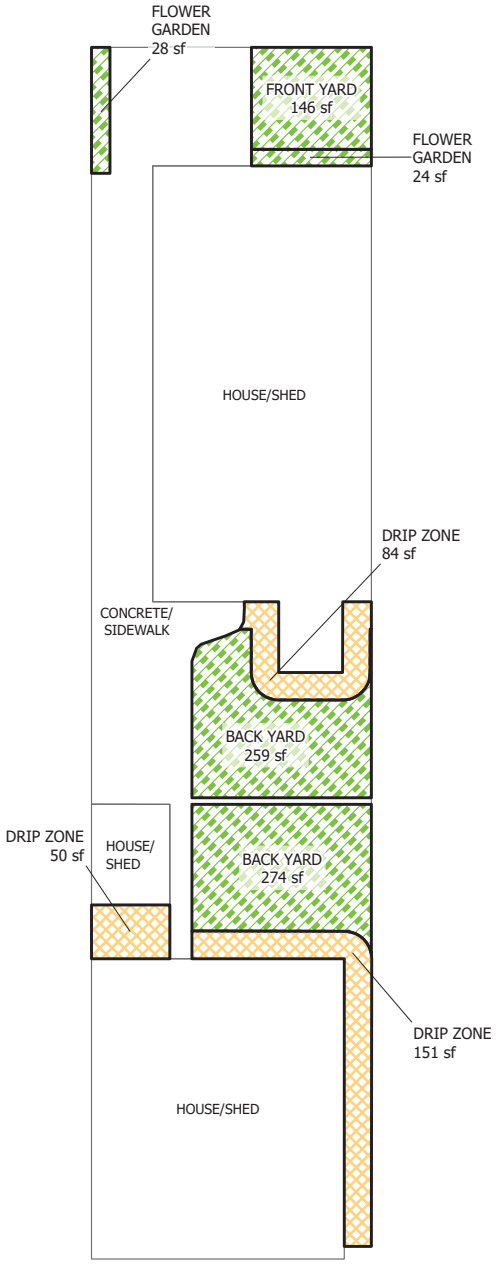
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-210

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-210			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-210-BY	Back Yard (BY)	533	20	24	29	33	323	300	330	336	-	-	-	-	-	-
BE-210-DZ	Drip Zone (DZ)	285	22	26	27	30	429	406	214	248	-	5.3	5.3	285	-	-
BE-210-FG	Flower Garden (FG)	52	21	28	22	32	360	210	18	14	-	-	-	-	-	-
BE-210-FY	Front Yard (FY)	146	23	29	33	27	230	187	30	39	-	-	-	-	-	-
TOTALS		1,016										5.3	5.3	285		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

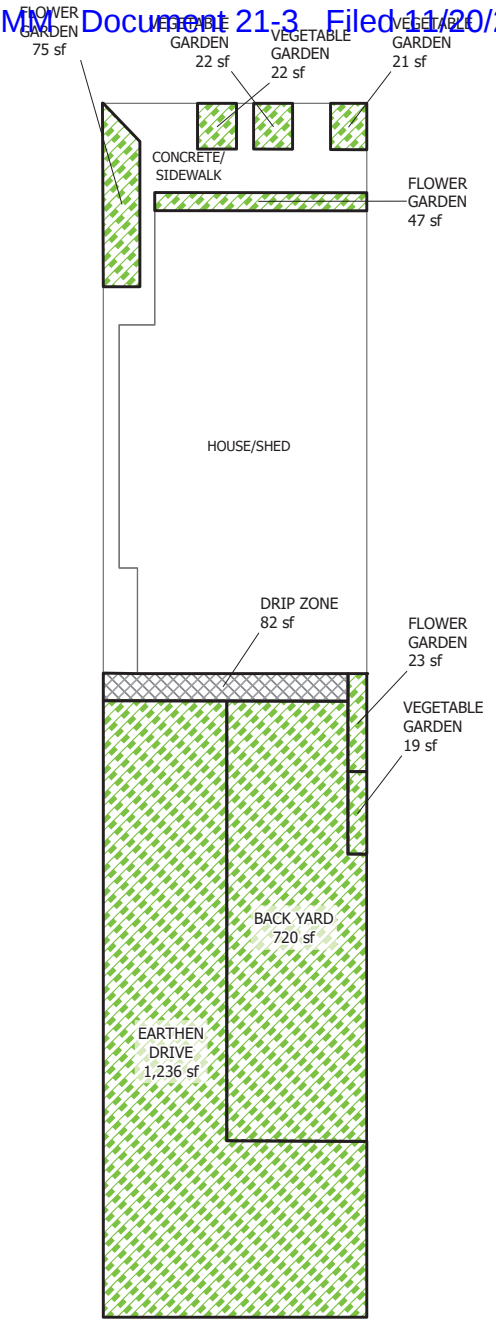
0 10 20 Feet

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Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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PROPERTY ADDRESS: 1520 COLORADO AVE
RESIDENT ID: BE-213



Resident ID
BE-213

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-213			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-213-BY	Back Yard (BY)	720	15	19	26	32	80	282	300	167	-	-	-	-	-	-
BE-213-DZ	Drip Zone (DZ)	82	12	8	23	29	71	36	595	441	-	4.6	4.6	82	-	-
BE-213-ED	Earthen Drive (ED)	1,236	31	36	38	34	114	149	187	166	-	-	-	-	-	-
BE-213-FG	Flower Garden (FG)	145	19	14	47	46	149	84	149	140	-	-	-	-	-	-
BE-213-VG	Vegetable Garden (VG)	84	18	20	15	55	252	342	91	92	-	-	-	-	-	-
	TOTALS	2,267										4.6	4.6	82		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

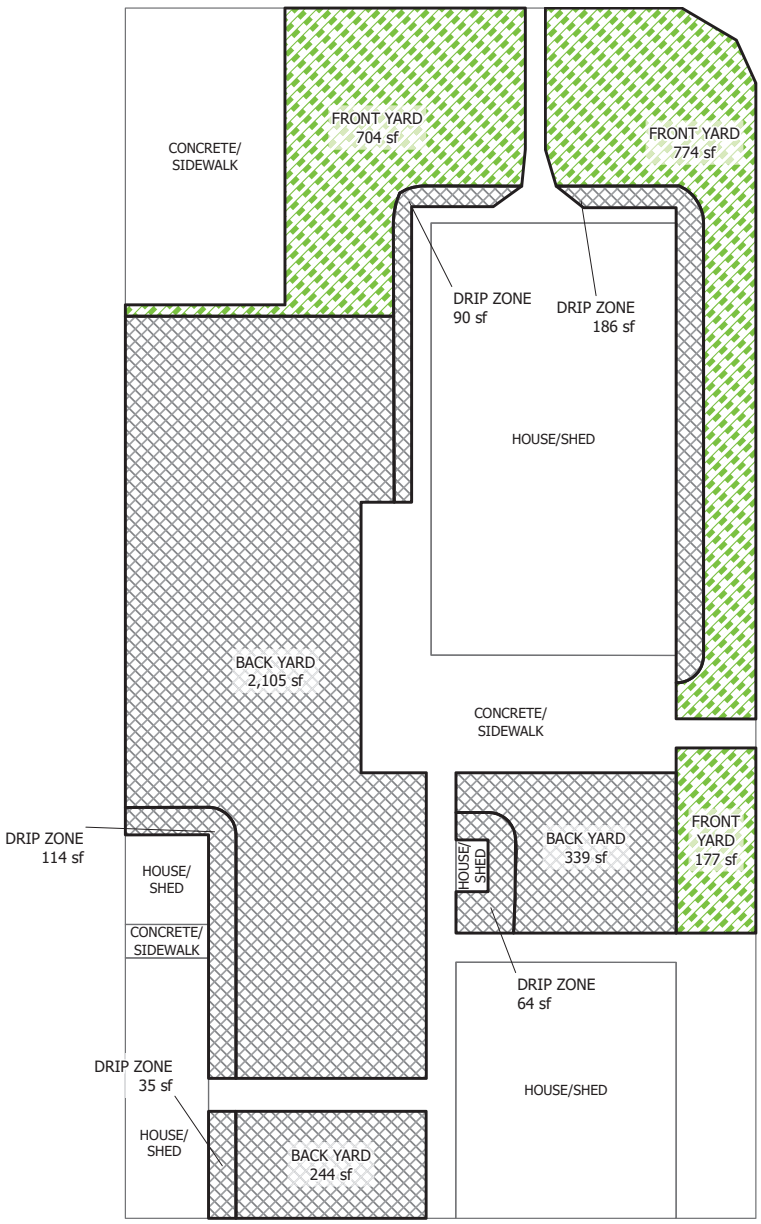
Legend
No Action
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-216

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-216			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-216-BY	Back Yard (BY)	2,688	17	24	34	24	168	143	114	466	-	149.3	149.3	2,688	-	-
BE-216-DZ	Drip Zone (DZ)	489	23	39	61	78	16	527	907	1470	-	27.2	27.2	489	-	-
BE-216-FY	Front Yard (FY)	1,655	17	26	49	67	150	220	191	88	-	-	-	-	-	-
	TOTALS	4,832										176.5	176.5	3,177		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

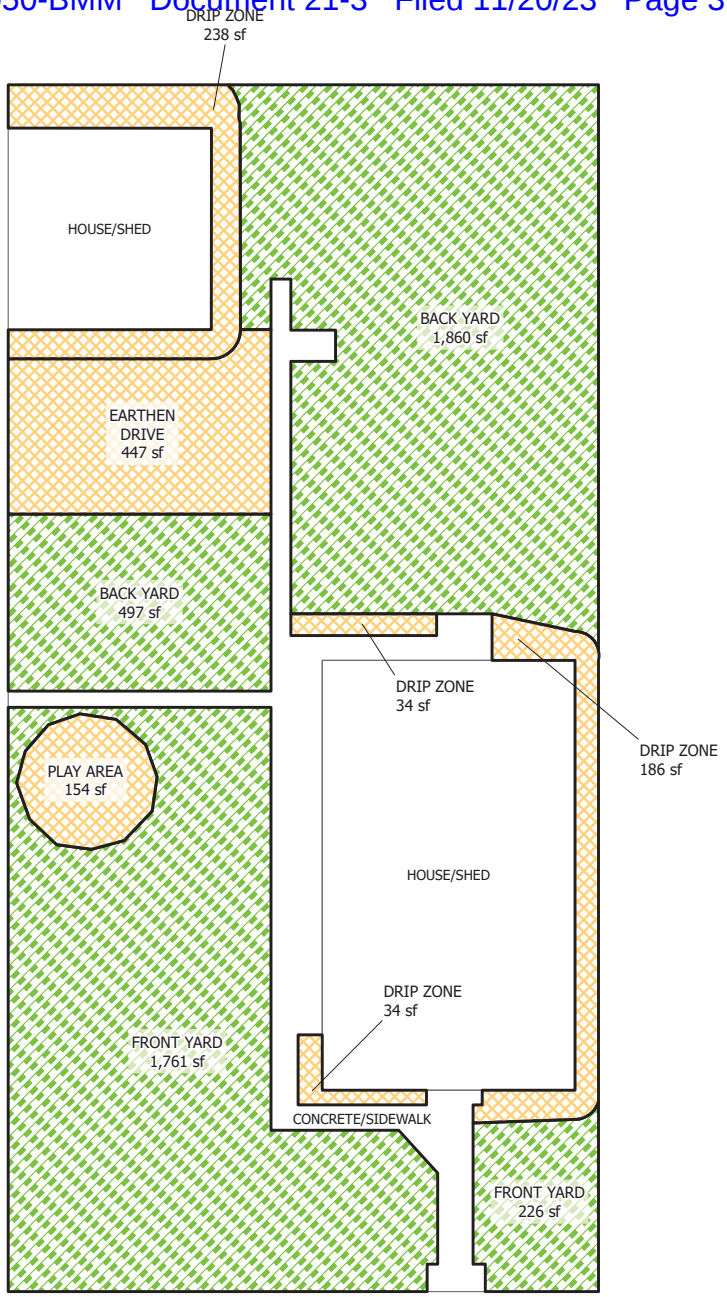
Legend
No Action
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-217

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-217			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-217-BY	Back Yard (BY)	2,357	31	38	42	63	388	332	306	252	-	-	-	-	-	-
BE-217-DZ	Drip Zone (DZ)	492	42	56	54	36	992	807	163	94	-	9.1	9.1	492	-	-
BE-217-ED	Earthen Drive (ED)	447	18	39	89	79	402	290	211	49	-	8.3	-	-	8.3	-
BE-217-FY	Front Yard (FY)	1,988	34	51	51	67	335	211	70	106	-	-	-	-	-	-
BE-217-PA	Play Area (PA)	154	47	86	52	68	234	161	13	39	Yes	2.9	2.9	154	-	-
	TOTALS	5,438										20.3	12.0	646	8.3	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

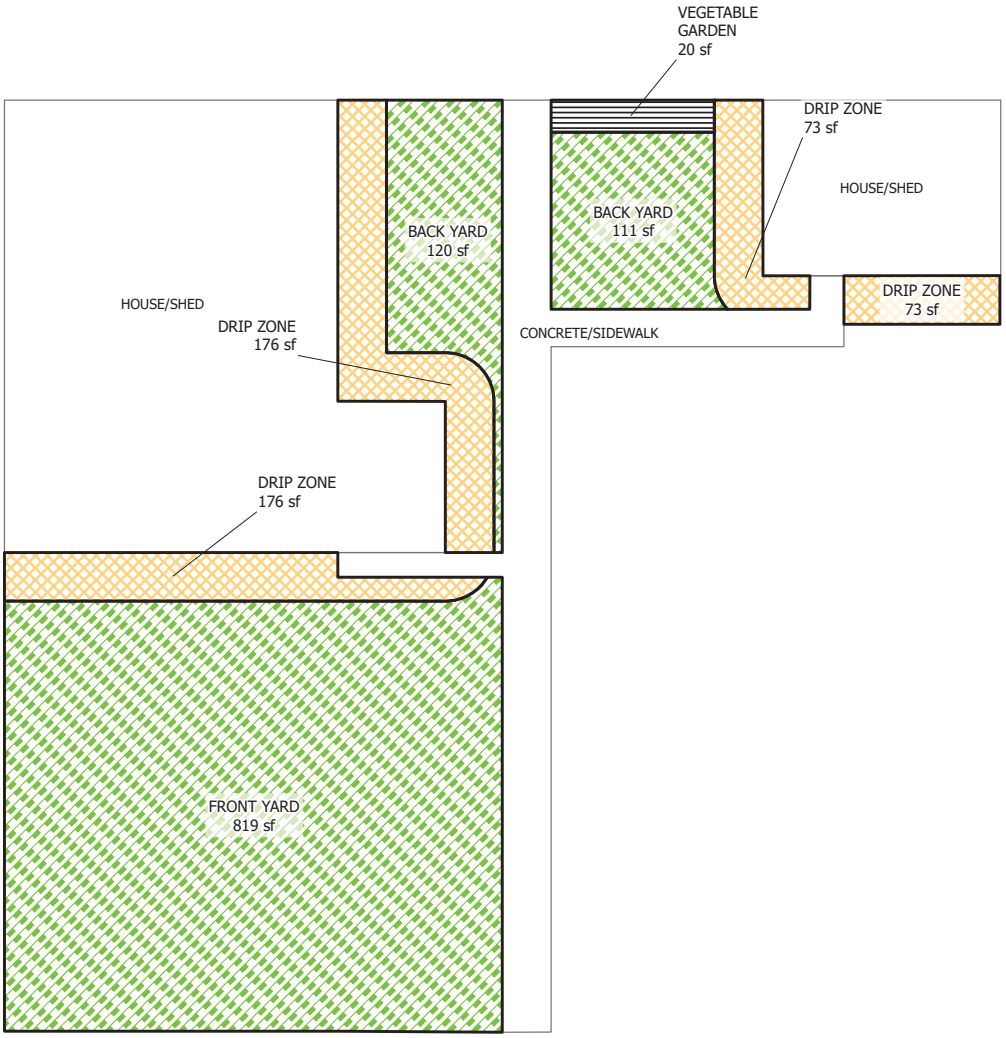
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-218B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-218B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-218B-BY	Back Yard (BY)	230	34	32	63	32	319	247	53	13	-	-	-	-	-	-
BE-218B-DZ	Drip Zone (DZ)	249	49	61	67	61	317	251	198	116	Yes	4.6	4.6	249	-	-
BE-218B-FY	Front Yard (FY)	819	33	64	31	50	177	264	242	200	-	-	-	-	-	-
BE-218B-VG	Vegetable Garden (VG)	20	34	34	71	111	269	285	588	858	-	1.5	1.5	20	-	-
	TOTALS	1,318										6.1	6.1	269		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

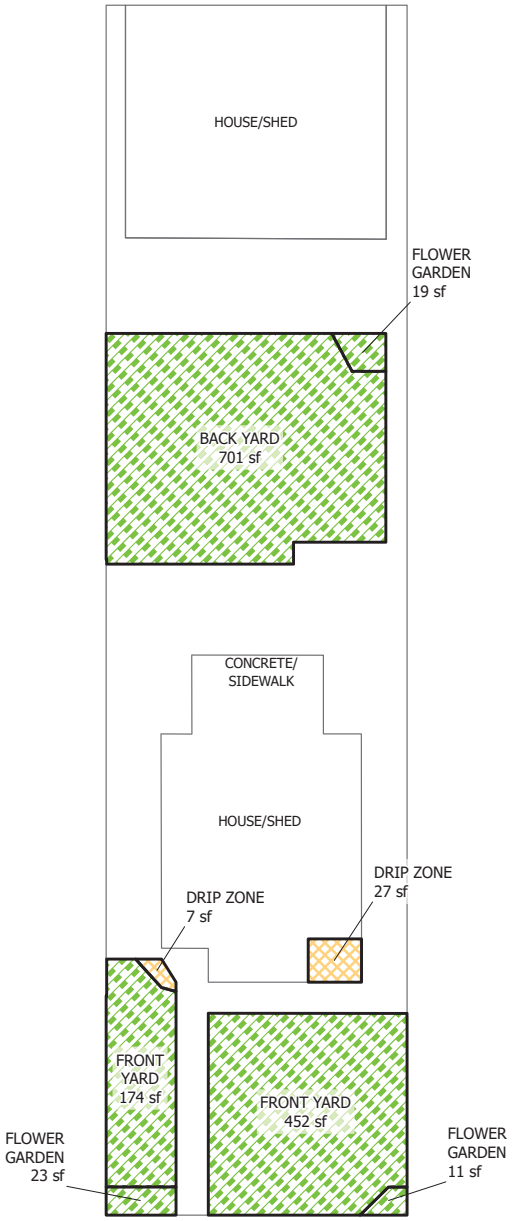
Legend
No Action
6" RA
24" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-219

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-219			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-219-BY	Back Yard (BY)	701	33	34	36	45	267	228	257	228	-	-	-	-	-	-
BE-219-DZ	Drip Zone (DZ)	34	25	32	29	33	525	1100	243	27	-	0.6	0.6	34	-	-
BE-219-FG	Flower Garden (FG)	53	30	35	50	45	326	343	317	117	-	-	-	-	-	-
BE-219-FY	Front Yard (FY)	626	31	34	41	44	228	366	343	83	-	-	-	-	-	-
TOTALS		1,414										0.6	0.6	34		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

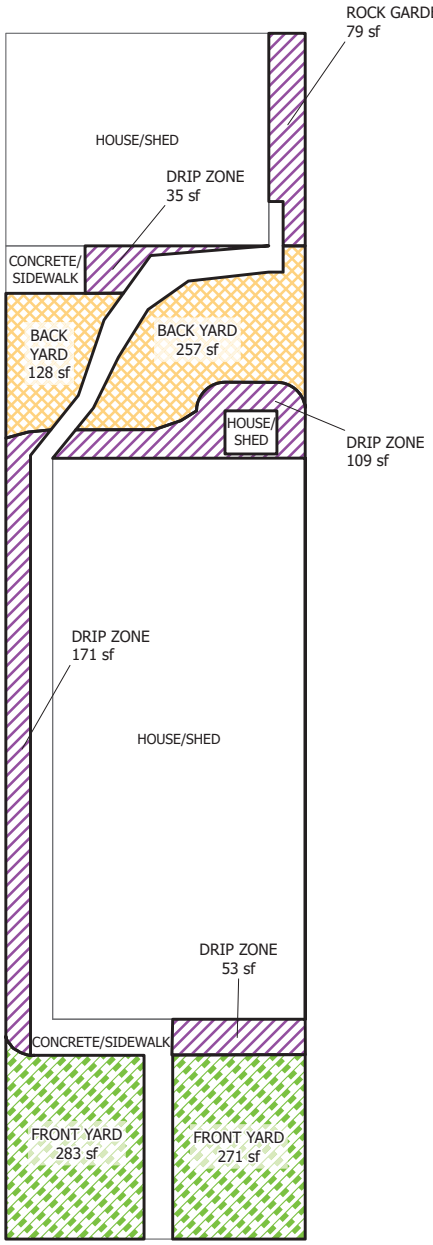
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-220

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-220			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-220-BY	Back Yard (BY)	385	113	31	90	65	289	299	233	182	Yes	7.1	7.1	385	-	-
BE-220-DZ	Drip Zone (DZ)	368	29	38	54	204	397	556	430	142	-	13.6	13.6	368	-	-
BE-220-FY	Front Yard (FY)	554	33	42	44	41	229	246	142	108	-	-	-	-	-	-
BE-220-RG	Rock Garden (RG)	79	35	83	126	108	409	527	630	382	-	2.9	2.9	-	-	-
	TOTALS	1,386										23.6	23.6	753		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable **to 24 inches** below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

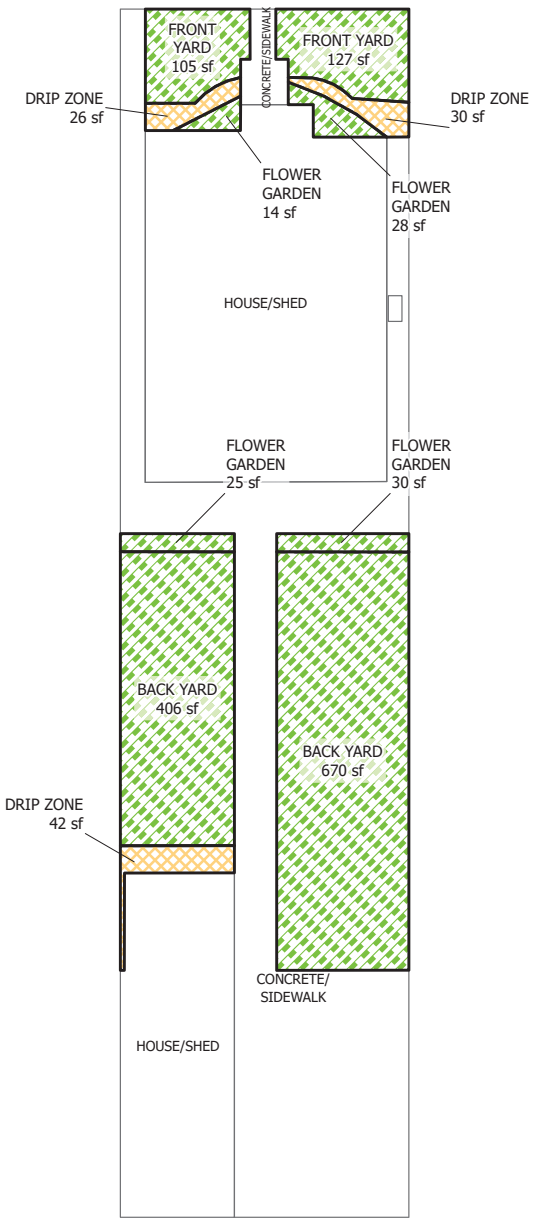
Legend
No Action
6" RA
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-223

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-223			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-223-BY	Back Yard (BY)	1,076	48	23	21	19	210	176	84	73	-	-	-	-	-	-
BE-223-DZ	Drip Zone (DZ)	98	18	23	22	22	424	480	80	212	-	1.8	1.8	98	-	-
BE-223-FG	Flower Garden (FG)	97	21	22	20	22	328	174	70	79	-	-	-	-	-	-
BE-223-FY	Front Yard (FY)	232	11	19	29	26	199	174	130	52	-	-	-	-	-	-
	TOTALS	1,503										1.8	1.8	98		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

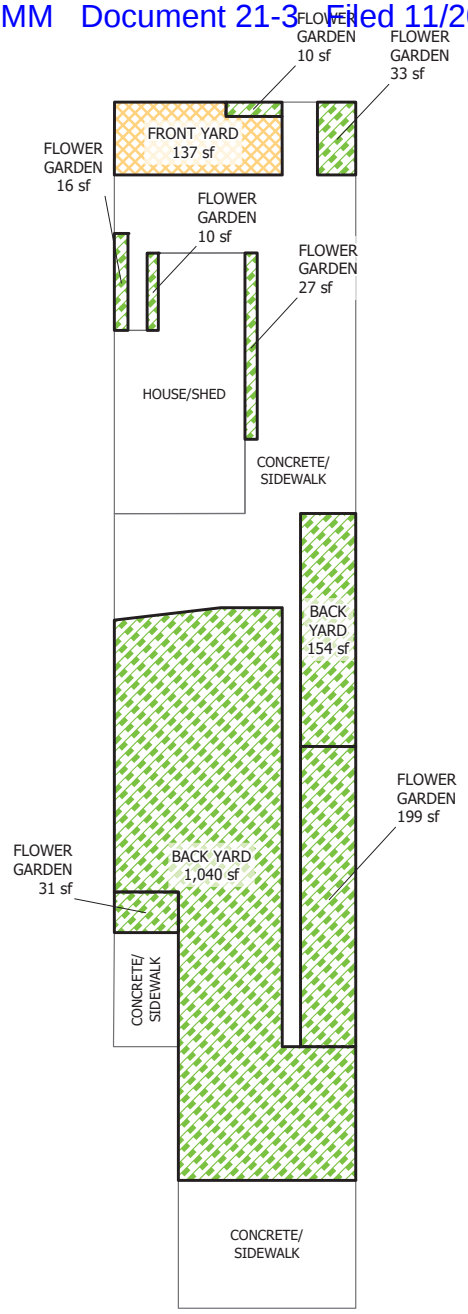
0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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PROPERTY ADDRESS: 1708 COLORADO AVE
RESIDENT ID: BE-225A



Resident ID
BE-225A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-225A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-225A-BY	Back Yard (BY)	1,194	23	26	31	33	210	224	235	189	-	-	-	-	-	-
BE-225A-DZ	Drip Zone (DZ)	220	9	16	18	29	29	44	36	13	-	-	-	-	-	-
BE-225A-FG	Flower Garden (FG)	326	18	23	25	33	185	182	135	265	-	-	-	-	-	-
BE-225A-FY	Front Yard (FY)	137	27	32	62	73	597	226	106	87	-	2.5	2.5	137	-	-
	TOTALS	1,877										2.5	2.5	137		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

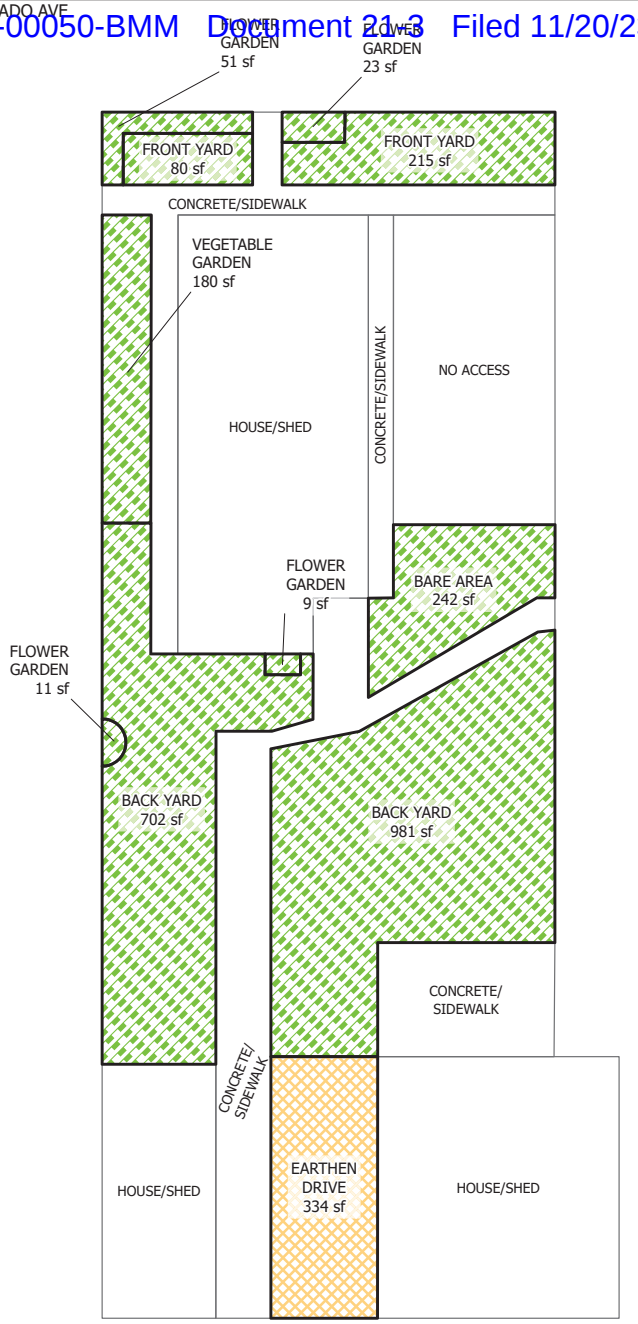
0 10 20 Feet

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Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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PROPERTY ADDRESS: 1708 COLORADO AVE
RESIDENT ID: BE-225B



Resident ID
BE-225B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-225B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-225B-BA	Bare Area (BA)	242	24	21	67	22	217	227	135	63	-	-	-	-	-	-
BE-225B-BY	Back Yard (BY)	1,683	25	28	35	36	245	238	237	139	-	-	-	-	-	-
BE-225B-ED	Earthen Drive (ED)	334	35	41	47	62	464	361	210	61	-	6.2	-	-	6.2	-
BE-225B-FG	Flower Garden (FG)	94	18	18	15	6	199	210	36	16	-	-	-	-	-	-
BE-225B-FY	Front Yard (FY)	295	23	34	29	14	336	282	112	25	-	-	-	-	-	-
BE-225B-VG	Vegetable Garden (VG)	180	28	17	24	15	30	167	19	7	-	-	-	-	-	-
	TOTALS	2,828										6.2			6.2	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

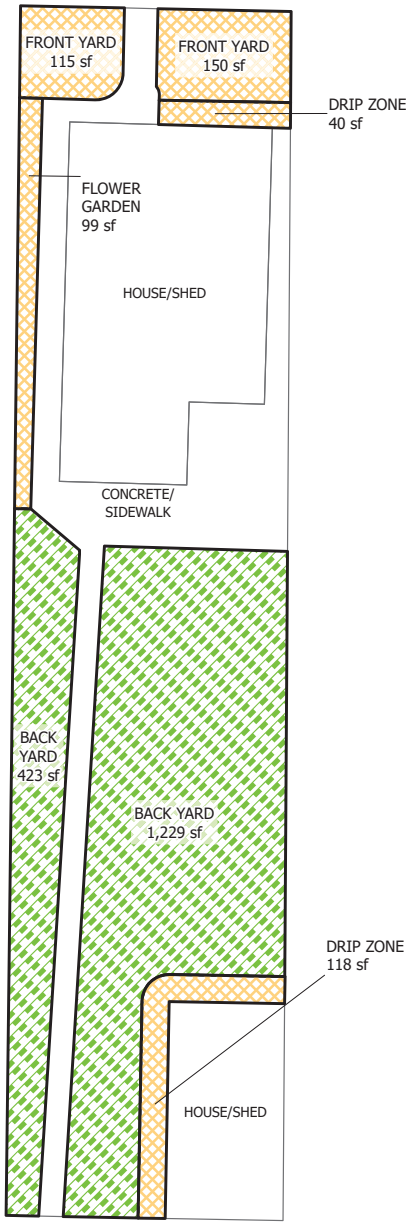
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-230

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-230			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-230-BY	Back Yard (BY)	1,652	24	37	53	61	284	322	165	89	-	-	-	-	-	-
BE-230-DZ	Drip Zone (DZ)	158	45	102	58	54	2150	537	26	38	-	2.9	2.9	158	-	-
BE-230-FG	Flower Garden (FG)	99	28	36	52	36	635	366	149	48	-	1.8	1.8	99	-	-
BE-230-FY	Front Yard (FY)	265	21	34	30	27	1040	468	144	119	-	4.9	4.9	265	-	-
	TOTALS	2,174										9.6	9.6	522		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-231

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-231			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-231-BY	Back Yard (BY)	1,187	20	33	40	23	122	89	51	36	-	-	-	-	-	-
BE-231-FG	Flower Garden (FG)	191	20	23	27	21	51	174	100	68	-	-	-	-	-	-
BE-231-FY	Front Yard (FY)	475	24	51	59	61	313	429	133	44	-	8.8	8.8	475	-	-
BE-231-VG	Vegetable Garden (VG)	438	21	20	36	75	143	142	279	351	-	-	-	-	-	-
	TOTALS	2,291										8.8	8.8	475		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

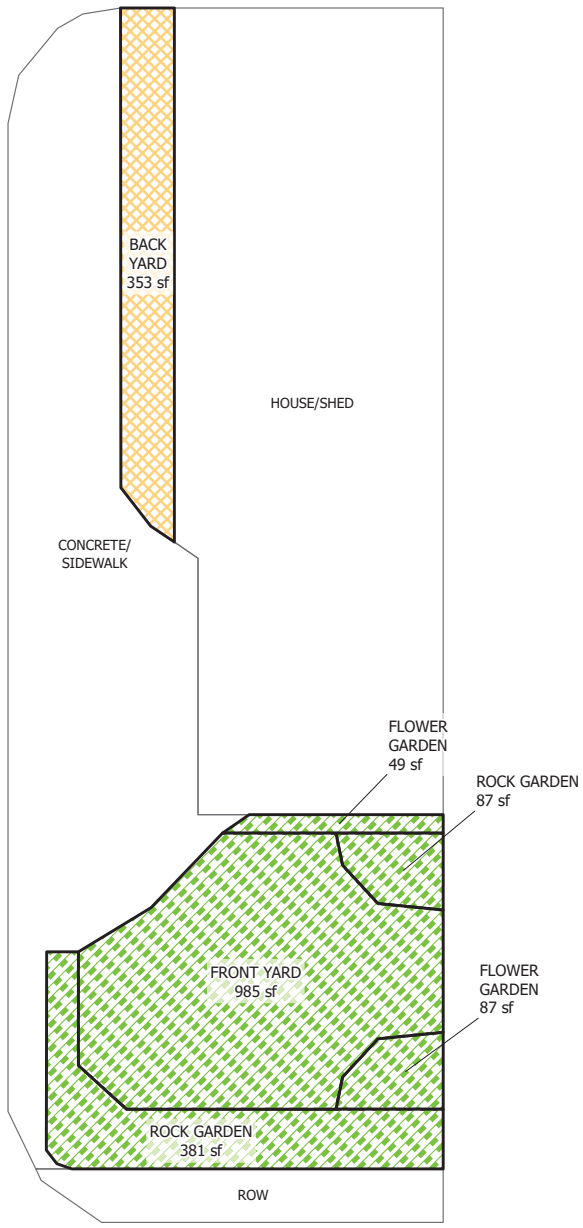
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-233

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-233			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-233-BY	Back Yard (BY)	353	20	27	26	28	433	361	287	146	-	6.5	6.5	353	-	-
BE-233-DZ	Drip Zone (DZ)	220	14	15	24	19	265	218	249	159	-	-	-	-	-	-
BE-233-FG	Flower Garden (FG)	136	16	18	15	22	387	352	86	84	-	-	-	-	-	-
BE-233-FY	Front Yard (FY)	985	18	24	20	29	296	234	115	80	-	-	-	-	-	-
BE-233-RG	Rock Garden (RG)	468	21	27	28	32	311	324	160	94	-	-	-	-	-	-
	TOTALS	2,162										6.5	6.5	353		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

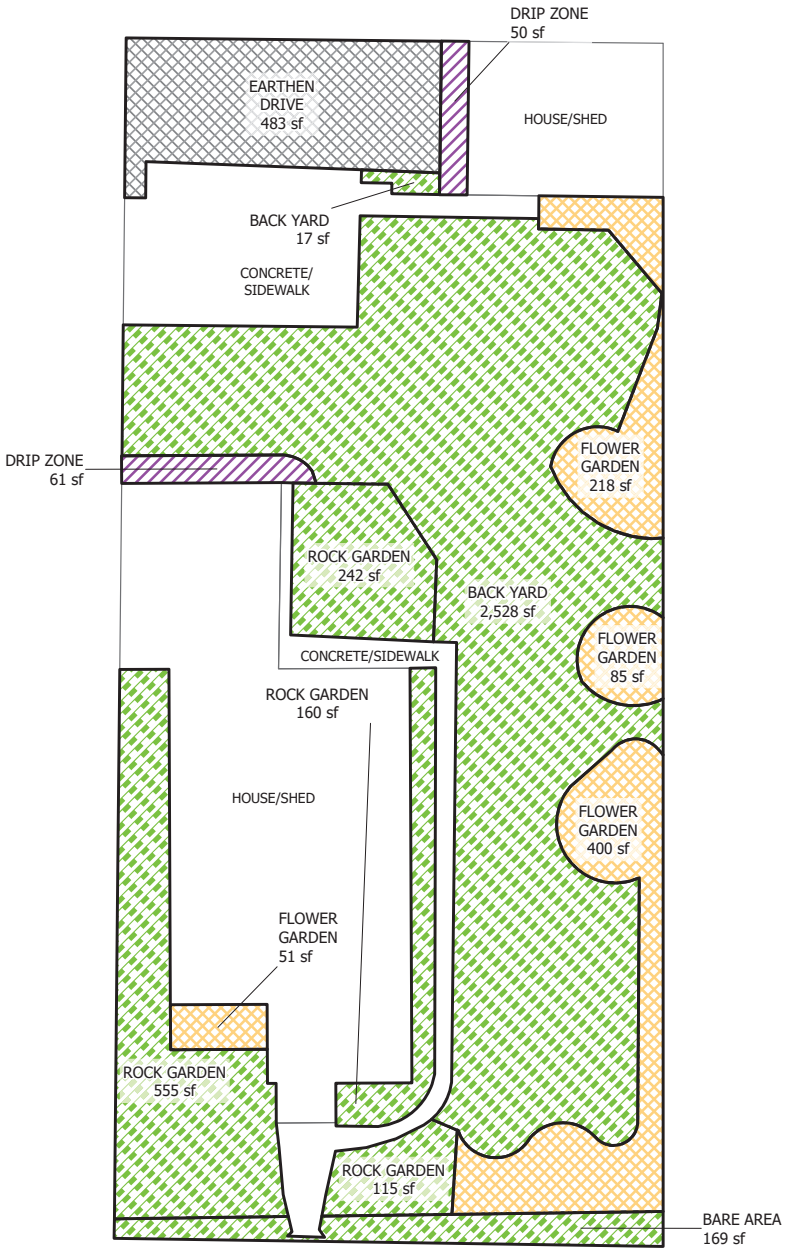
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-234

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-234			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-234-BA	Bare Area (BA)	169	15	24	26	21	242	280	145	54	-	-	-	-	-	-
BE-234-BY	Back Yard (BY)	2,545	19	24	71	27	220	201	144	20	-	-	-	-	-	-
BE-234-DZ	Drip Zone (DZ)	111	26	30	41	42	1250	463	571	238	-	4.1	4.1	111	-	-
BE-234-ED	Earthen Drive (ED)	483	50	201	154	175	528	689	490	528	-	26.8	17.9	-	8.9	-
BE-234-FG	Flower Garden (FG)	754	16	22	28	37	681	364	333	370	-	14.0	14.0	754	-	-
BE-234-RG	Rock Garden (RG)	1,072	25	39	43	52	354	277	143	65	-	-	-	-	-	-
	TOTALS	5,134										44.9	36.0	865	8.9	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

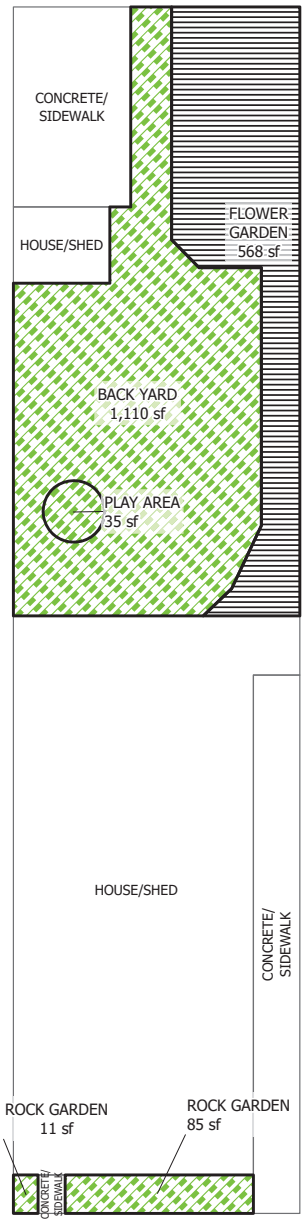
Legend
- No Action
- 6" RA
- 12" RA
- 18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-235

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-235			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-235-BY	Back Yard (BY)	1,110	36	19.1	58	46	296	142	210	108	-	-	-	-	-	-
BE-235-DZ	Drip Zone (DZ)	220	21	31	53	60	217	319	251	195	-	-	-	-	-	-
BE-235-FG	Flower Garden (FG)	568	18	18	26	36	183	138	390	560	-	42.1	42.1	568	-	-
BE-235-PA	Play Area (PA)	35	20	29	35	26	161	185	180	43	-	-	-	-	-	-
BE-235-RG	Rock Garden (RG)	96	26	30	18	12	327	383	50	32	-	-	-	-	-	-
	TOTALS	2,029										42.1	42.1	568		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

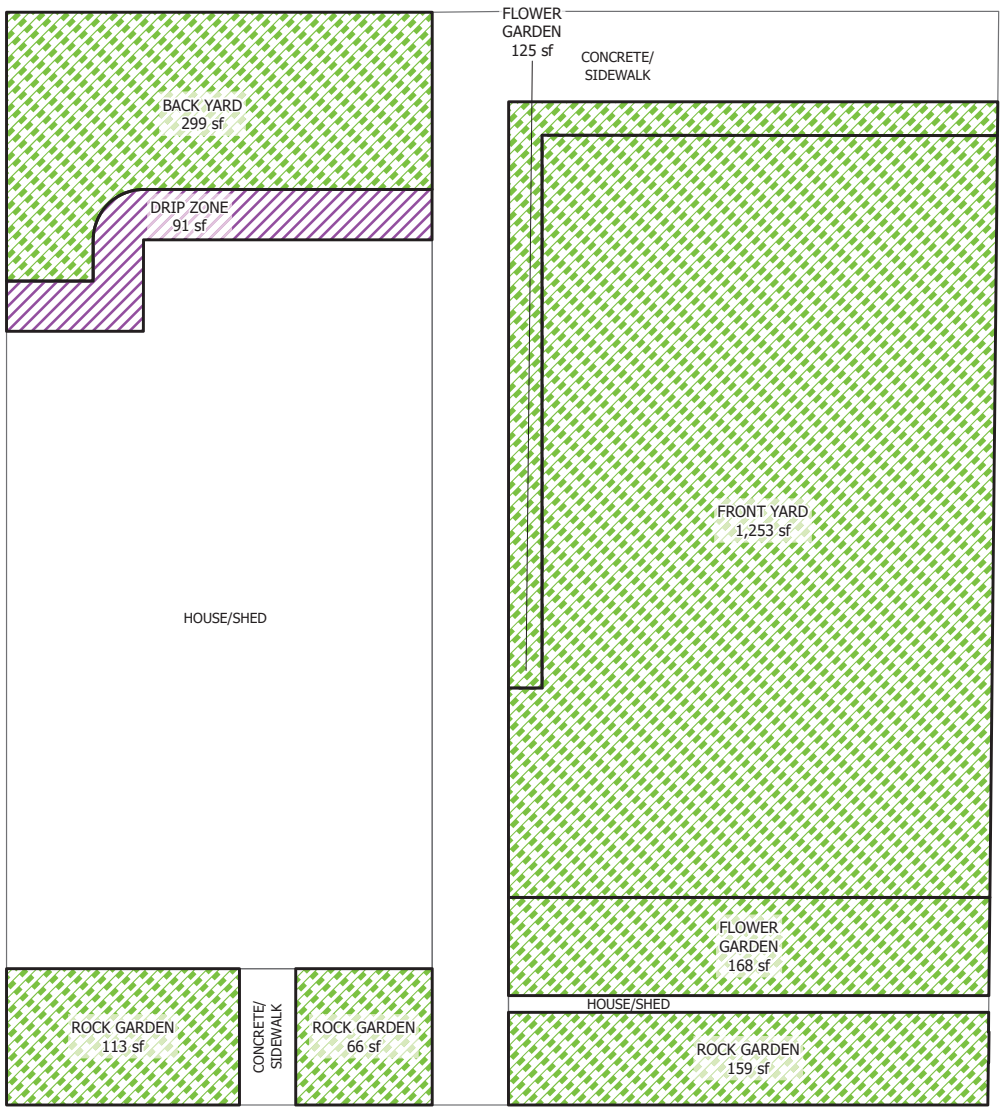
Legend
No Action
24" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-236A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-236A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-236A-BY	Back Yard (BY)	299	61	59	79	119	179	209	163	75	-	-	-	-	-	-
BE-236A-DZ	Drip Zone (DZ)	91	26	27	29	18	316	425	478	225	-	3.4	3.4	91	-	-
BE-236A-FG	Flower Garden (FG)	293	32	35	43	36	243	191	163	86	-	-	-	-	-	-
BE-236A-FY	Front Yard (FY)	1,253	34	36	42	38	298	243	167	68	-	-	-	-	-	-
BE-236A-RG	Rock Garden (RG)	338	23	21	35	17	318	338	314	163	-	-	-	-	-	-
	TOTALS	2,274										3.4	3.4	91		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

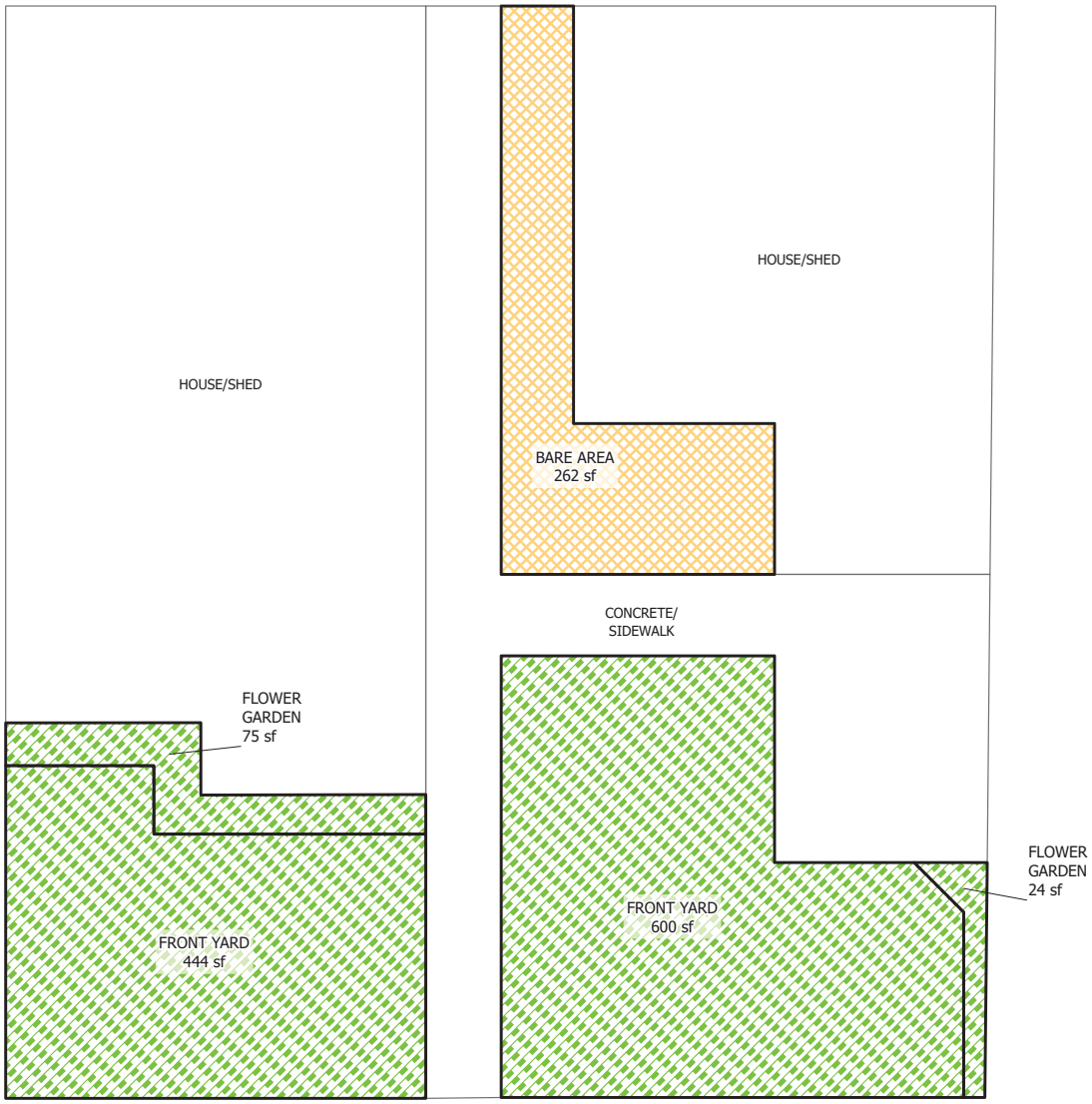
Legend
No Action
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-236B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-236B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-236B-BA	Bare Area (BA)	262	37	136	46	80	327	473	69	89	-	4.9	4.9	262	-	-
BE-236B-DZ	Drip Zone (DZ)	220	29	32	38	37	181	100	106	77	-	-	-	-	-	-
BE-236B-FG	Flower Garden (FG)	99	21	23	54	76	134	135	166	123	-	-	-	-	-	-
BE-236B-FY	Front Yard (FY)	1,044	35	49	66	80	190	219	204	92	-	-	-	-	-	-
	TOTALS	1,625										4.9	4.9	262		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

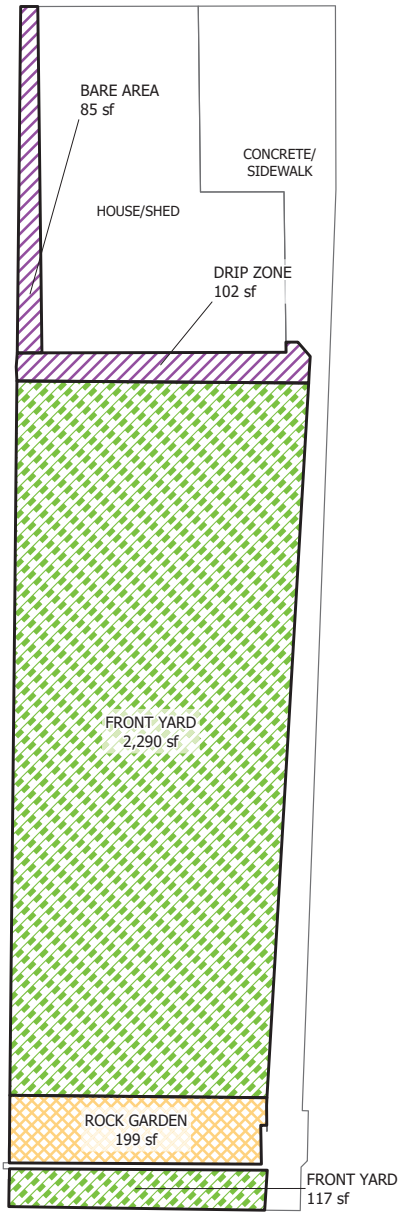
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-237A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-237A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-237A-BA	Bare Area (BA)	85	22	45	84	117	455	753	600	154	-	3.1	3.1	85	-	-
BE-237A-DZ	Drip Zone (DZ)	102	26	27	93	98	568	643	983	203	-	3.8	3.8	102	-	-
BE-237A-FY	Front Yard (FY)	2,407	30	52	72	60	324	266	181	120	-	-	-	-	-	-
BE-237A-RG	Rock Garden (RG)	199	38	70	96	88	257	290	210	102	Yes	3.7	3.7	-	-	-
	TOTALS	2,793										10.6	10.6	187		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

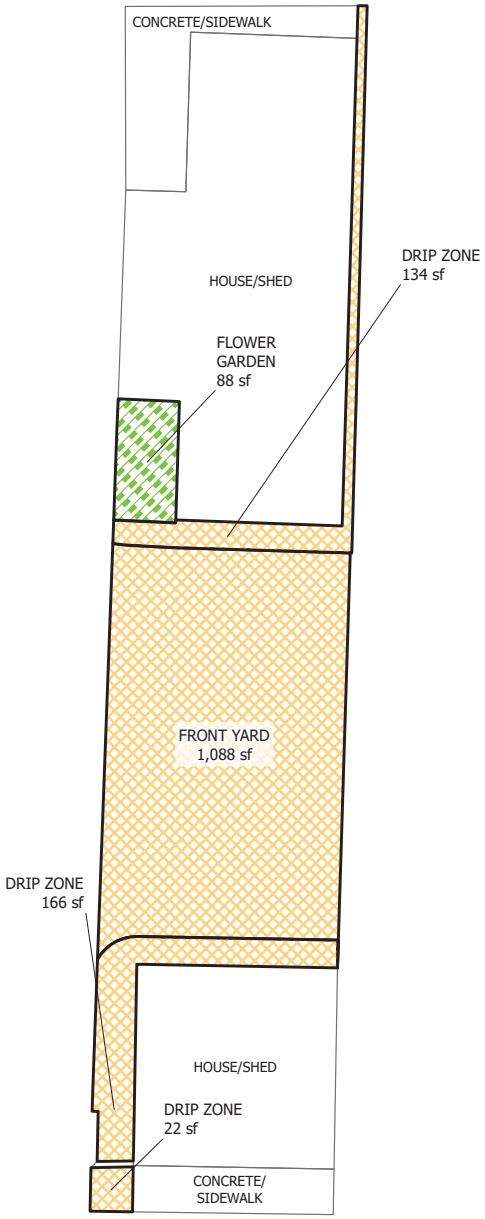
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- No Action
- 6" RA
- 12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-237B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-237B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-237B-DZ	Drip Zone (DZ)	322	32	41	55	80	305	501	156	168	-	6.0	6.0	322	-	-
BE-237B-FG	Flower Garden (FG)	88	29	42	48	38	269	287	157	178	-	-	-	-	-	-
BE-237B-FY	Front Yard (FY)	1,088	36	52	72	52	304	204	150	63	Yes	20.1	20.1	1,088	-	-
	TOTALS	1,498										26.1	26.1	1,410		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

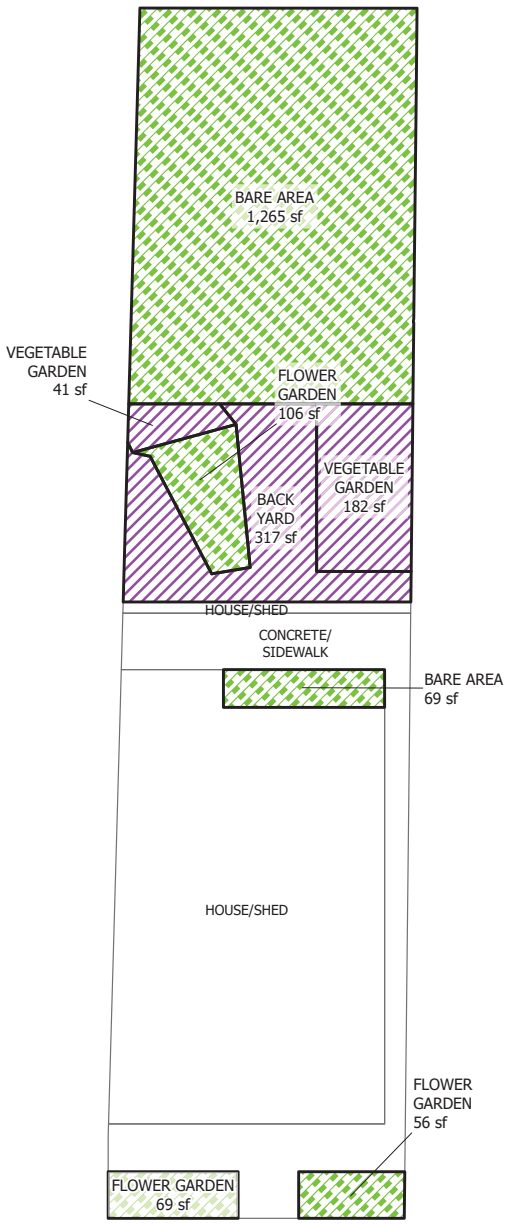
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No Action
6" RA

0 10 20 Feet

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Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-238

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-238			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-238-BA	Bare Area (BA)	1,334	14	18	18	16	141	195	78	160	-	-	-	-	-	-
BE-238-BY	Back Yard (BY)	317	47	43	114	14	294	271	618	210	-	11.7	11.7	317	-	-
BE-238-DZ	Drip Zone (DZ)	220	140	16	16	10	111	242	216	78	-	-	-	-	-	-
BE-238-FG	Flower Garden (FG)	231	13	14	24	21	219	38	280	157	-	-	-	-	-	-
BE-238-VG	Vegetable Garden (VG)	223	35	42	58	62	312	336	445	301	-	8.3	8.3	223	-	-
	TOTALS	2,325										20.0	20.0	540		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

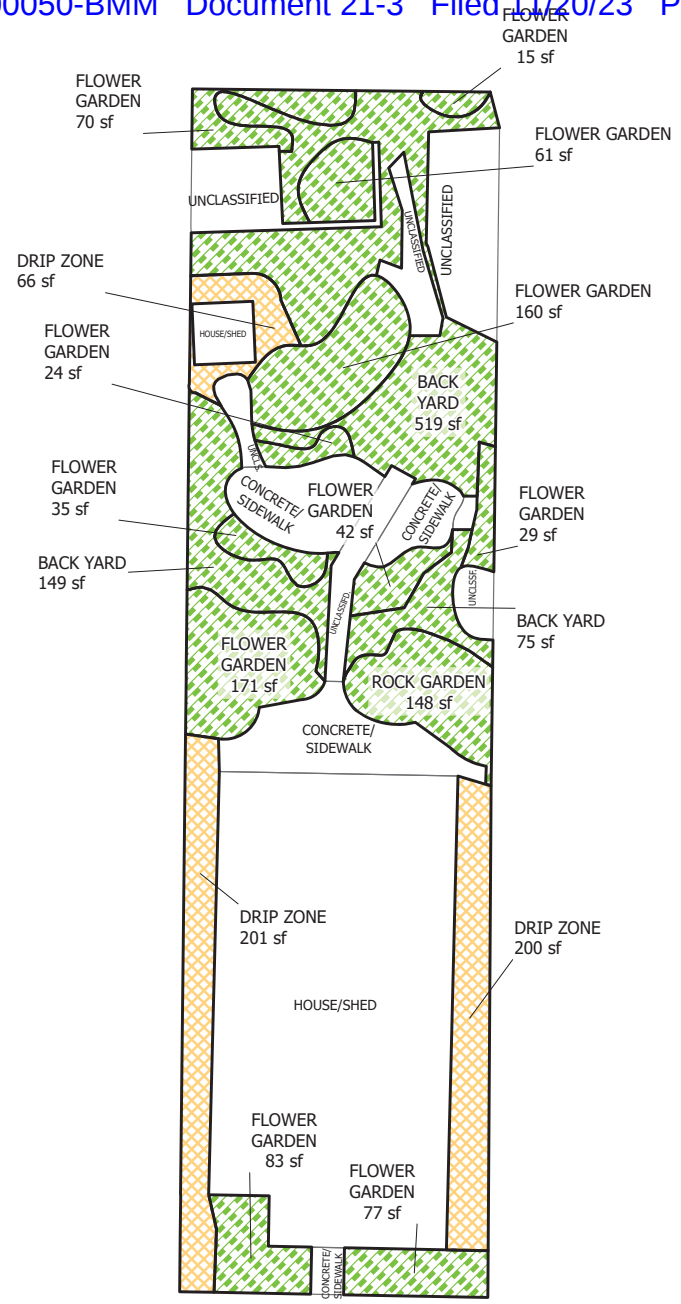
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No Action
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-239

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-239			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-239-BY	Back Yard (BY)	743	34	40	48	67	120	117	269	309	-	-	-	-	-	-
BE-239-DZ	Drip Zone (DZ)	467	27	51	56	34	776	344	240	27	-	8.6	8.6	467	-	-
BE-239-FG	Flower Garden (FG)	767	5	8	9	16	20	39	42	104	-	-	-	-	-	-
BE-239-RG	Rock Garden (RG)	148	9	15	46	27	31	26	226	86	-	-	-	-	-	-
TOTALS		2,125										8.6	8.6	467		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

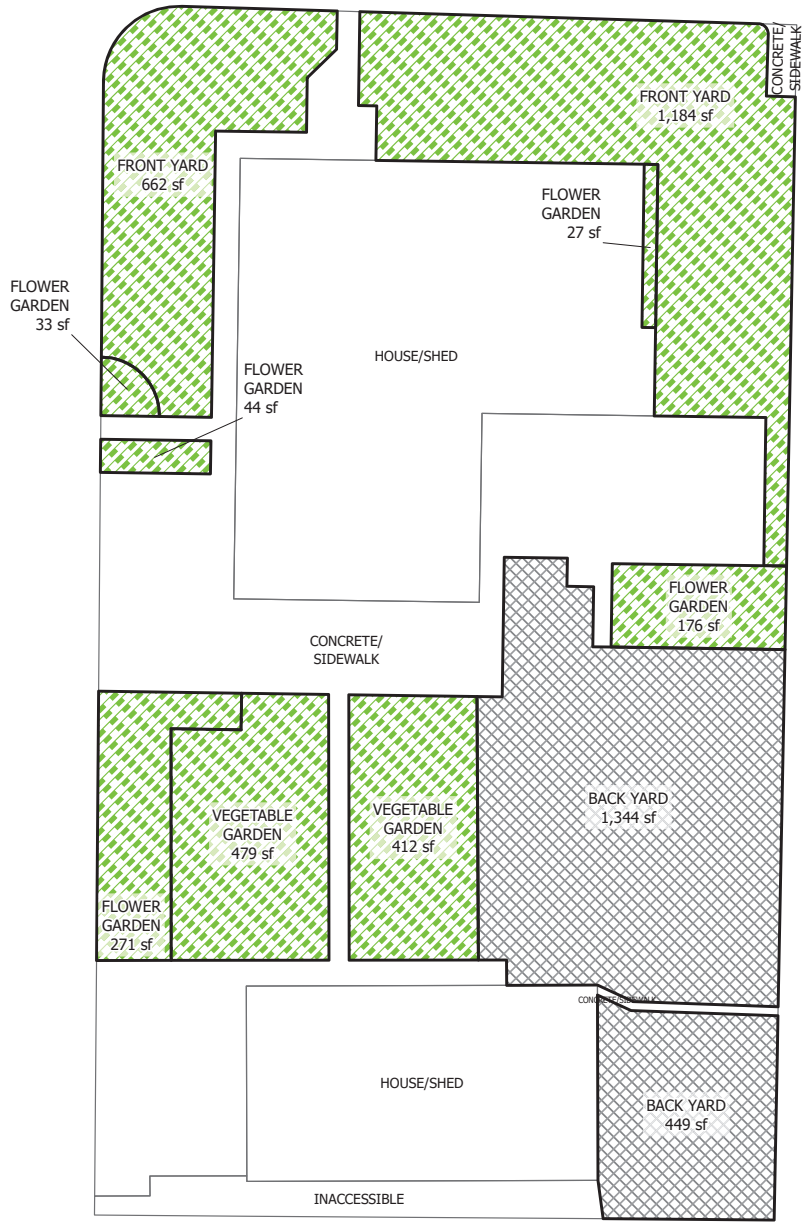
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-240

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-240			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-240-BY	Back Yard (BY)	1,793	28	37	36	44	267	359	927	1080	-	99.6	99.6	1,793	-	-
BE-240-DZ	Drip Zone (DZ)	220	24	41	64	34	170	212	126	35	-	-	-	-	-	-
BE-240-FG	Flower Garden (FG)	551	26	44	42	40	146	201	125	46	-	-	-	-	-	-
BE-240-FY	Front Yard (FY)	1,846	14	22	27	21	76	113	123	75	-	-	-	-	-	-
BE-240-VG	Vegetable Garden (VG)	891	34	34	33	155	189	149	82	39	-	-	-	-	-	-
	TOTALS	5,301										99.6	99.6	1,793		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

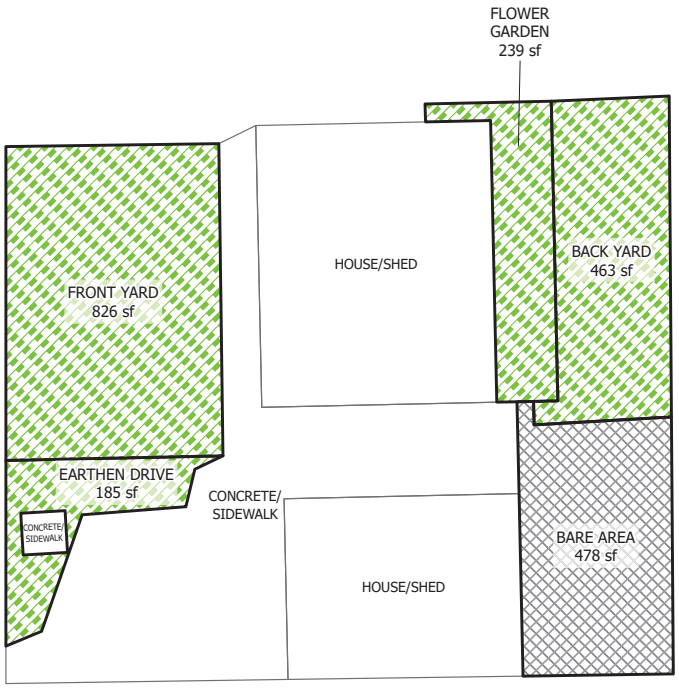
Legend
No Action
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-243B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-243B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-243B-BA	Bare Area (BA)	478	17	21	52	57	133	191	598	507	-	26.6	26.6	478	-	-
BE-243B-BY	Back Yard (BY)	463	24	37	20	18	69	79	52	55	-	-	-	-	-	-
BE-243B-DZ	Drip Zone (DZ)	220	15	20	18	28	140	148	48	75	-	-	-	-	-	-
BE-243B-ED	Earthen Drive (ED)	185	37	20	20	13	284	105	104	174	-	-	-	-	-	-
BE-243B-FG	Flower Garden (FG)	239	24	30	24	40	161	183	106	107	-	-	-	-	-	-
BE-243B-FY	Front Yard (FY)	826	16	15	23	14	144	117	123	43	-	-	-	-	-	-
	TOTALS	2,411										26.6	26.6	478		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

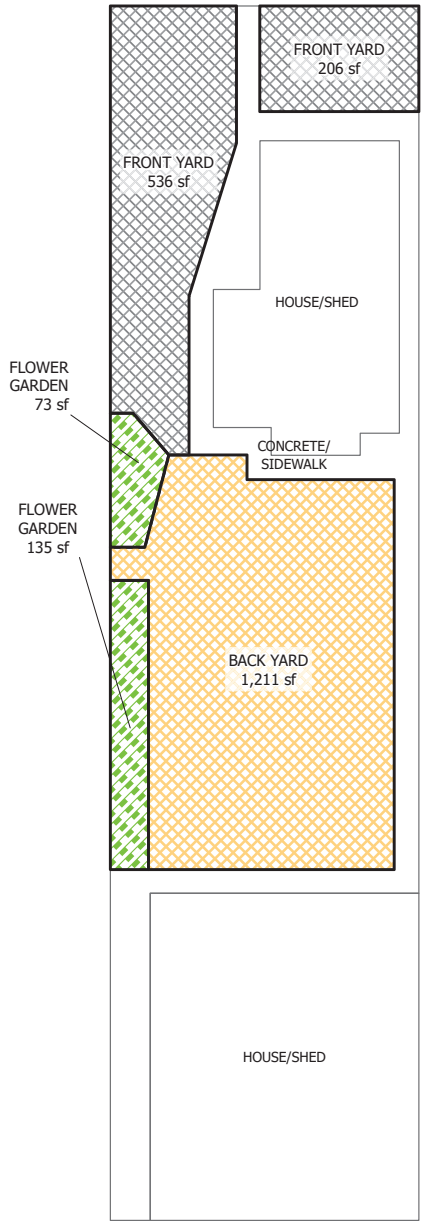
Legend
No Action
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-245

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-245			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-245-BY	Back Yard (BY)	1,211	32	61	71	68	165	234	178	137	Yes	22.4	22.4	1,211	-	-
BE-245-FG	Flower Garden (FG)	208	46	48	73	72	234	236	256	194	-	-	-	-	-	-
BE-245-FY	Front Yard (FY)	742	38	62	81	131	420	437	509	503	-	41.2	41.2	742	-	-
	TOTALS	2,161										63.6	63.6	1,953		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

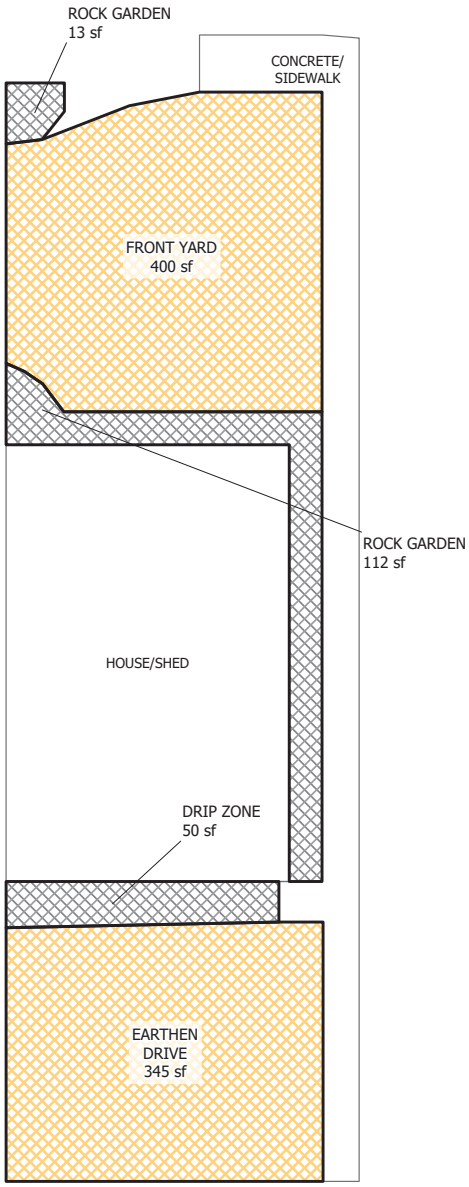
Legend
- No Action
- 6" RA
- 18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-247A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL: COMPONENT ARSENIC CONCENTRATION (mg/kg)				STEP 1 REMOVAL: COMPONENT LEAD CONCENTRATION (mg/kg)				STEP 2 REMOVAL	ESTIMATED QUANTITIES				
BE-247A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-247A-DZ	Drip Zone (DZ)	50	34	92	56	32	315	84	156	410	-	2.8	2.8	50	-	-
BE-247A-ED	Earthen Drive (ED)	345	70	66	90	94	199	58	75	70	Yes	6.4	-	-	6.4	-
BE-247A-FY	Front Yard (FY)	400	21	29	31	13	431	645	222	39	-	7.4	7.4	400	-	-
BE-247A-RG	Rock Garden (RG)	125	24	28	36	30	361	767	234	443	-	6.9	6.9	-	-	-
TOTALS		920										23.5	17.1	450	6.4	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

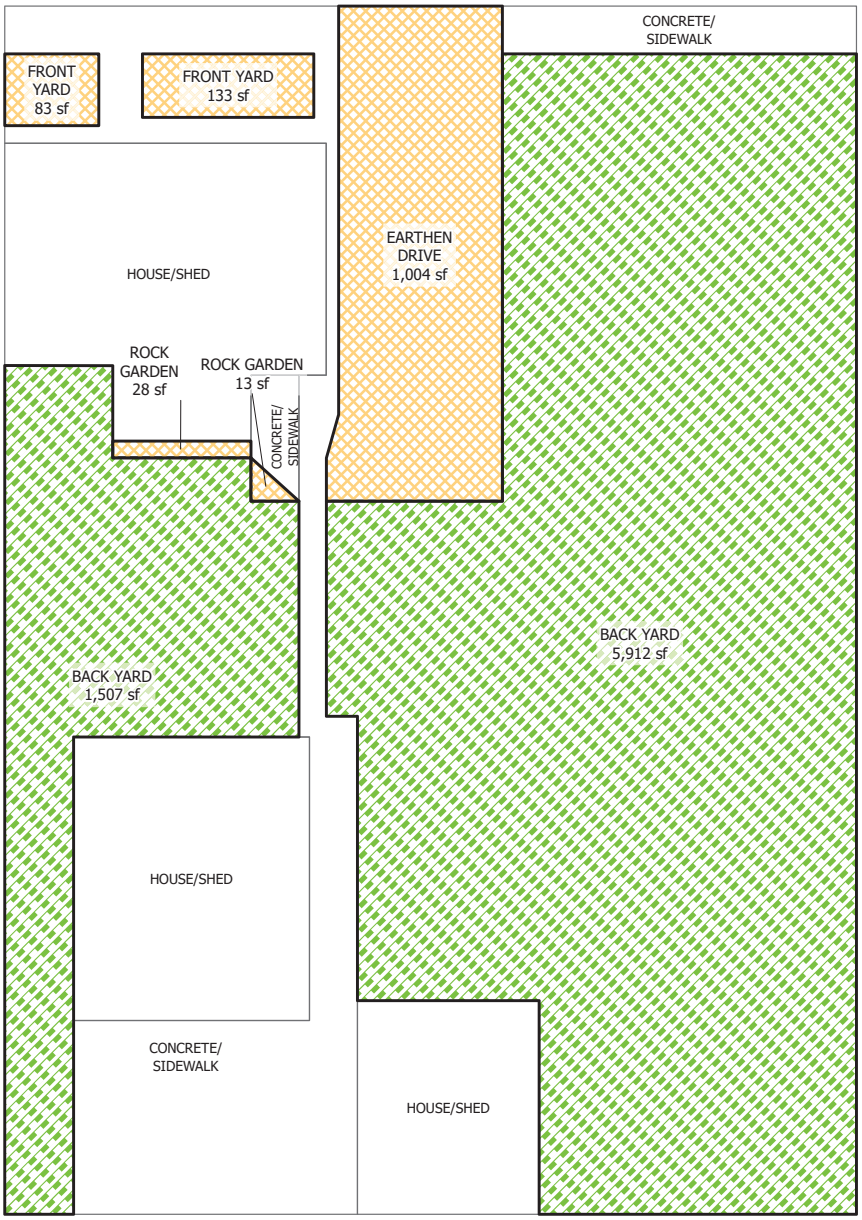
Legend
6" RA
18" RA

N

0 10 20 Feet

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-248

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-248			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-248-BY	Back Yard (BY)	7,419	20	47	78	86	123	202	194	60	-	-	-	-	-	-
BE-248-DZ	Drip Zone (DZ)	220	33	42	103	40	362	336	190	153	-	-	-	-	-	-
BE-248-ED	Earthen Drive (ED)	1,004	45	139	97	69	259	274	318	246	Yes	18.6	-	-	18.6	-
BE-248-FY	Front Yard (FY)	216	29	38	13	12	509	242	27	25	-	4.0	4.0	216	-	-
BE-248-RG	Rock Garden (RG)	41	34	87	90	65	253	420	135	33	-	0.8	0.8	-	-	-
	TOTALS	8,900										23.4	4.8	216	18.6	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

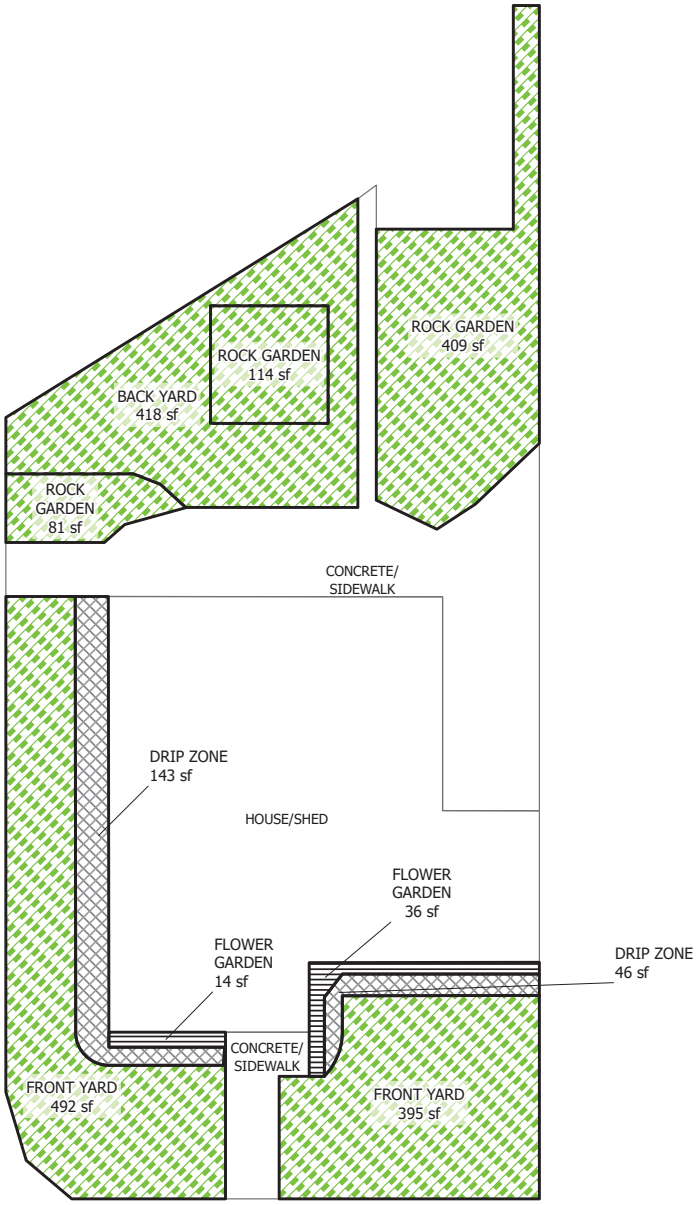
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-250A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-250A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-250A-BY	Back Yard (BY)	418	19	19	24	27	226	237	64	213	-	-	-	-	-	-
BE-250A-DZ	Drip Zone (DZ)	189	16	20	23	23	521	482	416	768	-	10.5	10.5	189	-	-
BE-250A-FG	Flower Garden (FG)	50	32	15	18	24	204	243	305	497	-	3.7	3.7	50	-	-
BE-250A-FY	Front Yard (FY)	887	17	19	25	29	199	200	166	138	-	-	-	-	-	-
BE-250A-RG	Rock Garden (RG)	604	28	34	32	16	251	267	239	306	-	-	-	-	-	-
	TOTALS	2,148										14.2	14.2	239		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
18" RA
24" RA

N

0 10 20 Feet

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-250B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-250B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-250B-BY	Back Yard (BY)	634	23	31	32	35	188	212	195	194	-	-	-	-	-	-
BE-250B-DZ	Drip Zone (DZ)	220	22	27	30	47	196	201	195	144	-	-	-	-	-	-
BE-250B-FG	Flower Garden (FG)	19	16	21	33	46	195	255	247	184	-	-	-	-	-	-
BE-250B-FY	Front Yard (FY)	162	22	28	28	66	232	175	141	93	-	-	-	-	-	-
BE-250B-PA	Play Area (PA)	80	35	36	37	32	425	447	418	185	-	3.0	3.0	80	-	-
	TOTALS	1,115										3.0	3.0	80		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

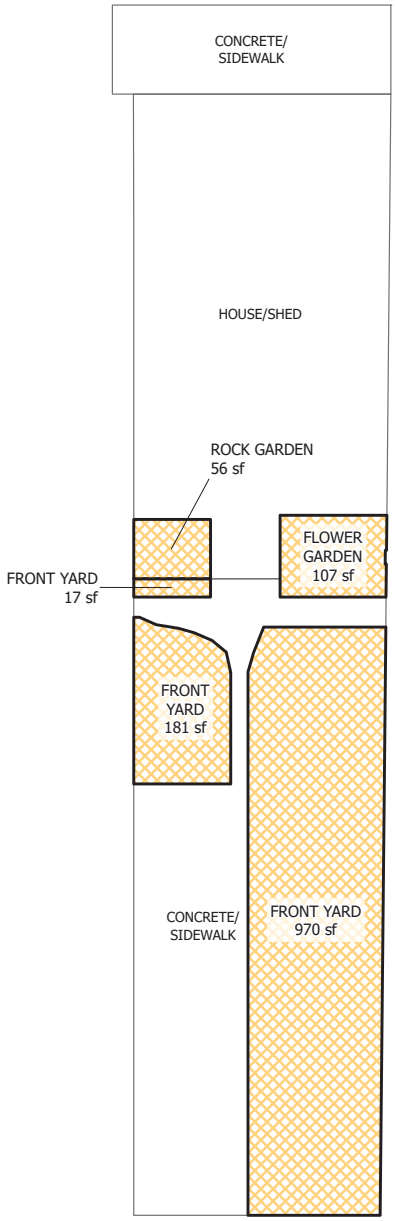
Legend
No Action
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-250C

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)									
BE-250C			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-250C-DZ	Drip Zone (DZ)	220	26	27	32	33	352	369	360	228	-	-	-	-	-	-
BE-250C-FG	Flower Garden (FG)	107	21	26	33	32	408	335	306	134	-	2.0	2.0	107	-	-
BE-250C-FY	Front Yard (FY)	1,168	28	27	28	33	417	334	204	120	-	21.6	21.6	1,168	-	-
BE-250C-RG	Rock Garden (RG)	56	24	29	34	36	388	443	325	158	-	1.0	1.0	-	-	-
TOTALS		1,551										24.6	24.6	1,275		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

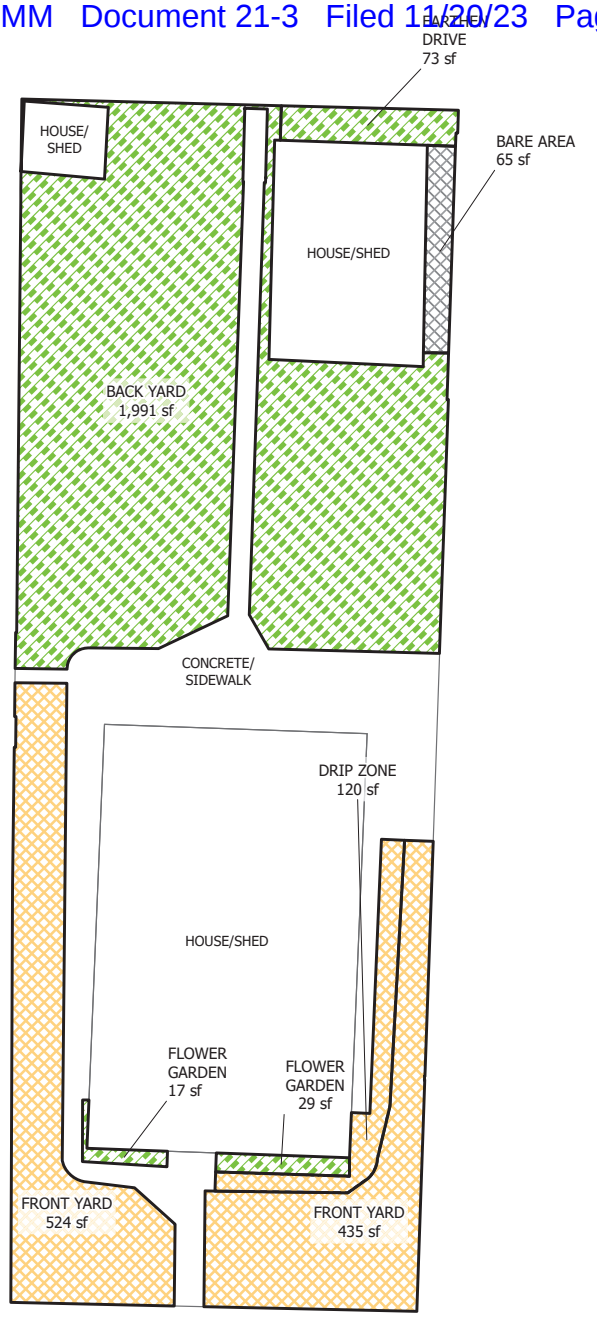
Legend
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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NOTE: ED Sampling refusal at 6 or 12 inches during sampling. Concentrations to 18 inches assumed based upon the 0 to 6 inch samples. No further sampling planned.

Resident ID
BE-251

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-251			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-251-BA	Bare Area (BA)	65	15	22	39	33	107	260	328	469	-	3.6	3.6	65	-	-
BE-251-BY	Back Yard (BY)	1,991	19	33	35	50	232	273	291	313	-	-	-	-	-	-
BE-251-DZ	Drip Zone (DZ)	120	35	39	49	52	525	215	52	53	-	2.2	2.2	120	-	-
BE-251-ED	Earthen Drive (ED)	73	15	15	N/A	N/A	112	112	N/A	N/A	-	-	-	-	-	-
BE-251-FG	Flower Garden (FG)	46	33	29	51	79	318	225	89	35	-	-	-	-	-	-
BE-251-FY	Front Yard (FY)	959	34	29	31	41	591	251	83	54	-	17.8	17.8	959	-	-
	TOTALS	3,254										23.6	23.6	1,144		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

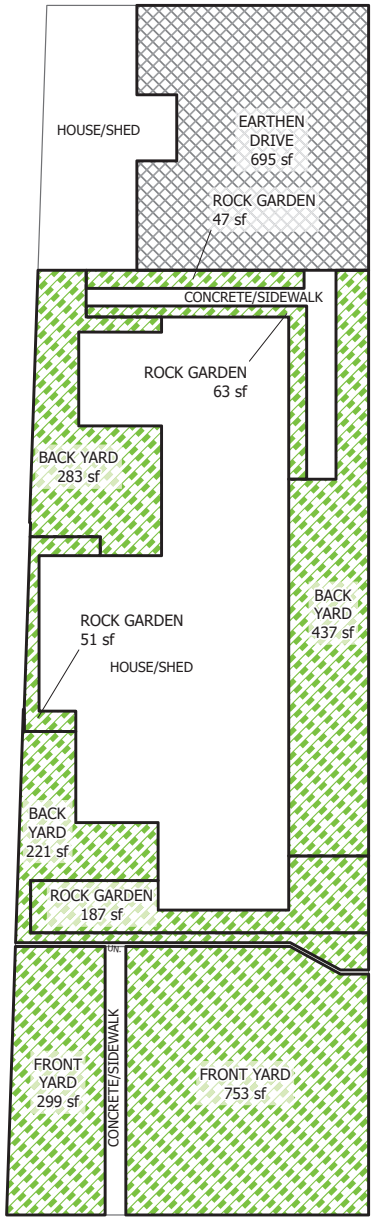
Legend
- No Action
- 6" RA
- 18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-252

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-252			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-252-BY	Back Yard (BY)	941	20	33	31	58	145	384	221	350	-	-	-	-	-	-
BE-252-DZ	Drip Zone (DZ)	220	15	13	24	31	56	89	121	155	-	-	-	-	-	-
BE-252-ED	Earthen Drive (ED)	695	7	10	18	29	37	28	112	685	-	38.6	25.7	-	12.9	-
BE-252-FY	Front Yard (FY)	1,052	13	21	19	29	70	163	113	88	-	-	-	-	-	-
BE-252-RG	Rock Garden (RG)	348	17	25	26	38	79	158	178	295	-	-	-	-	-	-
	TOTALS	3,256										38.6	25.7		12.9	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

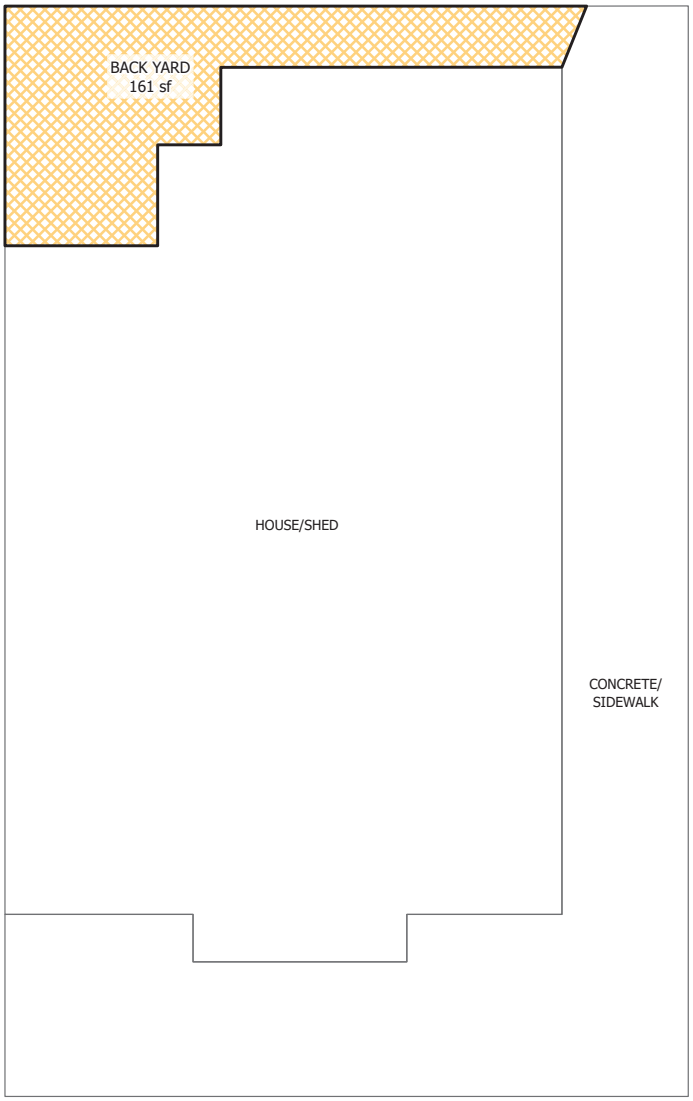
Legend
No Action
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-253A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-253A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-253A-BY	Back Yard (BY)	161	113	144	96	47	528	518	285	20	-	3.0	3.0	161	-	-
BE-253A-DZ	Drip Zone (DZ)	220	30	47	39	30	229	379	180	23	-	-	-	-	-	-
	TOTALS	381										3.0	3.0	161		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

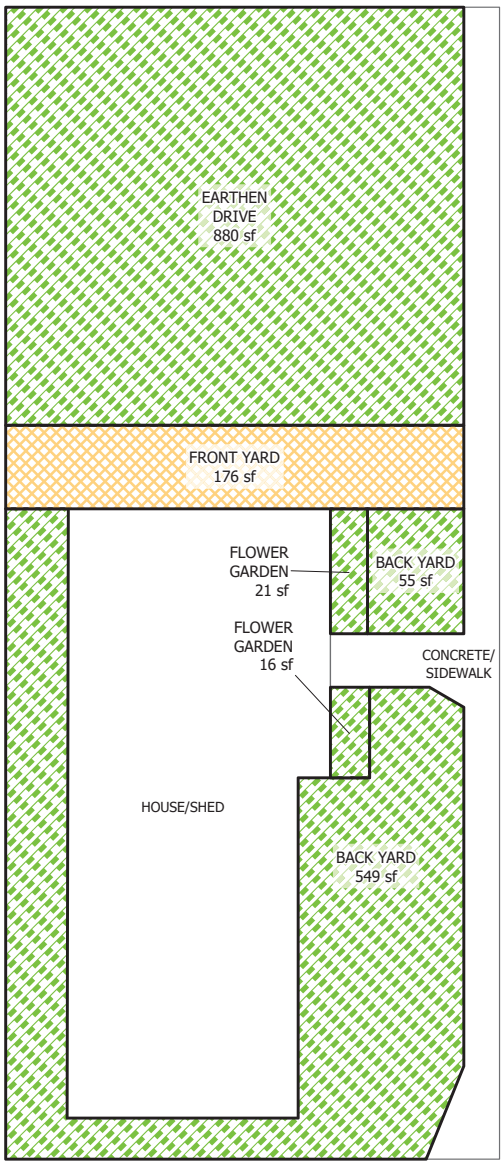
Legend
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-253B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-253B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-253B-BY	Back Yard (BY)	604	13	36	69	72	70	315	134	15[illegible]	-	-	-	-	-	-
BE-253B-DZ	Drip Zone (DZ)	220	39	44	48	44	321	364	252	190	-	-	-	-	-	-
BE-253B-ED	Earthen Drive (ED)	880	12	29	61	67	58	371	332	150	-	-	-	-	-	-
BE-253B-FG	Flower Garden (FG)	37	22	30	37	53	200	315	273	208	-	-	-	-	-	-
BE-253B-FY	Front Yard (FY)	176	20	30	34	228	203	405	300	214	-	3.3	3.3	176	-	-
	TOTALS	1,917										3.3	3.3	176		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

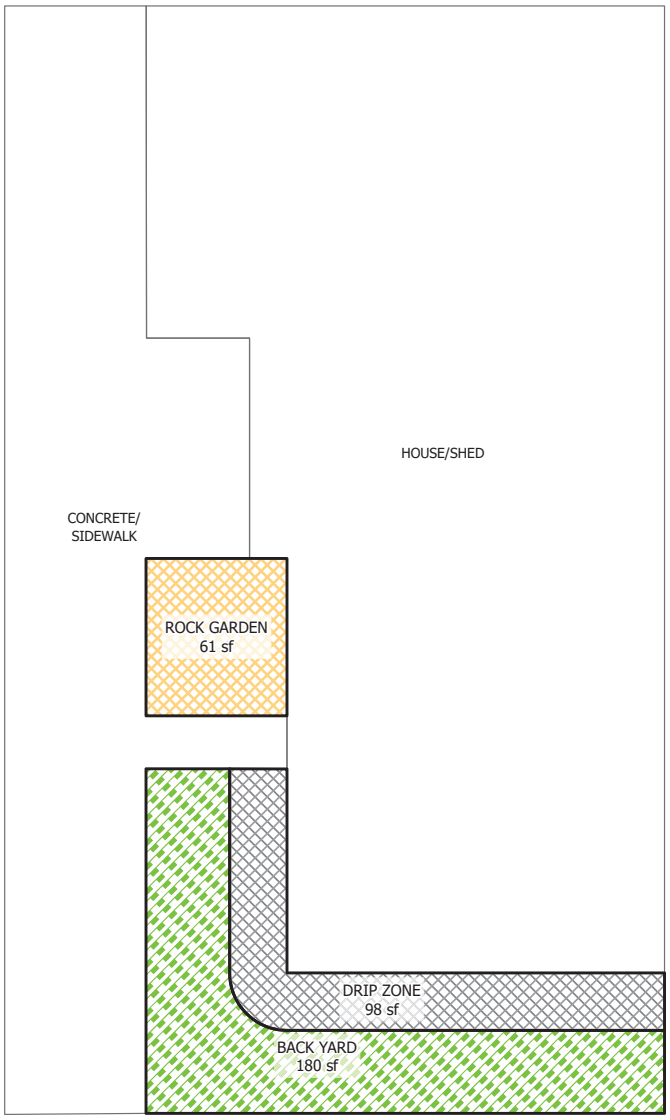
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-254B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-254B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-254B-BY	Back Yard (BY)	180	49	35	52	61	296	356	282	89	-	-	-	-	-	-
BE-254B-DZ	Drip Zone (DZ)	98	16	31	77	49	129	286	260	503	-	5.4	5.4	98	-	-
BE-254B-RG	Rock Garden (RG)	61	115	66	79	137	211	312	200	333	Yes	1.1	1.1	-	-	-
	TOTALS	339										6.5	6.5	98		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

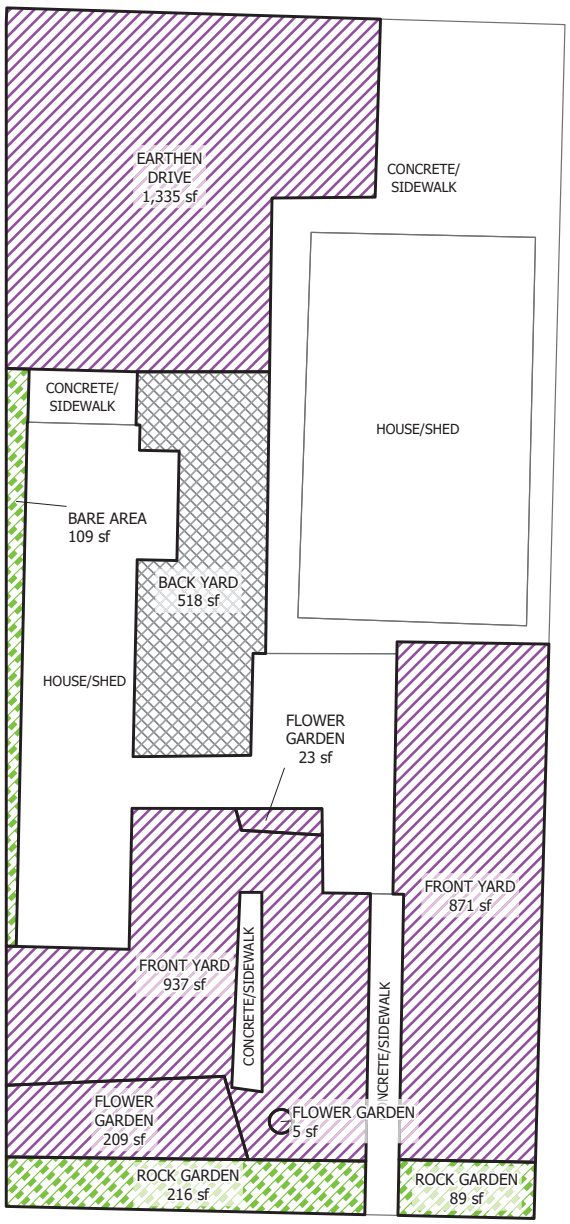
Legend
- No Action
- 6" RA
- 18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-255

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-255			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-255-BA	Bare Area (BA)	109	25	19	78	69	263	387	266	66	-	-	-	-	-	-
BE-255-BY	Back Yard (BY)	518	20	18	44	88	282	33	542	885	-	28.8	28.8	518	-	-
BE-255-ED	Earthen Drive (ED)	1,335	13	43	84	83	114	376	434	198	-	49.4	24.7	-	24.7	-
BE-255-FG	Flower Garden (FG)	237	37	35	58	70	351	401	442	313	-	8.8	8.8	237	-	-
BE-255-FY	Front Yard (FY)	1,808	25	39	153	87	215	296	575	177	-	67.0	67.0	1,808	-	-
BE-255-RG	Rock Garden (RG)	305	49	46	29	47	338	361	178	310	-	-	-	-	-	-
	TOTALS	4,312										154.0	129.3	2,563	24.7	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

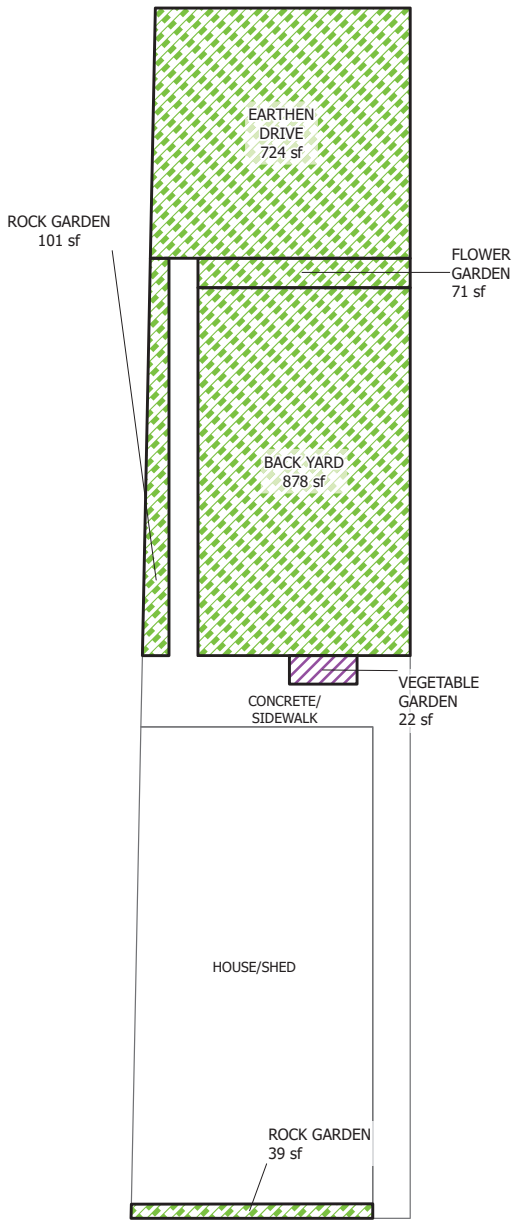
Legend
- No Action
- 12" RA
- 18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-256

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-256			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-256-BY	Back Yard (BY)	878	8	9	37	51	28	36	238	365	-	-	-	-	-	-
BE-256-ED	Earthen Drive (ED)	724	5	5	5	6	11	6	18	34	-	-	-	-	-	-
BE-256-FG	Flower Garden (FG)	71	8	8	47	65	37	26	249	284	-	-	-	-	-	-
BE-256-RG	Rock Garden (RG)	140	61	30	59	32	261	361	110	71	-	-	-	-	-	-
BE-256-VG	Vegetable Garden (VG)	22	8	26	59	63	55	212	424	318	-	0.8	0.8	22	-	-
	TOTALS	1,835										0.8	0.8	22		

Component Arsenic Concentration is > 253 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
12" RA

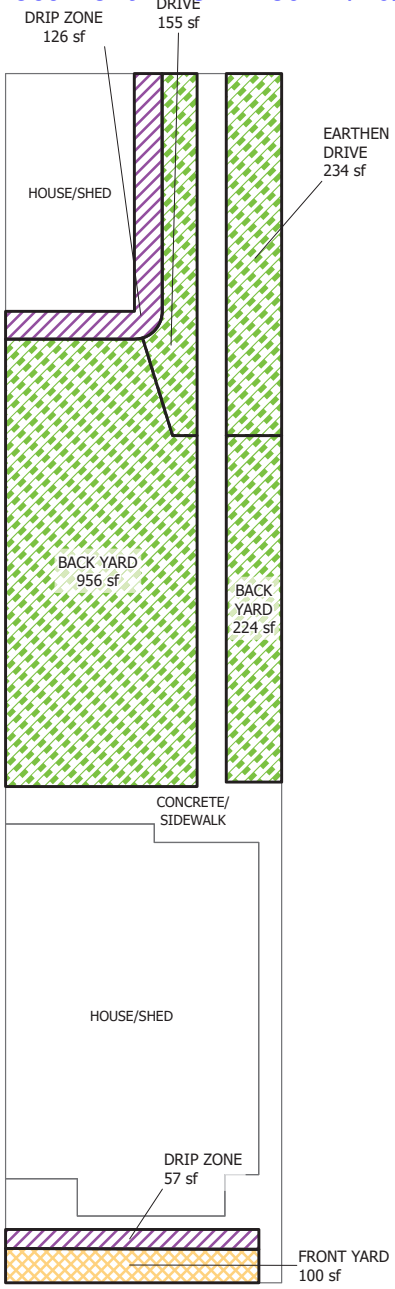
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N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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PROPERTY ADDRESS: 1921 SMELTER AVE NE
RESIDENT ID: BE-257



Resident ID
BE-257

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-257			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-257-BY	Back Yard (BY)	1,180	21	34	40	46	307	286	399	282	-	-	-	-	-	-
BE-257-DZ	Drip Zone (DZ)	183	30	30	43	40	537	536	629	367	-	6.8	6.8	183	-	-
BE-257-ED	Earthen Drive (ED)	389	19	42	79	69	219	337	331	238	-	-	-	-	-	-
BE-257-FY	Front Yard (FY)	100	19	36	149	85	253	492	313	61	-	1.9	1.9	100	-	-
	TOTALS	1,852										8.7	8.7	283		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

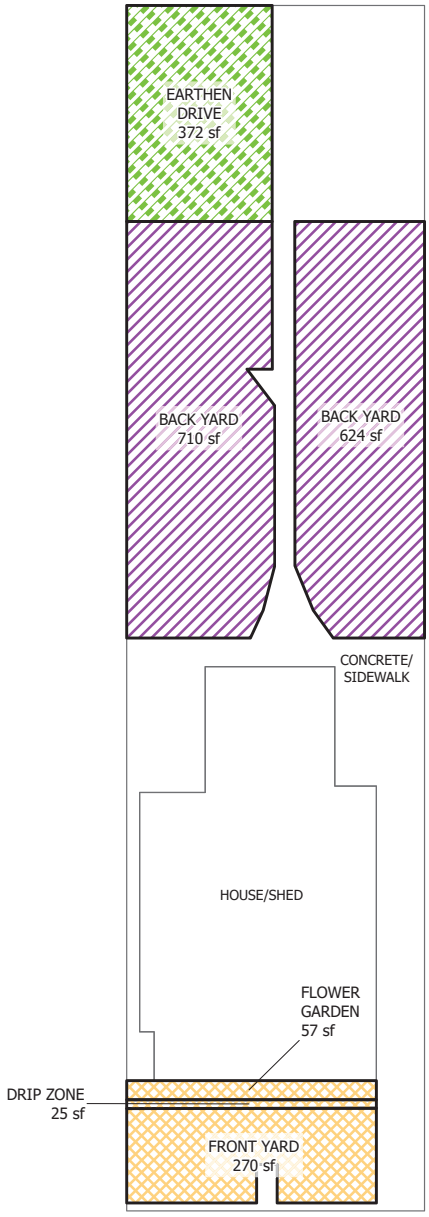
Legend
- No Action
- 6" RA
- 12" RA

N

0 10 20 Feet

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-258

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-258			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-258-BY	Back Yard (BY)	1,334	38	47	87	113	373	397	555	363	-	49.4	49.4	1,334	-	-
BE-258-DZ	Drip Zone (DZ)	25	21	33	55	49	377	544	352	19	-	0.5	0.5	25	-	-
BE-258-ED	Earthen Drive (ED)	372	6	6	5	12	10	7	6	89	-	-	-	-	-	-
BE-258-FG	Flower Garden (FG)	57	31	32	38	17	441	554	339	17	-	1.1	1.1	57	-	-
BE-258-FY	Front Yard (FY)	270	46	26	66	87	533	528	377	48	-	5.0	5.0	270	-	-
	TOTALS	2,058										56.0	56.0	1,686		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

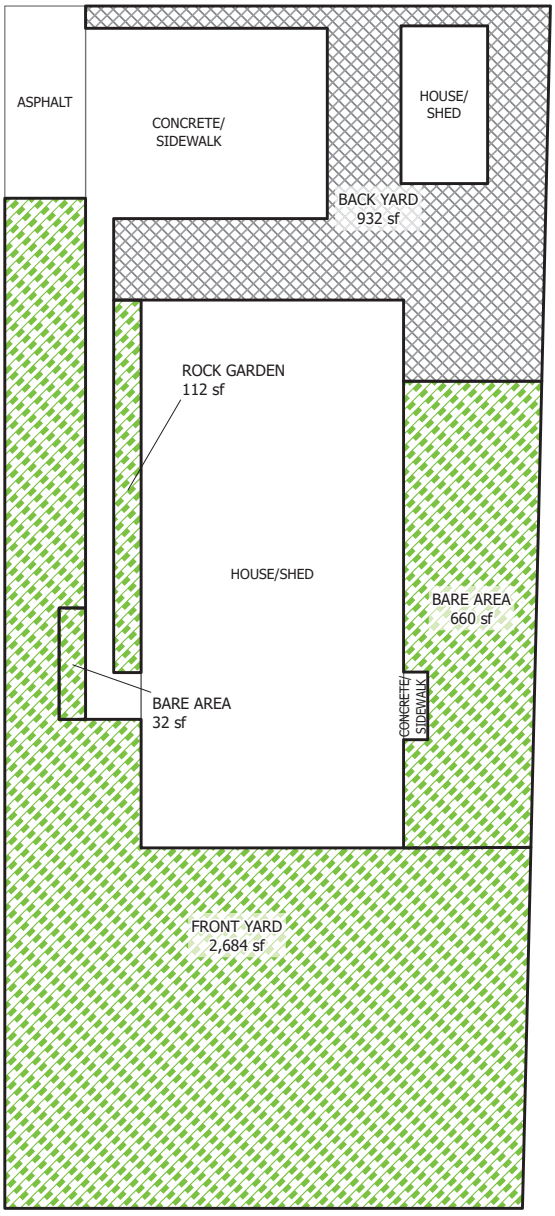
Legend
No Action
6" RA
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-260

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-260			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-260-BA	Bare Area (BA)	692	22	13	9	9	51	28	14	13	-	-	-	-	-	-
BE-260-BY	Back Yard (BY)	932	35	27	22	45	102	88	247	417	-	51.8	51.8	932	-	-
BE-260-DZ	Drip Zone (DZ)	220	20	22	17	24	56	58	41	48	-	-	-	-	-	-
BE-260-FY	Front Yard (FY)	2,684	25	23	29	15	70	112	84	28	-	-	-	-	-	-
BE-260-RG	Rock Garden (RG)	112	22	27	38	21	56	62	91	39	-	-	-	-	-	-
	TOTALS	4,640										51.8	51.8	932		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

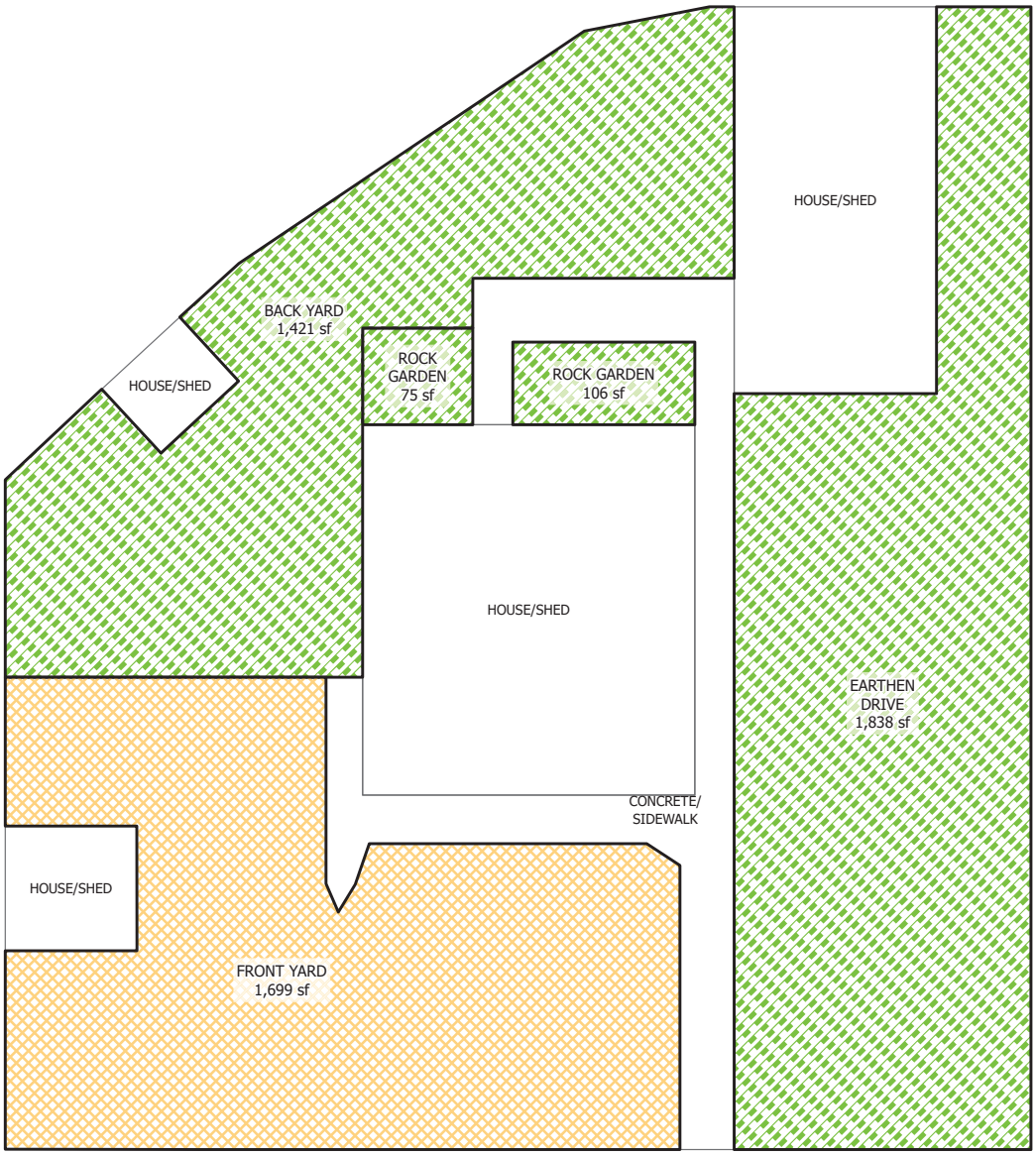
Legend
No Action
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-264

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-264			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-264-BY	Back Yard (BY)	1,421	23	23	45	52	220	76	42	52	-	-	-	-	-	-
BE-264-DZ	Drip Zone (DZ)	220	16	14	19.1	19	279	109	50	52	-	-	-	-	-	-
BE-264-ED	Earthen Drive (ED)	1,838	11	14	19	37	126	87	42	90	-	-	-	-	-	-
BE-264-FY	Front Yard (FY)	1,699	24	25	21	19	466	155	122	53	-	31.5	31.5	1,699	-	-
BE-264-RG	Rock Garden (RG)	181	22	37	68	62	265	93	91	35	-	-	-	-	-	-
	TOTALS	5,359										31.5	31.5	1,699		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

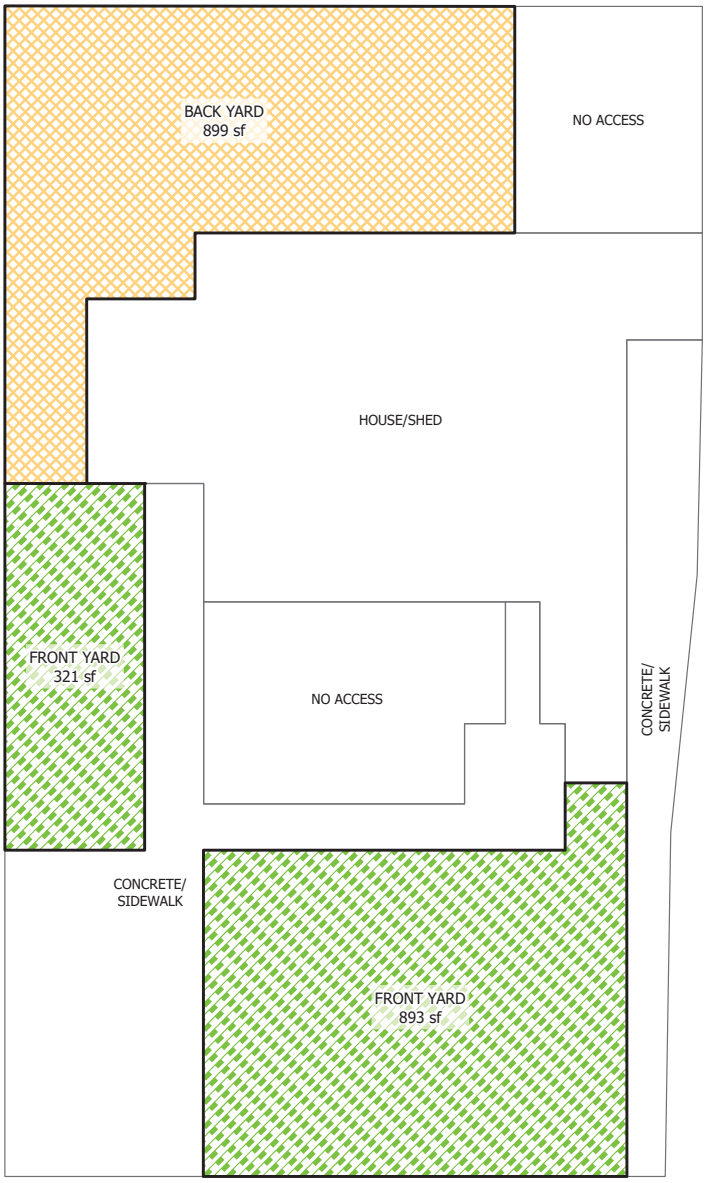
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-267

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-267			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-267-BY	Back Yard (BY)	899	74	92	36	66	140	140	82	206	Yes	16.6	16.6	899	-	-
BE-267-DZ	Drip Zone (DZ)	220	50	98	95	61	367	213	204	235	Yes	4.1	4.1	220	-	-
BE-267-FY	Front Yard (FY)	1,214	31	43	44	30	170	308	116	152	-	-	-	-	-	-
	TOTALS	2,333										20.7	20.7	1,119		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

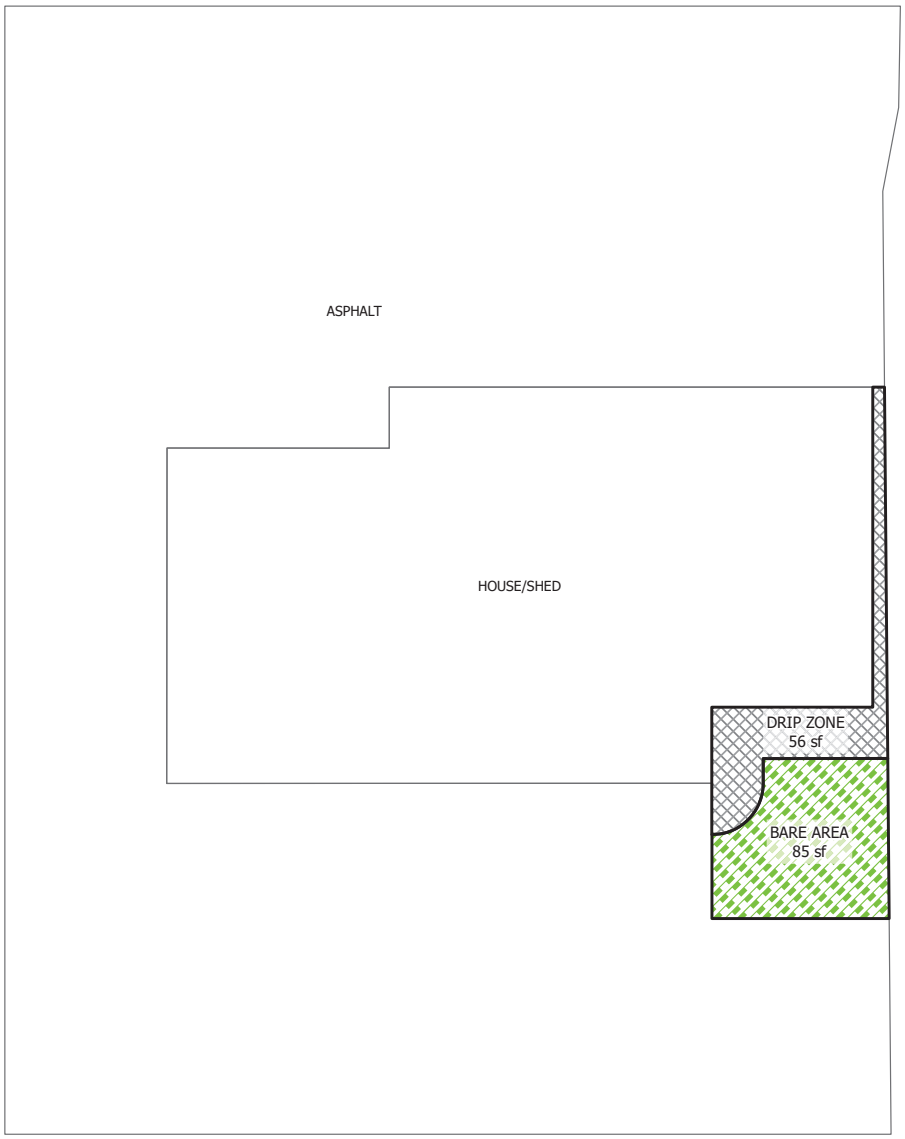
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-268

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-268			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-268-BA	Bare Area (BA)	85	17	49	36	31	196	207	322	236	-	-	-	-	-	-
BE-268-DZ	Drip Zone (DZ)	56	22	26	57	66	140	144	313	1100	-	3.1	3.1	56	-	-
	TOTALS	141										3.1	3.1	56		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

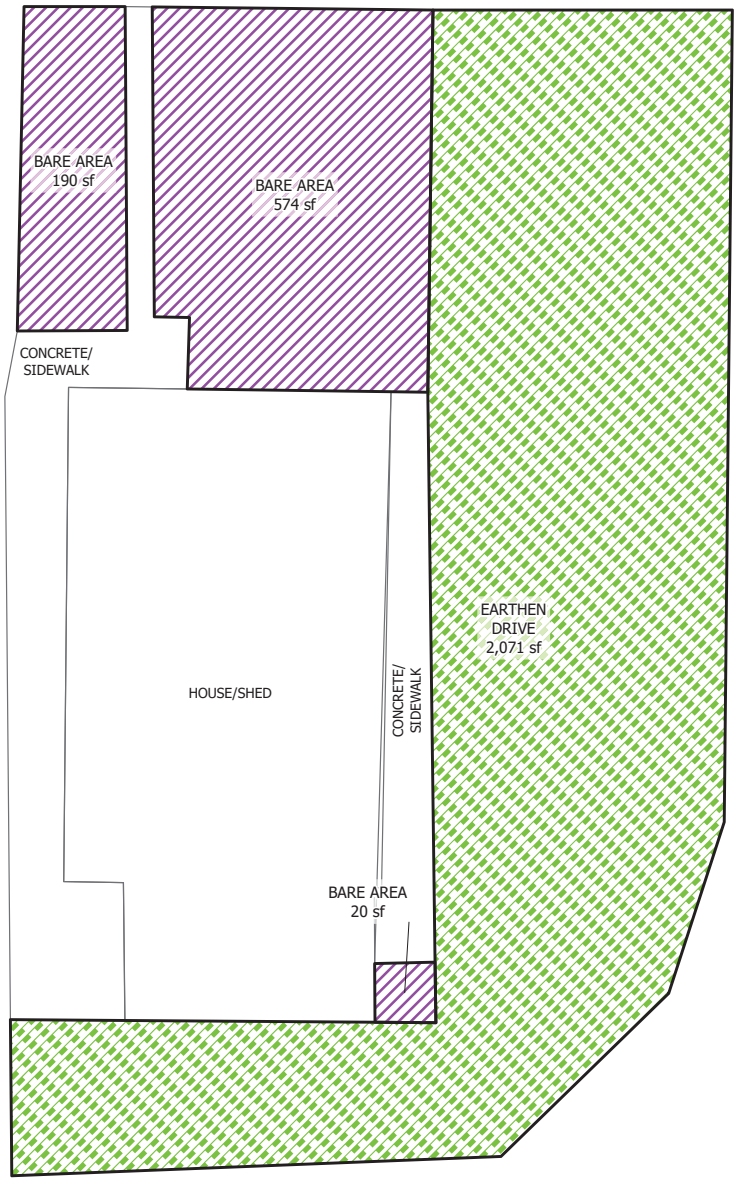
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No Action
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-269A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-269A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-269A-BA	Bare Area (BA)	784	14	18	41	77	109	247	780	200	-	29.0	29.0	784	-	-
BE-269A-DZ	Drip Zone (DZ)	220	24	25	31	45	184	229	245	165	-	-	-	-	-	-
BE-269A-ED	Earthen Drive (ED)	2,071	8	16	13	10	58	66	63	195	-	-	-	-	-	-
	TOTALS	3,075										29.0	29.0	784		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

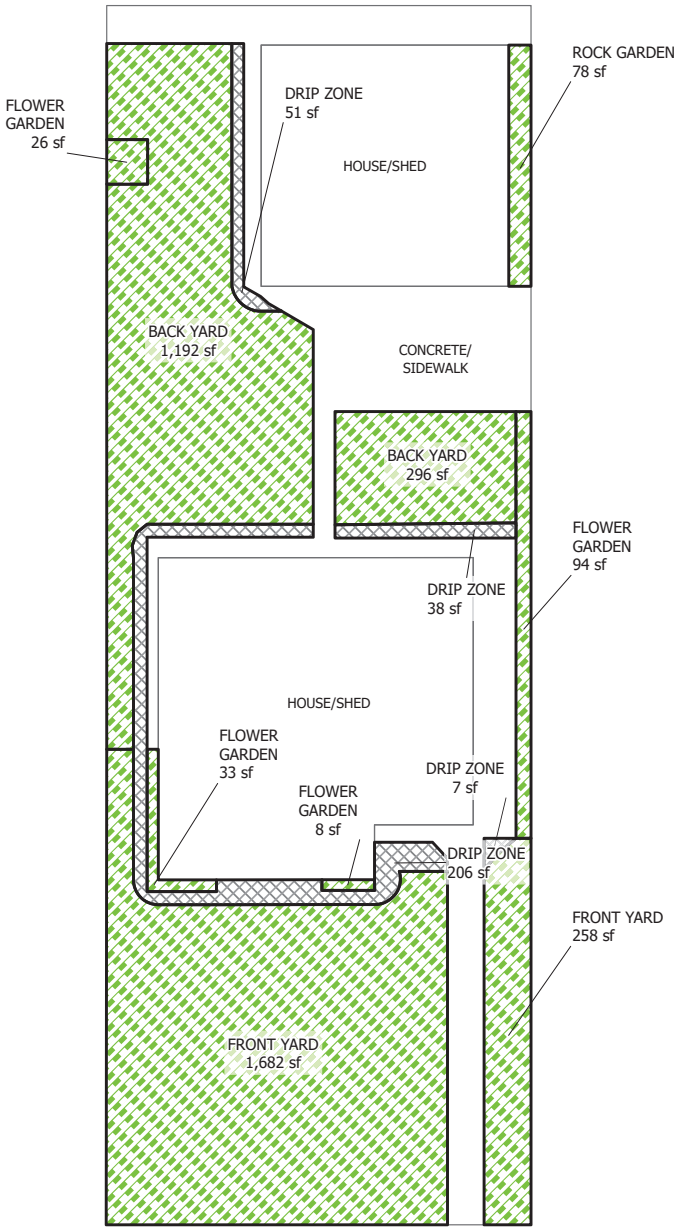
Legend
No Action
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-276

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-276			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-276-BY	Back Yard (BY)	1,488	19.1	31	20	9	284	177	24	12	-	-	-	-	-	-
BE-276-DZ	Drip Zone (DZ)	302	13	10	11	8	134	85	39	439	-	16.8	16.8	302	-	-
BE-276-FG	Flower Garden (FG)	161	12	23	11	9	158	249	57	31	-	-	-	-	-	-
BE-276-FY	Front Yard (FY)	1,940	16	17	17	18	163	44	19	21	-	-	-	-	-	-
BE-276-RG	Rock Garden (RG)	78	15	16	16	8	127	212	15	11	-	-	-	-	-	-
	TOTALS	3,969										16.8	16.8	302		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

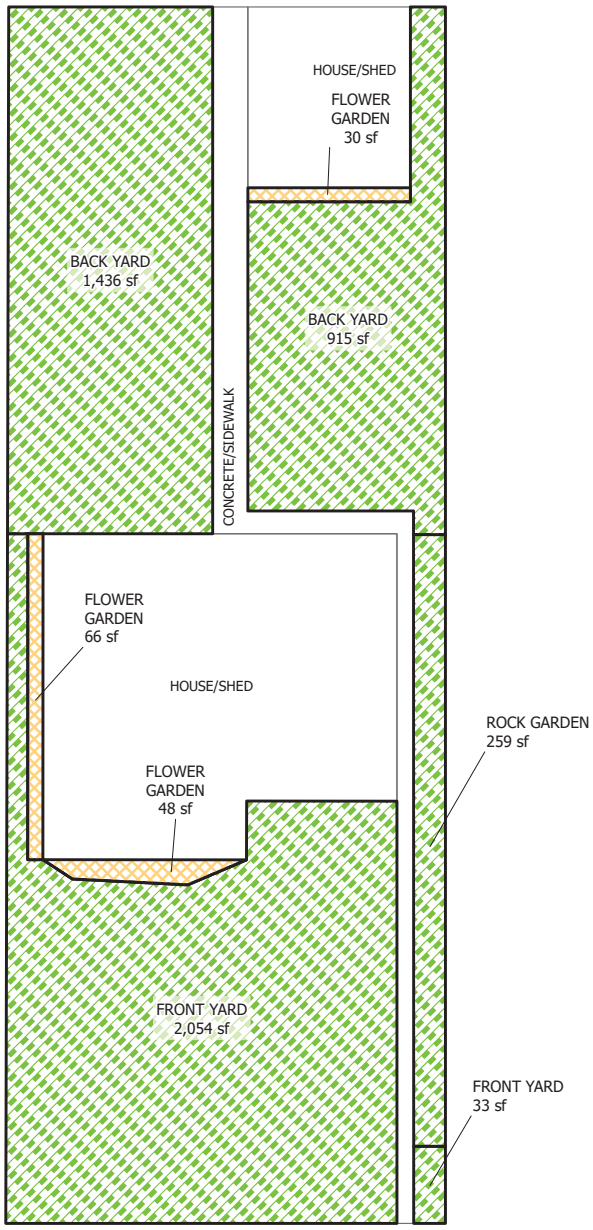
Legend
No Action
18" RA

N

0 10 20 Feet

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-280

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-280			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-280-BY	Back Yard (BY)	2,351	14	17	19.1	7	79	25	20	9	-	-	-	-	-	-
BE-280-DZ	Drip Zone (DZ)	220	15	12	11	11	140	51	94	26	-	-	-	-	-	-
BE-280-FG	Flower Garden (FG)	144	15	12	15	16	1030	160	166	166	-	2.7	2.7	144	-	-
BE-280-FY	Front Yard (FY)	2,087	11	13	2	29	83	23	3	61	-	-	-	-	-	-
BE-280-RG	Rock Garden (RG)	259	12	13	13	10	50	29	19	19	-	-	-	-	-	-
	TOTALS	5,061										2.7	2.7	144		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

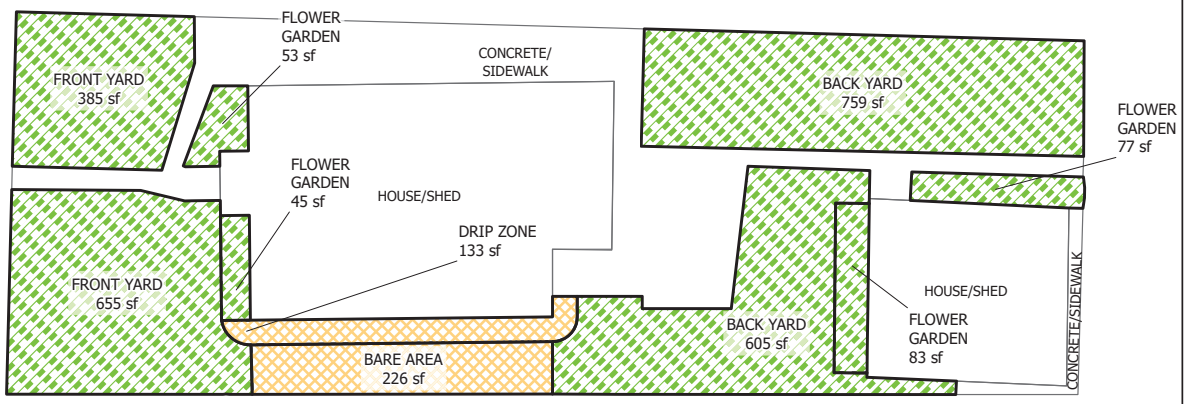
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-300

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-300			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-300-BA	Bare Area (BA)	226	31	49	49	69	533	251	55	59	-	4.2	4.2	226	-	-
BE-300-BY	Back Yard (BY)	1,364	24	43	16	29	76	78	279	147	-	-	-	-	-	-
BE-300-DZ	Drip Zone (DZ)	133	33	39	41	53	442	371	146	129	-	2.5	2.5	133	-	-
BE-300-FG	Flower Garden (FG)	258	26	31	42	40	209	272	177	136	-	-	-	-	-	-
BE-300-FY	Front Yard (FY)	1,040	7	52	35	47	34	179	69	24	-	-	-	-	-	-
	TOTALS	3,021										6.7	6.7	359		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

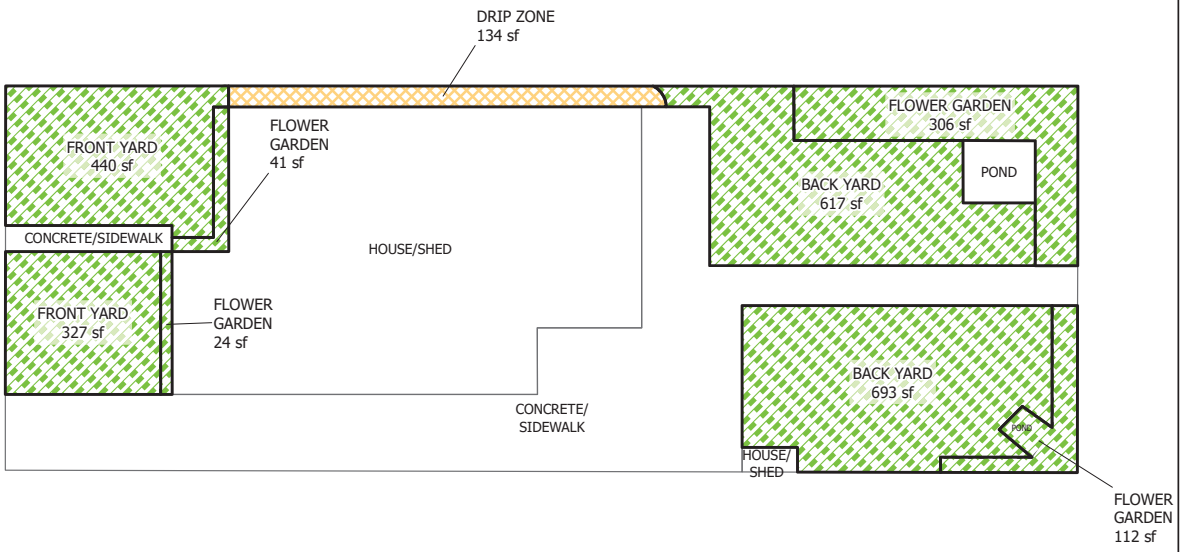
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-301

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-301			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-301-BY	Back Yard (BY)	1,310	17	22	25	20	258	178	112	57	-	-	-	-	-	-
BE-301-DZ	Drip Zone (DZ)	134	29	40	30	53	473	177	160	104	-	2.5	2.5	134	-	-
BE-301-FG	Flower Garden (FG)	483	21	23	30	33	169	362	239	226	-	-	-	-	-	-
BE-301-FY	Front Yard (FY)	767	43	32	44	59	283	166	63	35	-	-	-	-	-	-
	TOTALS	2,694										2.5	2.5	134		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

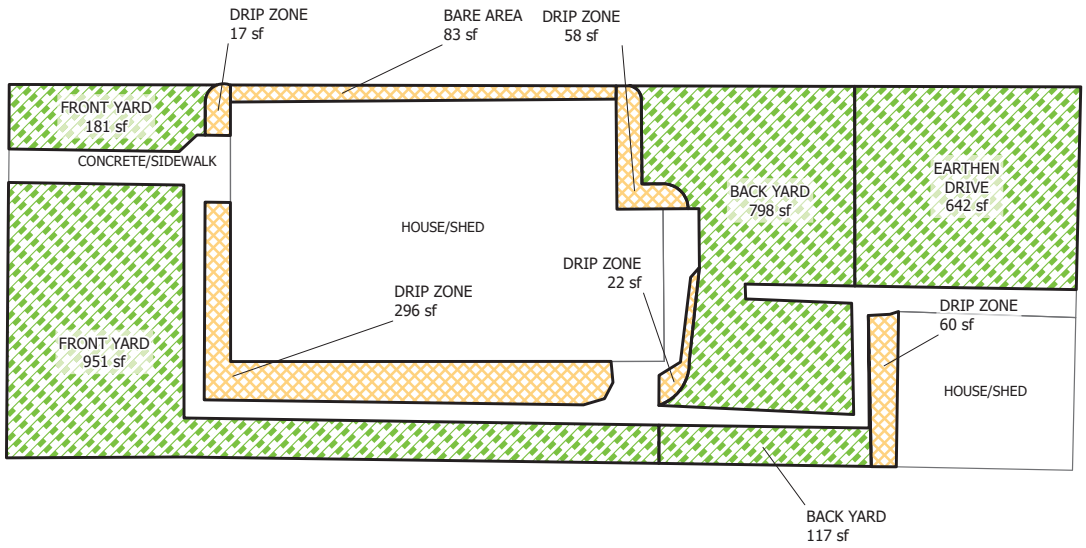
Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA
0 10 20 Feet
N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-302

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-302			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-302-BA	Bare Area (BA)	83	27	54	62	37	611	152	53	24	-	1.5	1.5	83	-	-
BE-302-BY	Back Yard (BY)	915	20	37	47	65	279	352	60	25	-	-	-	-	-	-
BE-302-DZ	Drip Zone (DZ)	453	21	34	63	38	436	202	115	22	-	8.4	8.4	453	-	-
BE-302-ED	Earthen Drive (ED)	642	42	23	34	15	147	182	99	95	-	-	-	-	-	-
BE-302-FY	Front Yard (FY)	1,132	31	30	51	70	372	376	70	32	-	-	-	-	-	-
	TOTALS	3,225										9.9	9.9	536		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

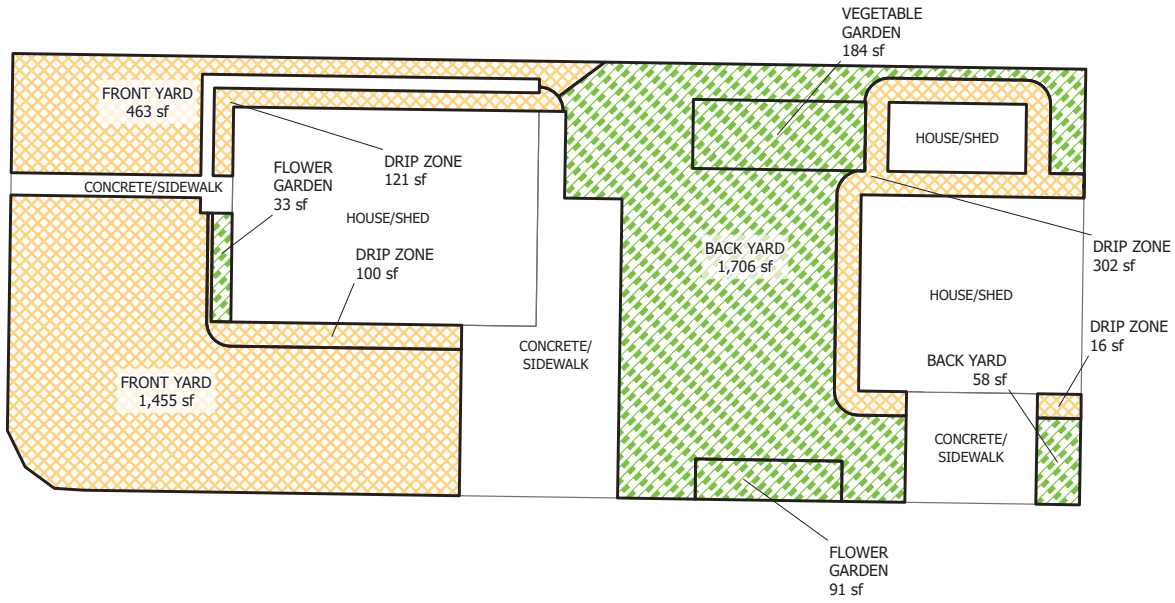
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-303

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-303			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-303-BY	Back Yard (BY)	1,764	9	18	29	28	109	190	184	60	-	-	-	-	-	-
BE-303-DZ	Drip Zone (DZ)	539	13	23	28	21	438	423	270	29	-	10.0	10.0	539	-	-
BE-303-FG	Flower Garden (FG)	124	19	24	28	37	356	398	250	45	-	-	-	-	-	-
BE-303-FY	Front Yard (FY)	1,918	19	25	28	31	528	257	102	48	-	35.5	35.5	1,918	-	-
BE-303-VG	Vegetable Garden (VG)	184	16	16	20	22	139	165	241	324	-	-	-	-	-	-
	TOTALS	4,529										45.5	45.5	2,457		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

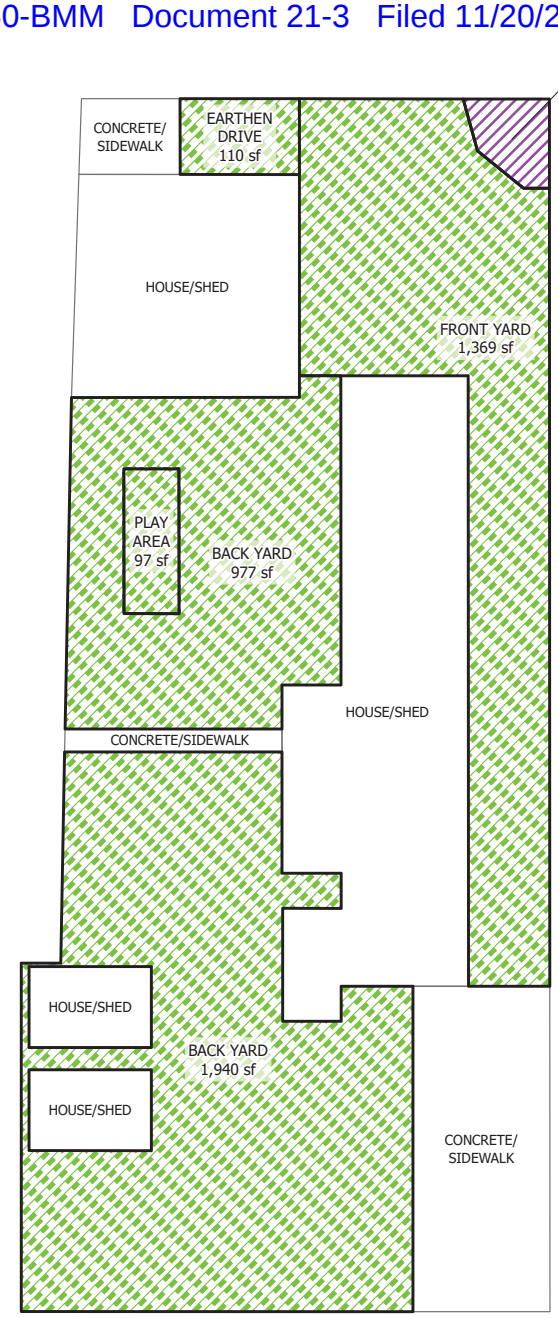
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-305

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-305			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-305-BY	Back Yard (BY)	2,917	29	41	34	26	192	150	46	7	-	-	-	-	-	-
BE-305-DZ	Drip Zone (DZ)	220	17	23	62	80	42	73	131	41	-	-	-	-	-	-
BE-305-ED	Earthen Drive (ED)	110	17	58	12	7	284	322	40	34	-	-	-	-	-	-
BE-305-FG	Flower Garden (FG)	72	50	41	68	18	316	513	433	50	-	2.7	2.7	72	-	-
BE-305-FY	Front Yard (FY)	1,369	20	18	36	33	77	52	103	26	-	-	-	-	-	-
BE-305-PA	Play Area (PA)	97	29	43	57	50	200	204	165	64	-	-	-	-	-	-
	TOTALS	4,785										2.7	2.7	72		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

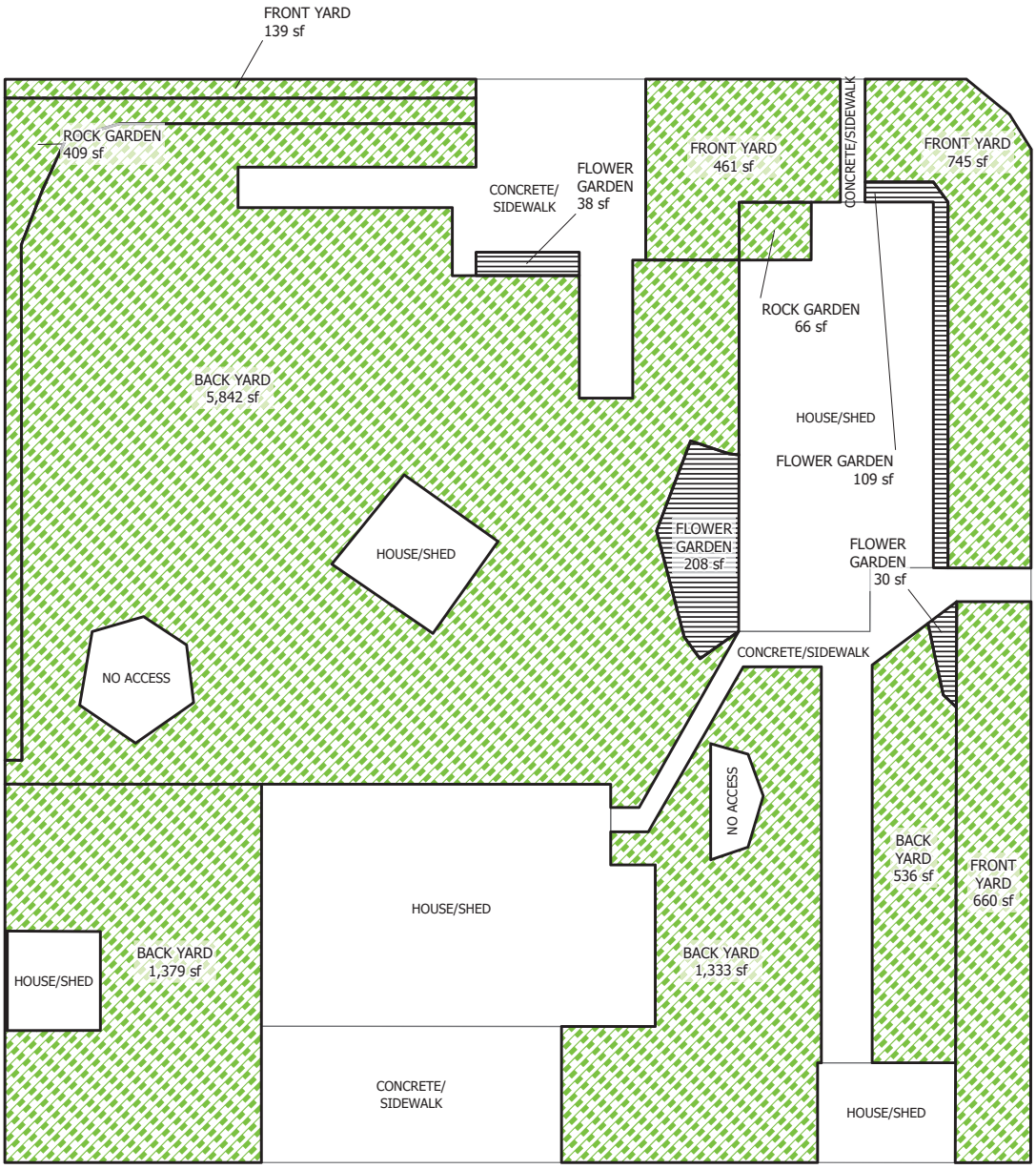
Legend
No Action
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-308

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-308			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-308-BY	Back Yard (BY)	9,090	22	35	45	38	222	200	194	22[illegible]	-	-	-	-	-	-
BE-308-DZ	Drip Zone (DZ)	220	26	31	48	23	326	229	92	113	-	-	-	-	-	-
BE-308-FG	Flower Garden (FG)	385	24	36	34	50	504	719	161	426	-	28.5	28.5	385	-	-
BE-308-FY	Front Yard (FY)	2,005	18	22	28	43	191	169	125	31	-	-	-	-	-	-
BE-308-RG	Rock Garden (RG)	475	30	54	42	19	108	71	28	14	-	-	-	-	-	-
	TOTALS	12,175										28.5	28.5	385		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

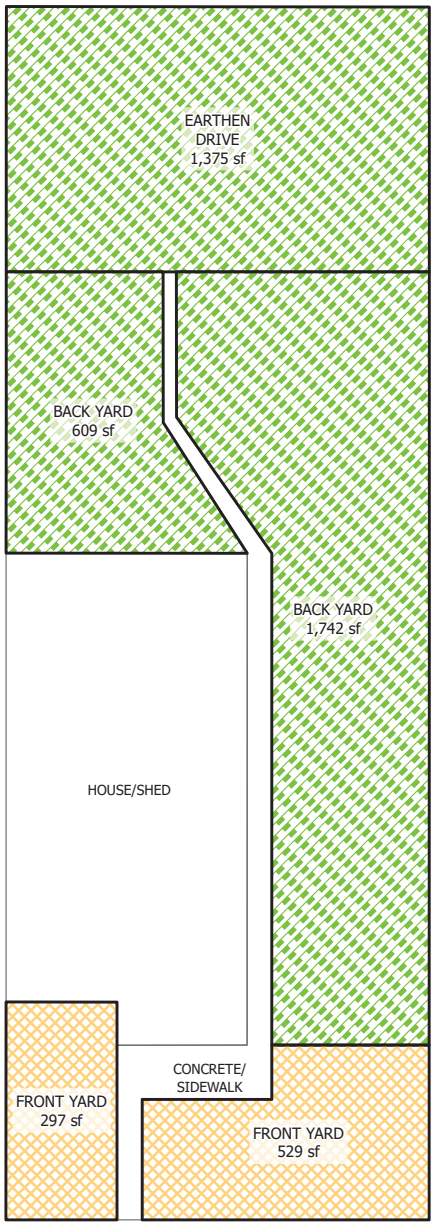
Legend
No Action
24" RA

N

0 10 20 Feet

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-313

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-313			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-313-BY	Back Yard (BY)	2,351	23	38	34	21	239	163	95	17	-	-	-	-	-	-
BE-313-DZ	Drip Zone (DZ)	220	26	30	28	22	319	251	91	85	-	-	-	-	-	-
BE-313-ED	Earthen Drive (ED)	1,375	25	39	59	62	255	318	231	77	-	-	-	-	-	-
BE-313-FY	Front Yard (FY)	826	19	22	45	28	527	364	329	19	-	15.3	15.3	826	-	-
	TOTALS	4,772										15.3	15.3	826		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

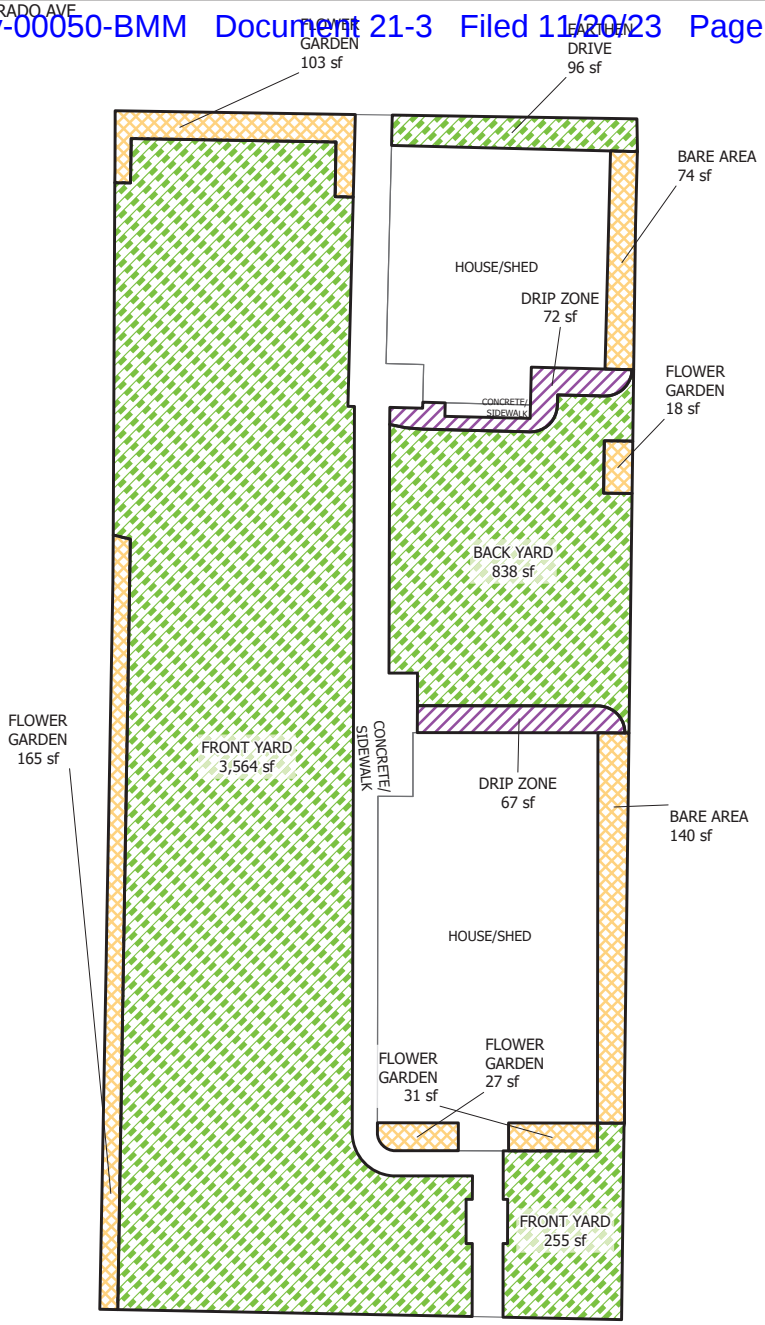
0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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PROPERTY ADDRESS: 1529 COLORADO AVE
RESIDENT ID: BE-316



Resident ID
BE-316

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-316			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-316-BA	Bare Area (BA)	214	46	48	42	84	375	510	232	314	-	4.0	4.0	214	-	-
BE-316-BY	Back Yard (BY)	838	30	36	56	59	168	209	143	94	-	-	-	-	-	-
BE-316-DZ	Drip Zone (DZ)	139	49	61	57	55	918	963	727	349	-	5.1	5.1	139	-	-
BE-316-ED	Earthen Drive (ED)	96	9	10	16	28	336	169	103	109	-	-	-	-	-	-
BE-316-FG	Flower Garden (FG)	344	27	36	30	22	1170	943	227	77	-	6.4	6.4	344	-	-
BE-316-FY	Front Yard (FY)	3,819	17	27	39	37	216	252	159	75	-	-	-	-	-	-
	TOTALS	5,450										15.5	15.5	697		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

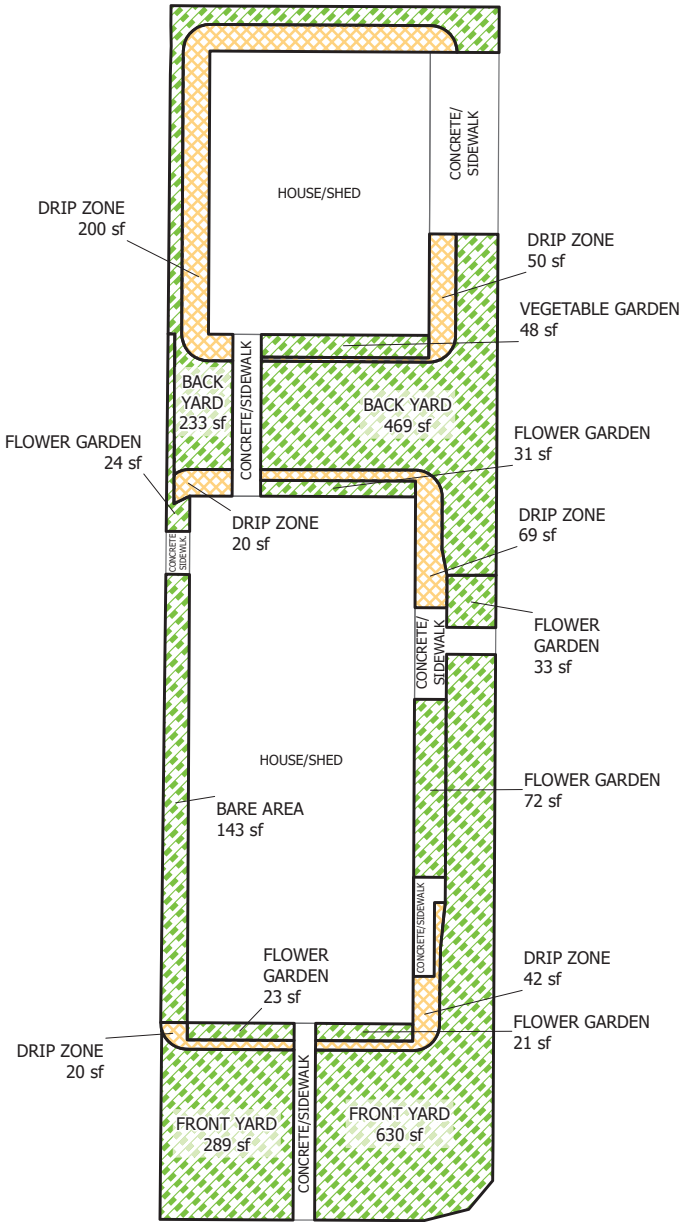
Legend
- No Action
- 6" RA
- 12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-317

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-317			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-317-BA	Bare Area (BA)	143	45	52	56	34	400	247	134	55	-	-	-	-	-	-
BE-317-BY	Back Yard (BY)	702	32	40	38	36	277	237	211	113	-	-	-	-	-	-
BE-317-DZ	Drip Zone (DZ)	401	45	32	33	39	525	343	181	124	-	7.4	7.4	401	-	-
BE-317-FG	Flower Garden (FG)	204	23	28	31	30	241	285	225	36	-	-	-	-	-	-
BE-317-FY	Front Yard (FY)	919	16	16	18	23	347	91	39	8	-	-	-	-	-	-
BE-317-VG	Vegetable Garden (VG)	48	24	31	15	14	123	165	35	15	-	-	-	-	-	-
	TOTALS	2,417										7.4	7.4	401		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

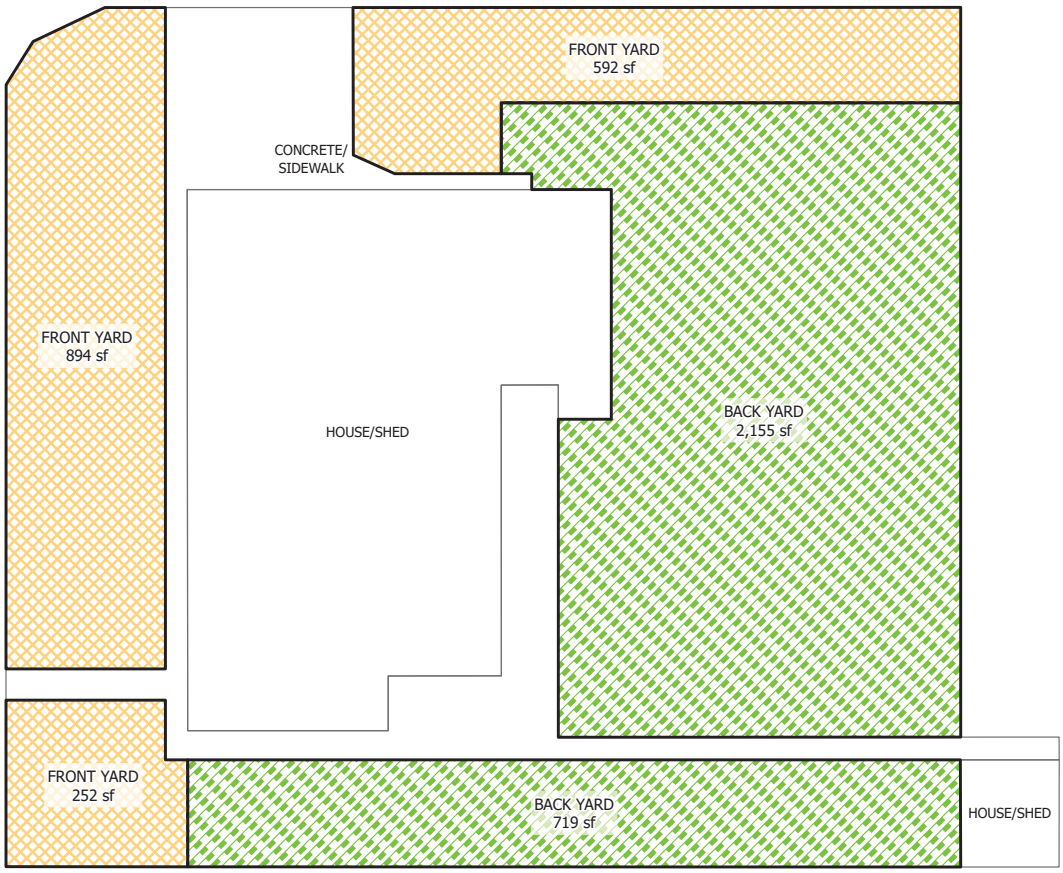
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-318

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-318			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-318-BY	Back Yard (BY)	2,874	18	24	27	18	152	133	98	35	-	-	-	-	-	-
BE-318-FY	Front Yard (FY)	1,738	16	20	43	29	579	152	86	73	-	32.2	32.2	1,738	-	-
	TOTALS	4,612										32.2	32.2	1,738		

Component Arsenic Concentration is > 253 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

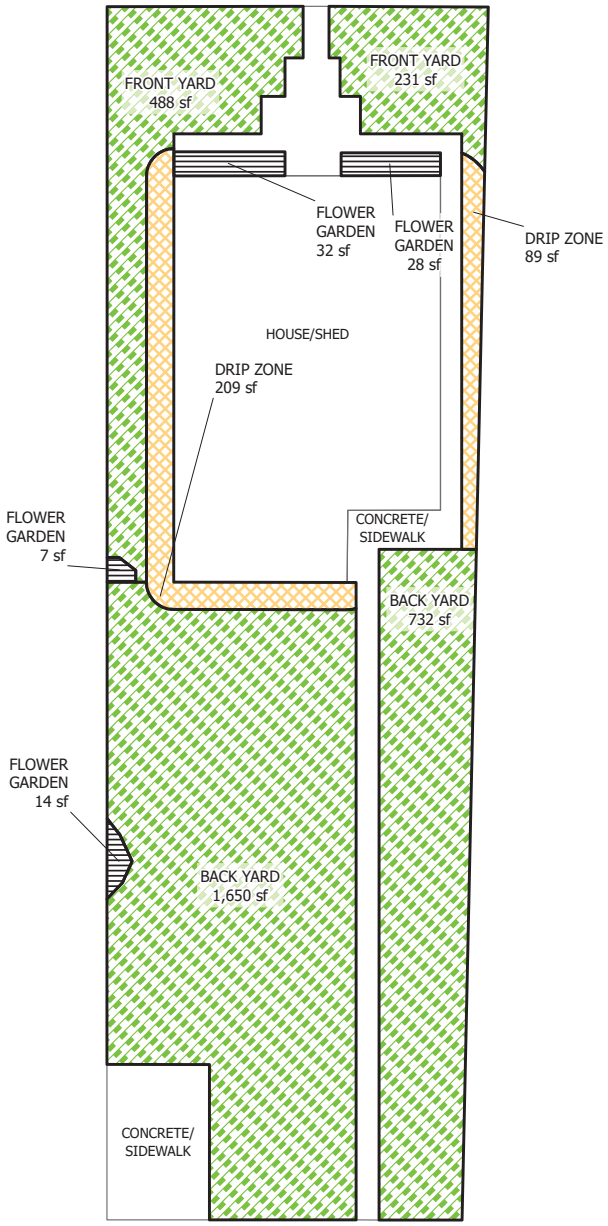
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-325

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-325			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-325-BY	Back Yard (BY)	2,382	23	25	29	30	189	181	90	62	-	-	-	-	-	-
BE-325-DZ	Drip Zone (DZ)	298	19	23	25	44	664	327	101	113	-	5.5	5.5	298	-	-
BE-325-FG	Flower Garden (FG)	81	18	23	28	39	353	604	227	903	-	6.0	6.0	81	-	-
BE-325-FY	Front Yard (FY)	719	16	22	10	7	228	270	12	12	-	-	-	-	-	-
	TOTALS	3,480										11.5	11.5	379		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

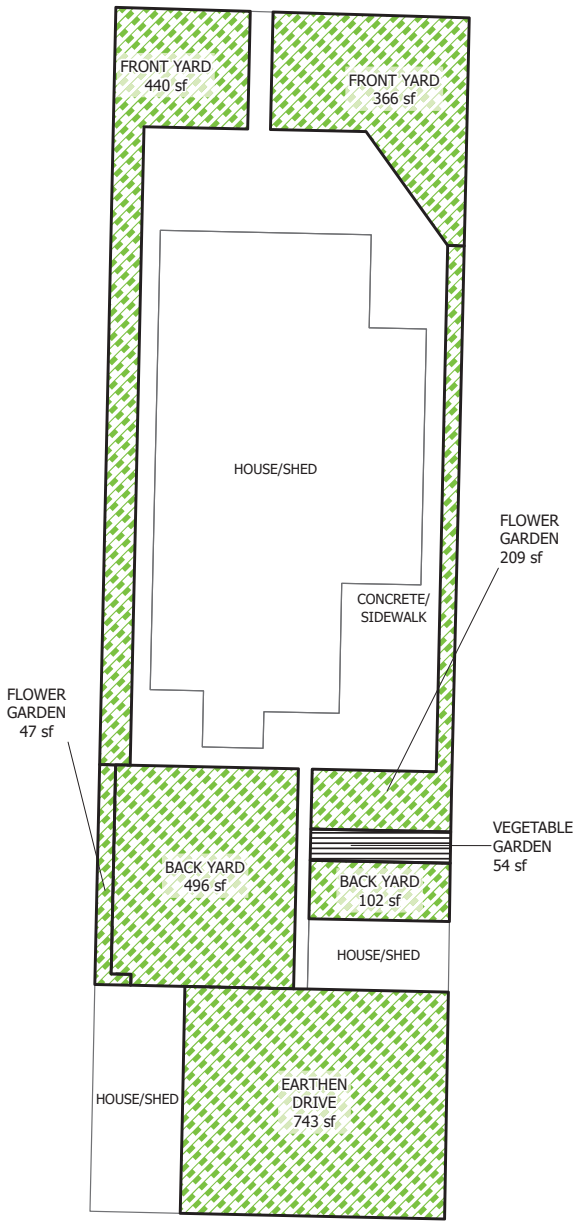
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No Action
6" RA
24" RA

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0 10 20 Feet

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-326

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-326			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-326-BY	Back Yard (BY)	598	39	51	41	43	374	295	342	47	-	-	-	-	-	-
BE-326-DZ	Drip Zone (DZ)	220	19	22	29	26	274	302	170	33	-	-	-	-	-	-
BE-326-ED	Earthen Drive (ED)	743	14	14	42	51	110	172	367	265	-	-	-	-	-	-
BE-326-FG	Flower Garden (FG)	256	18	23	34	32	271	343	322	65	-	-	-	-	-	-
BE-326-FY	Front Yard (FY)	806	33	35	84	26	192	163	73	15	-	-	-	-	-	-
BE-326-RG	Rock Garden (RG)	150	15	17	38	38	149	221	77	35	-	-	-	-	-	-
BE-326-VG	Vegetable Garden (VG)	54	18	18	30	36	297	290	807	420	-	4.0	4.0	54	-	-
	TOTALS	2,827										4.0	4.0	54		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

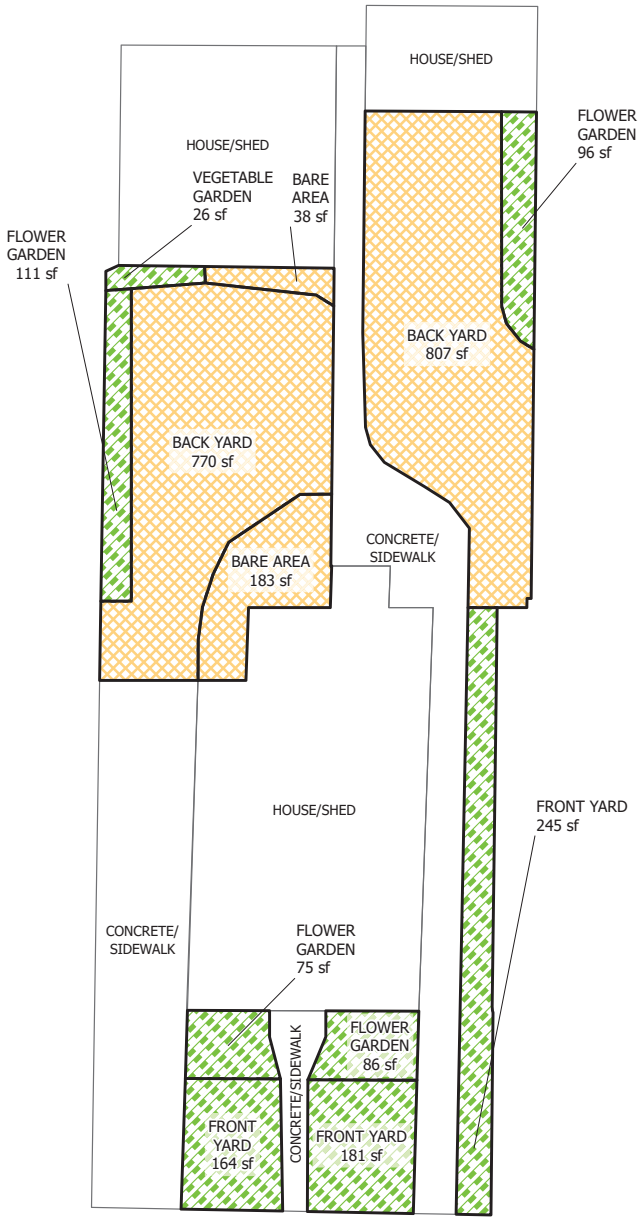
Legend
No Action
24" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-332

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-332			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-332-BA	Bare Area (BA)	221	11	31	40	30	36	449	257	39	-	4.1	4.1	221	-	-
BE-332-BY	Back Yard (BY)	1,577	9	24	31	42	82	406	369	87	-	29.2	29.2	1,577	-	-
BE-332-DZ	Drip Zone (DZ)	220	8	16	43	30	13	33	153	94	-	-	-	-	-	-
BE-332-FG	Flower Garden (FG)	368	0	15	30	42	0	92	267	179	-	-	-	-	-	-
BE-332-FY	Front Yard (FY)	590	17	27	30	25	290	269	120	60	-	-	-	-	-	-
BE-332-VG	Vegetable Garden (VG)	26	7	12	29	79	11	111	300	103	-	-	-	-	-	-
	TOTALS	3,002										33.3	33.3	1,798		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

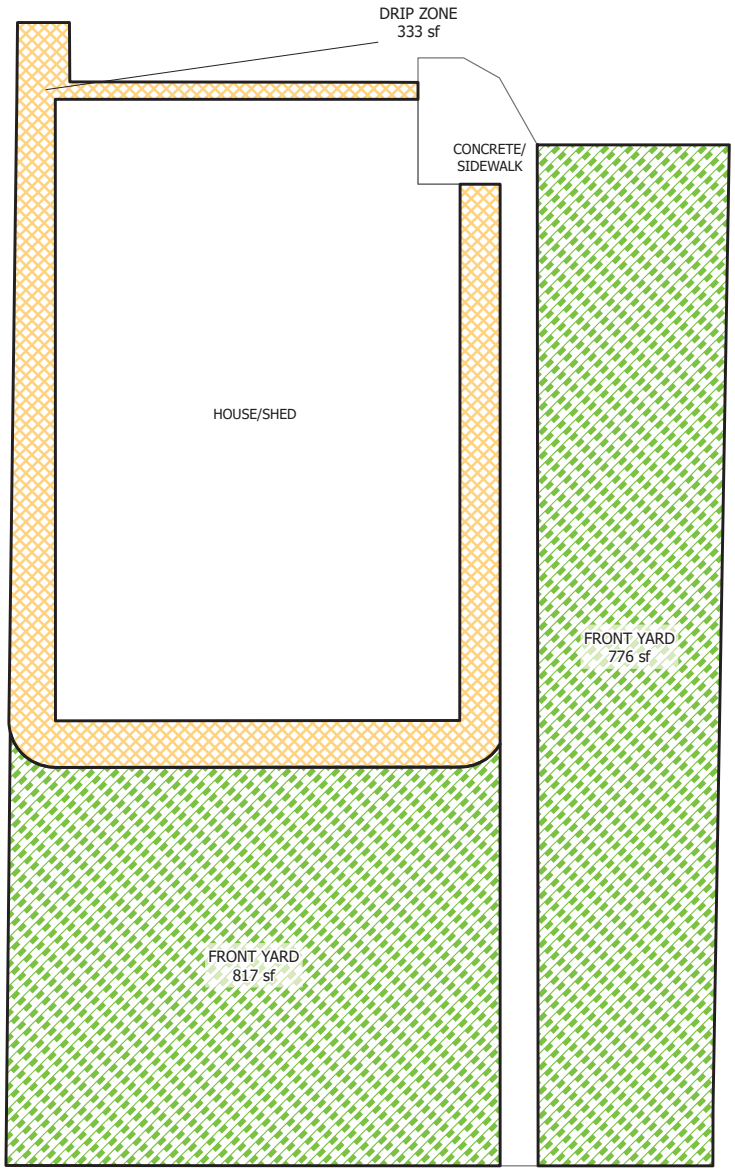
Legend
No Action
6" RA

0 10 20 Feet

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Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-333A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-333A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-333A-DZ	Drip Zone (DZ)	333	44	102	120	47	416	265	295	195	-	6.2	6.2	333	-	-
BE-333A-FY	Front Yard (FY)	1,593	12	18	38	28	223	74	62	26	-	-	-	-	-	-
	TOTALS	1,926										6.2	6.2	333		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

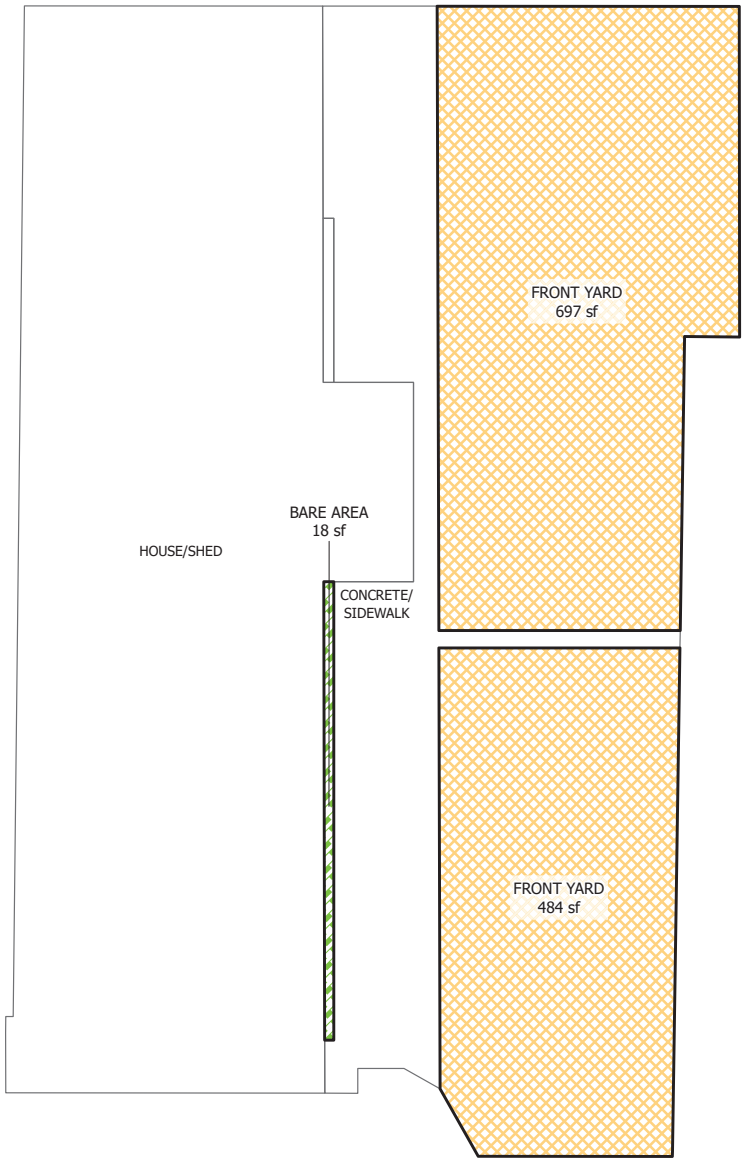
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-333B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-333B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-333B-BA	Bare Area (BA)	18	29	31	27	9	276	290	70	88	-	-	-	-	-	-
BE-333B-DZ	Drip Zone (DZ)	220	17	54	72	66	376	213	48	25	-	-	-	-	-	-
BE-333B-FY	Front Yard (FY)	1,181	19	29	35	18	151	406	221	29	-	21.9	21.9	1,181	-	-
	TOTALS	1,419										21.9	21.9	1,181		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

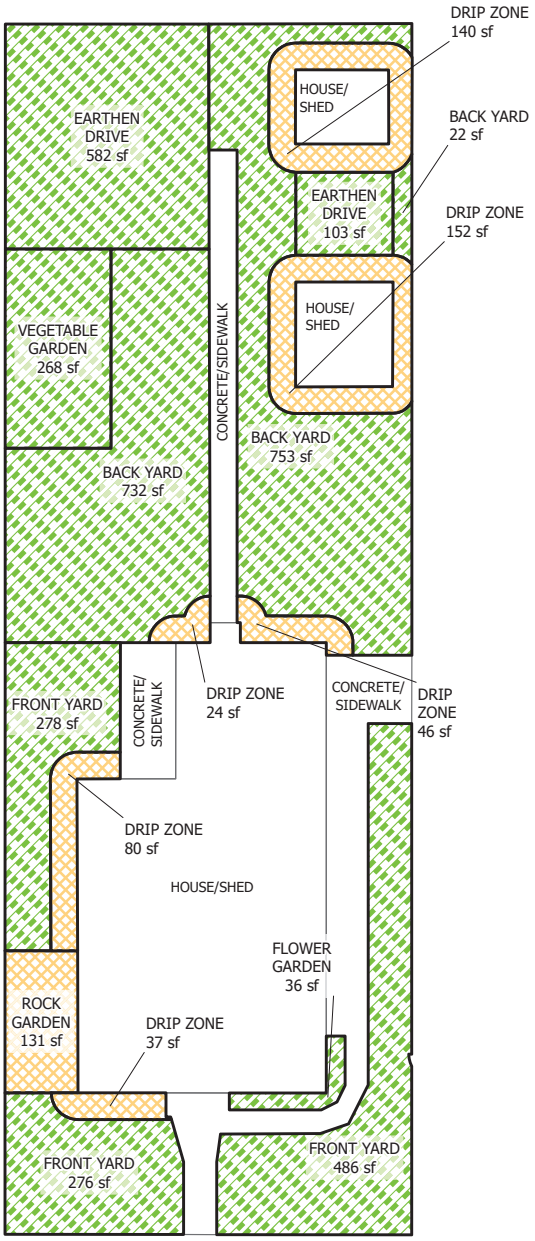
Legend
No Action
6" RA

0 10 20 Feet

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Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-335

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-335			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-335-BY	Back Yard (BY)	1,507	20	23	26	32	173	272	176	33	-	-	-	-	-	-
BE-335-DZ	Drip Zone (DZ)	479	28	34	39	134	527	468	140	58	-	8.9	8.9	479	-	-
BE-335-ED	Earthen Drive (ED)	685	7	26	31	28	16	294	270	273	-	-	-	-	-	-
BE-335-FG	Flower Garden (FG)	36	25	45	24	33	386	171	361	38	-	-	-	-	-	-
BE-335-FY	Front Yard (FY)	1,040	17	30	65	64	199	243	99	56	-	-	-	-	-	-
BE-335-RG	Rock Garden (RG)	131	25	34	58	56	1870	358	121	63	-	2.4	2.4	-	-	-
BE-335-VG	Vegetable Garden (VG)	268	17	23	25	27	104	157	170	135	-	-	-	-	-	-
	TOTALS	4,146										11.3	11.3	479		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/Flower garden** component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable **to 24 inches** below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

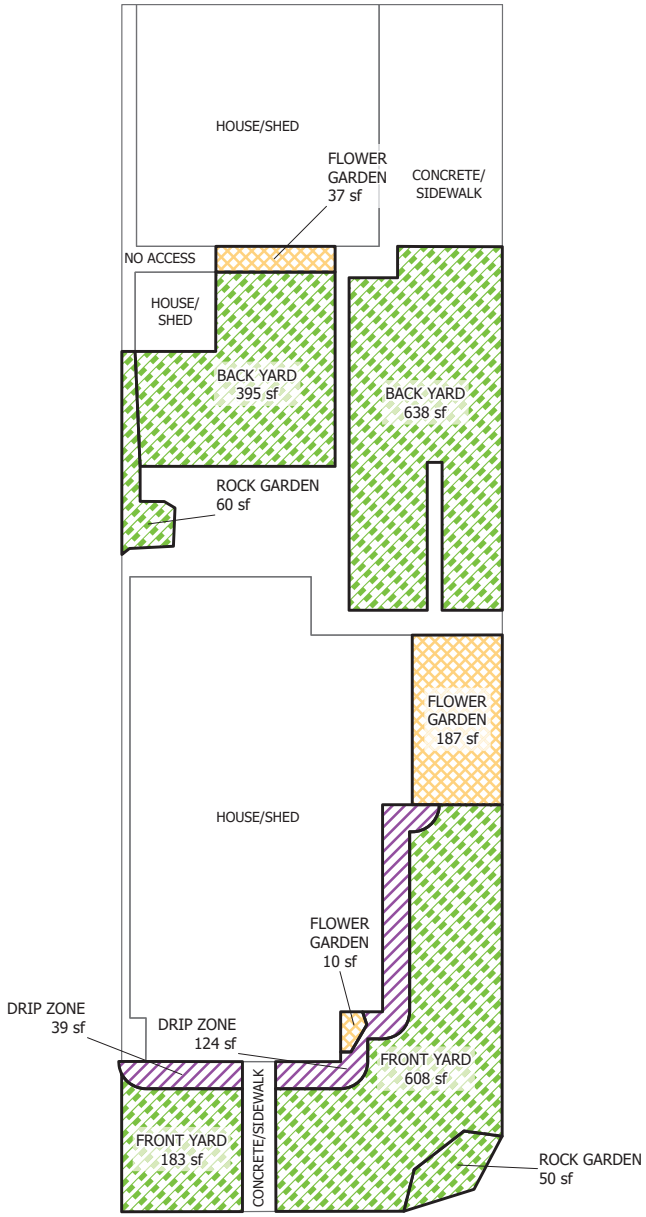
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-336

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-336			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-336-BY	Back Yard (BY)	1,033	18	17	30	14	249	205	118	11	-	-	-	-	-	-
BE-336-DZ	Drip Zone (DZ)	163	21	26	39	39	233	557	681	125	-	6.0	6.0	163	-	-
BE-336-FG	Flower Garden (FG)	234	10	36	21	23	244	464	17	21	-	4.3	4.3	234	-	-
BE-336-FY	Front Yard (FY)	791	11	18	38	29	160	285	238	112	-	-	-	-	-	-
BE-336-RG	Rock Garden (RG)	110	13	18	21	22	98	202	133	12	-	-	-	-	-	-
	TOTALS	2,331										10.3	10.3	397		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA
12" RA

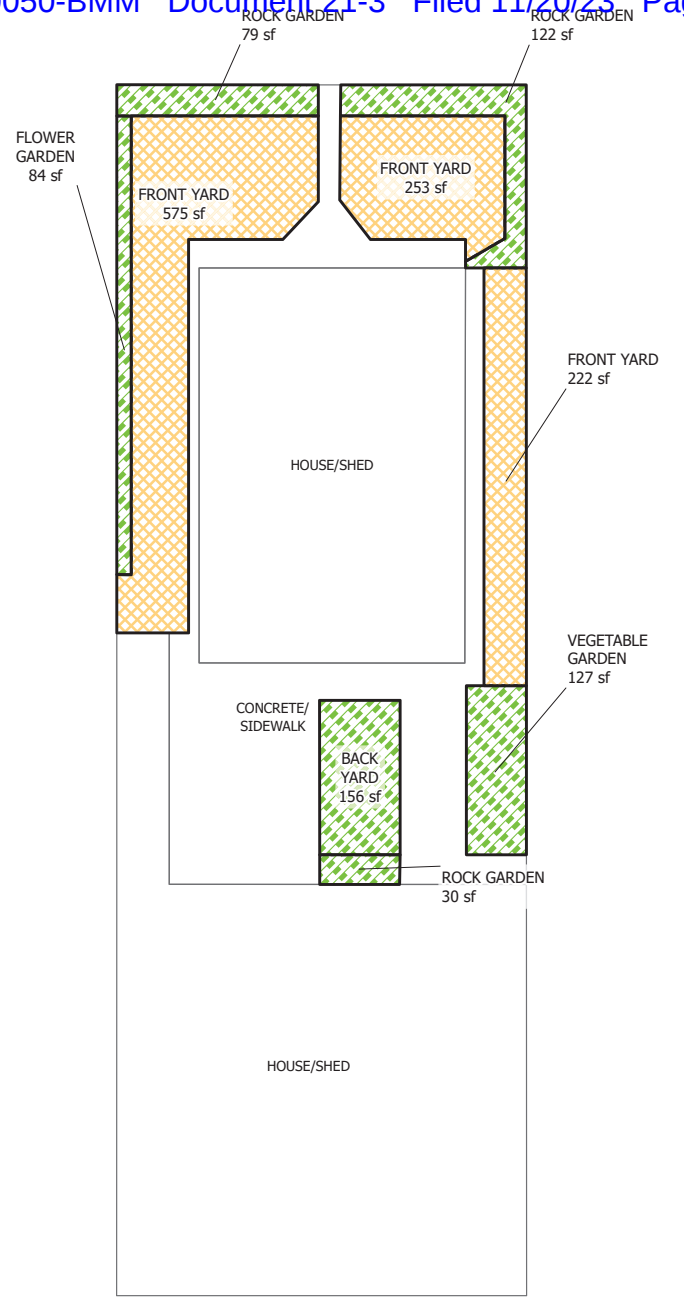
0 10 20 Feet

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Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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PROPERTY ADDRESS: 1912 MONTANA AVE
RESIDENT ID: BE-340



Resident ID
BE-340

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-340			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-340-BY	Back Yard (BY)	156	22	23	29	54	325	360	351	82	-	-	-	-	-	-
BE-340-FG	Flower Garden (FG)	84	26	27	39	67	174	168	146	111	-	-	-	-	-	-
BE-340-FY	Front Yard (FY)	1,050	31	47	64	73	615	139	123	128	-	19.4	19.4	1,050	-	-
BE-340-RG	Rock Garden (RG)	231	23	30	59	63	128	111	64	58	-	-	-	-	-	-
BE-340-VG	Vegetable Garden (VG)	127	19	19	22	39	203	237	244	43	-	-	-	-	-	-
	TOTALS	1,648										19.4	19.4	1,050		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

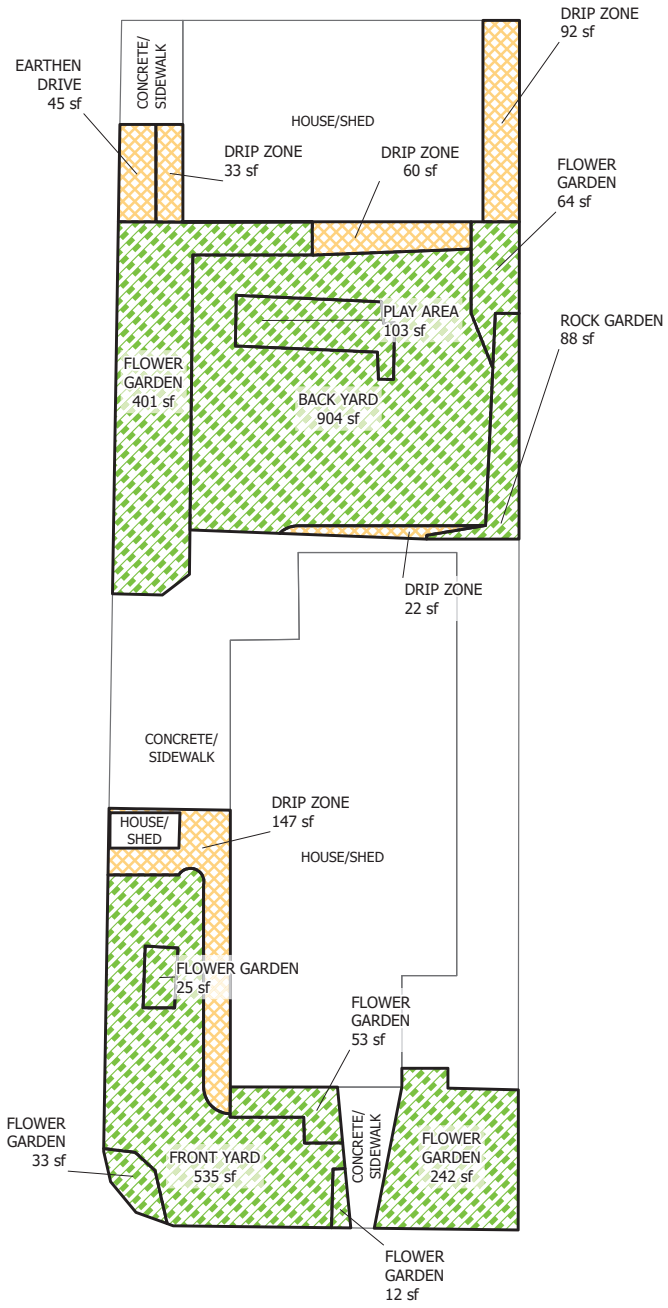
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-345

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-345			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-345-BY	Back Yard (BY)	904	14	36	29	52	98	250	320	96	-	-	-	-	-	-
BE-345-DZ	Drip Zone (DZ)	354	36	38	63	59	801	457	154	157	-	6.6	6.6	354	-	-
BE-345-ED	Earthen Drive (ED)	45	12	51	65	73	248	410	242	176	-	0.8	-	-	0.8	-
BE-345-FG	Flower Garden (FG)	830	19	27	44	62	197	332	128	116	-	-	-	-	-	-
BE-345-FY	Front Yard (FY)	535	14	14	25	18	126	99	83	11	-	-	-	-	-	-
BE-345-PA	Play Area (PA)	103	7	24	54	36	46	120	63	17	-	-	-	-	-	-
BE-345-RG	Rock Garden (RG)	88	25	39	52	76	260	287	218	129	-	-	-	-	-	-
	TOTALS	2,859										7.4	6.6	354	0.8	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

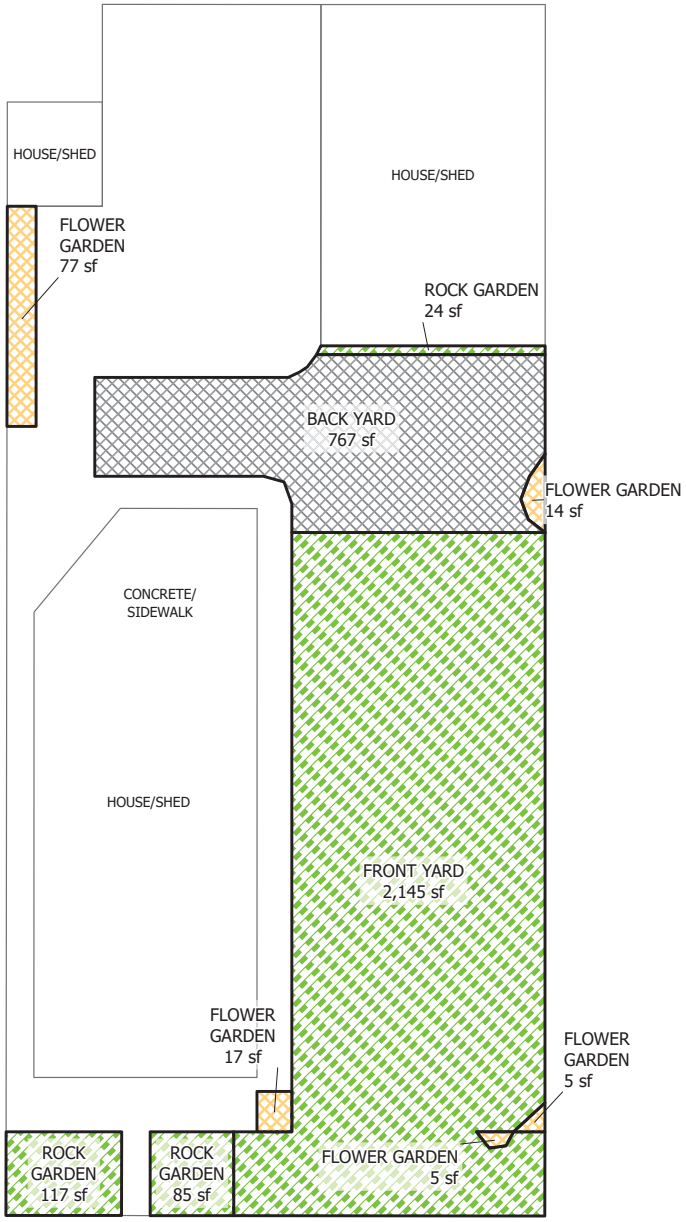
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-346

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL: COMPONENT ARSENIC CONCENTRATION (mg/kg)				STEP 1 REMOVAL: COMPONENT LEAD CONCENTRATION (mg/kg)				STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-346																
BE-346-BY	Back Yard (BY)	767	27	39	69	66	248	417	748	413	-	42.6	42.6	767	-	-
BE-346-FG	Flower Garden (FG)	118	78	51	60	53	282	354	321	137	Yes	2.2	2.2	118	-	-
BE-346-FY	Front Yard (FY)	2,145	23	33	33	29	189	220	116	42	-	-	-	-	-	-
BE-346-RG	Rock Garden (RG)	226	17	37	74	99	116	190	120	33	-	-	-	-	-	-
TOTALS		3,256										44.8	44.8	885		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

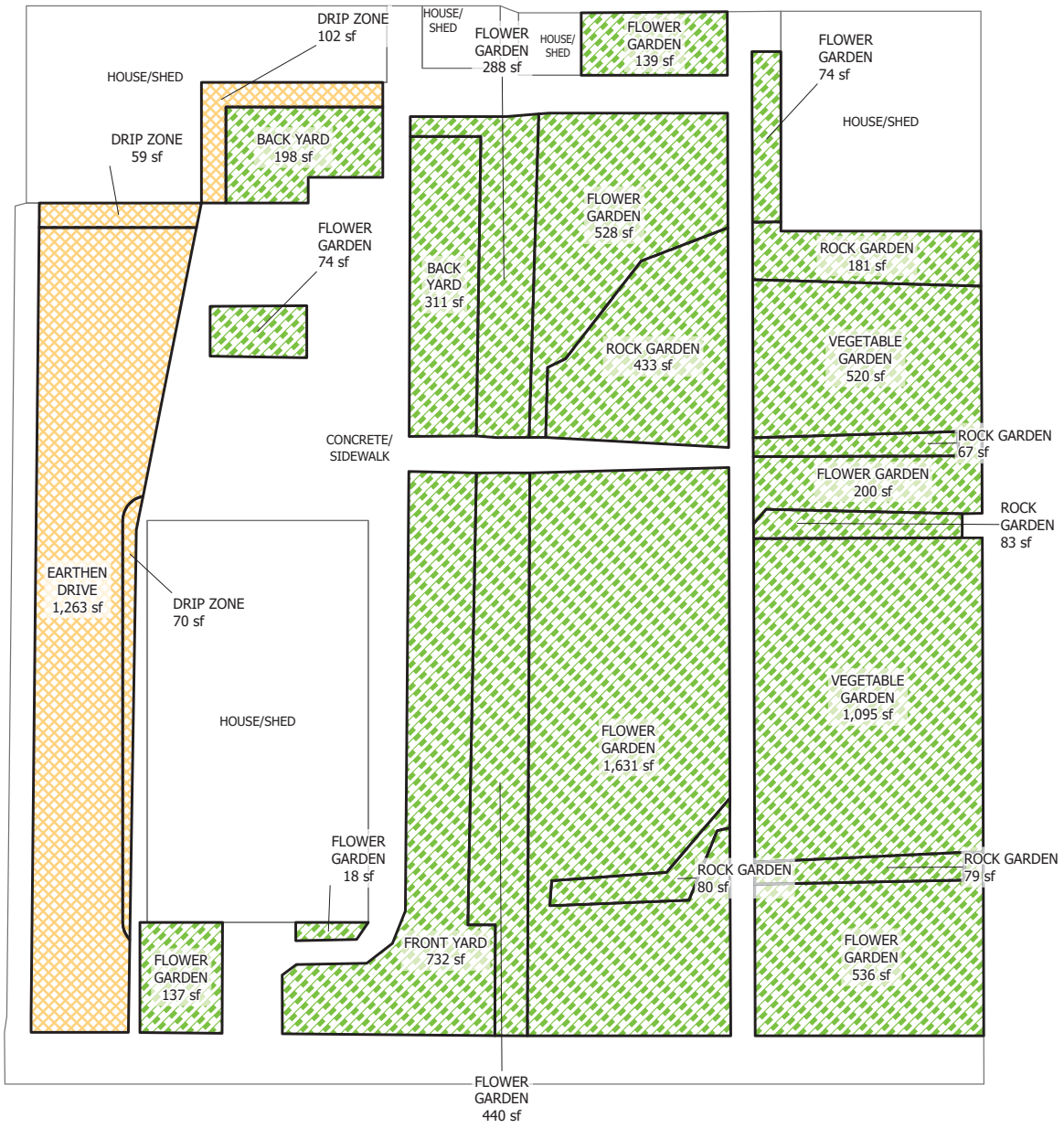
Legend
No Action
6" RA
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-347

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-347			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-347-BY	Back Yard (BY)	509	24	46	49	50	270	378	352	67	-	-	-	-	-	-
BE-347-DZ	Drip Zone (DZ)	231	27	33	36	66	571	109	56	47	-	4.3	4.3	231	-	-
BE-347-ED	Earthen Drive (ED)	1,263	45	73	62	52	543	330	101	18	-	23.4	-	-	23.4	-
BE-347-FY	Front Yard (FY)	732	16	25	33	47	119	197	239	76	-	-	-	-	-	-
BE-347-LFG	Flower Garden (FG)	3,108	41	41	37	38	226	258	175	85	-	-	-	-	-	-
BE-347-RG	Rock Garden (RG)	923	29	52	75	40	138	300	374	135	-	-	-	-	-	-
BE-347-UFG	Flower Garden (FG)	957	57	37	33	39	224	368	183	112	-	-	-	-	-	-
BE-347-VG	Vegetable Garden (VG)	1,615	31	39	37	37	150	201	171	80	-	-	-	-	-	-
	TOTALS	9,338										27.7	4.3	231	23.4	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

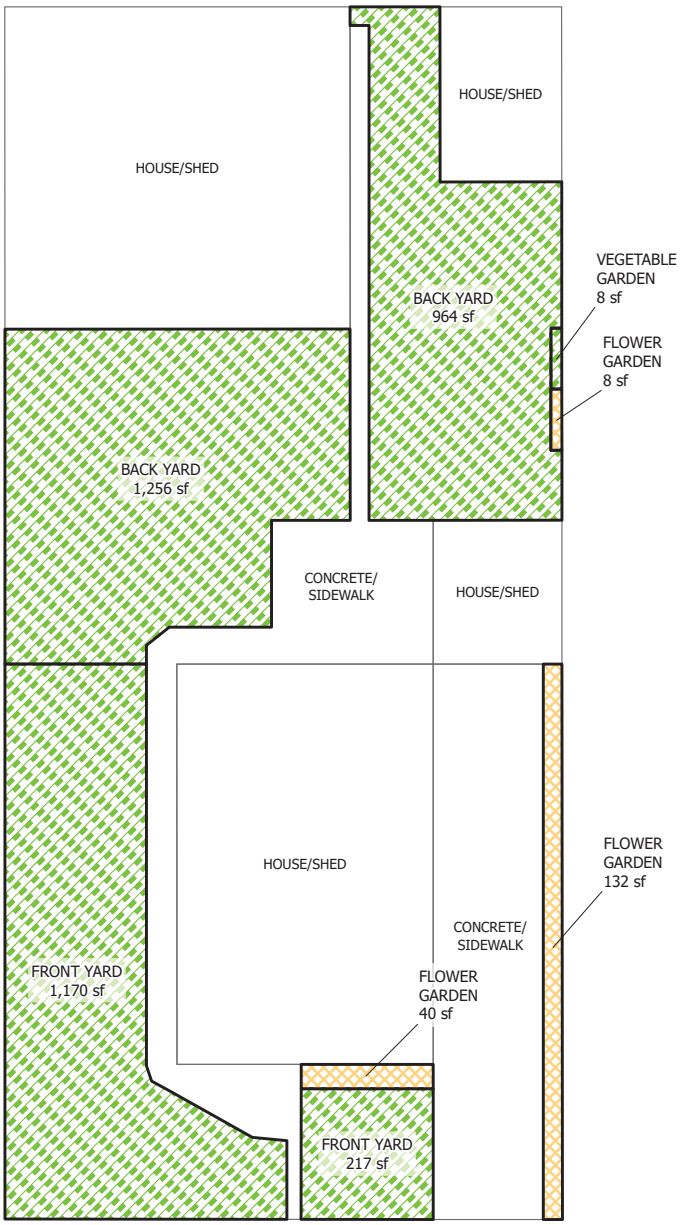
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions.
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Resident ID
BE-348

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-348			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-348-BY	Back Yard (BY)	2,220	22	31	41	33	185	172	62	35	-	-	-	-	-	-
BE-348-DZ	Drip Zone (DZ)	220	6	17	22	25	14	141	257	85	-	-	-	-	-	-
BE-348-FG	Flower Garden (FG)	180	19	26	33	42	413	337	69	93	-	3.3	3.3	180	-	-
BE-348-FY	Front Yard (FY)	1,387	12	20	25	71	72	155	176	336	-	-	-	-	-	-
BE-348-VG	Vegetable Garden (VG)	8	13	12	31	35	22	64	51	22	-	-	-	-	-	-
	TOTALS	4,015										3.3	3.3	180		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

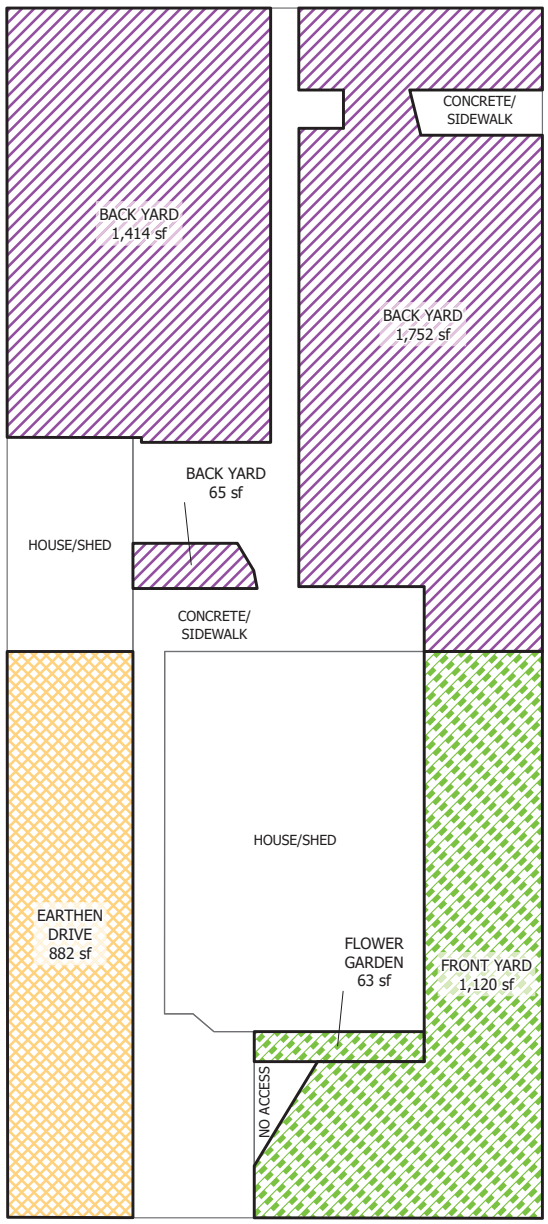
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-349

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-349			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-349-BY	Back Yard (BY)	3,231	77	23	50	61	169	360	513	107	-	119.7	119.7	3,231	-	-
BE-349-DZ	Drip Zone (DZ)	220	57	19	23	31	74	222	318	226	-	-	-	-	-	-
BE-349-ED	Earthen Drive (ED)	882	8	8	102	63	406	36	252	326	-	16.3	-	-	16.3	-
BE-349-FG	Flower Garden (FG)	63	71	21	38	62	101	241	106	94	-	-	-	-	-	-
BE-349-FY	Front Yard (FY)	1,121	26	56	51	65	223	375	304	54	-	-	-	-	-	-
	TOTALS	5,517										136.0	119.7	3,231	16.3	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

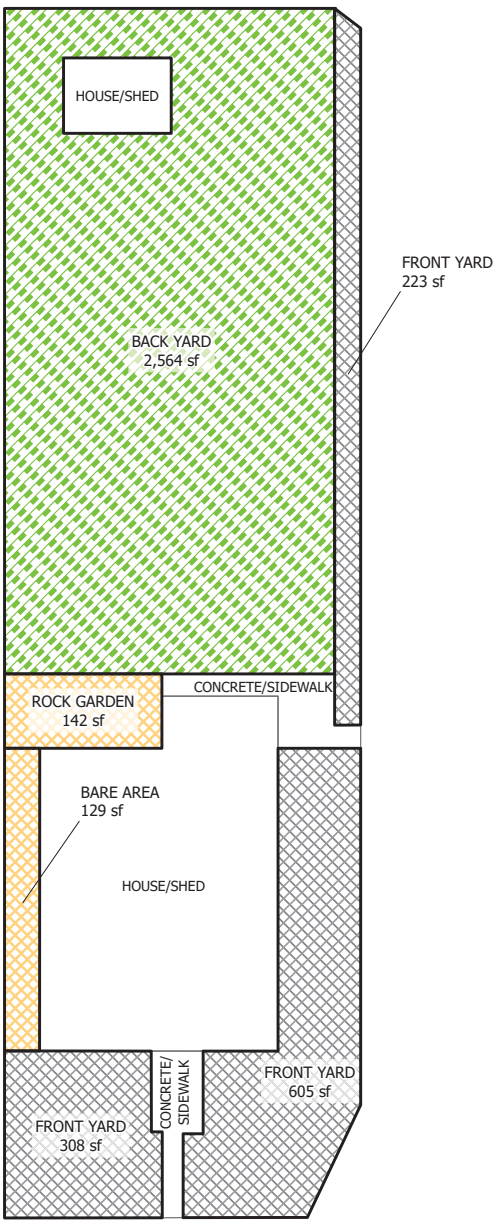
Legend
No Action
6" RA
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-351

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-351			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-351-BA	Bare Area (BA)	129	26	32	47	104	780	608	193	64	-	2.4	2.4	129	-	-
BE-351-BY	Back Yard (BY)	2,564	29	38	55	68	193	228	277	99	-	-	-	-	-	-
BE-351-DZ	Drip Zone (DZ)	220	34	13	24	28	51	162	345	258	-	-	-	-	-	-
BE-351-FY	Front Yard (FY)	1,136	23	35	45	15	272	318	131	65	-	63.1	63.1	1,136	-	-
BE-351-RG	Rock Garden (RG)	142	23	38	44	117	630	389	214	180	-	2.6	2.6	-	-	-
	TOTALS	4,191										68.1	68.1	1,265		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

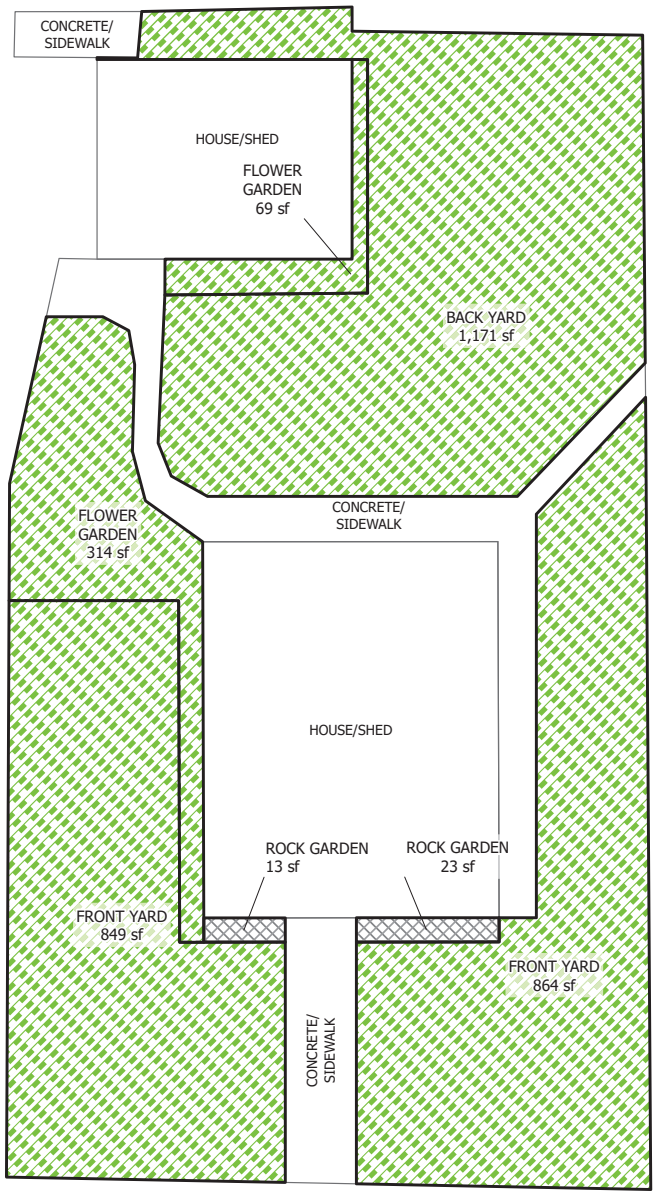
Legend
No Action
6" RA
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-355

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-355			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-355-BY	Back Yard (BY)	1,171	17	30	30	19	284	127	58	12	-	-	-	-	-	-
BE-355-DZ	Drip Zone (DZ)	220	24	12	13	27	110	112	158	252	-	-	-	-	-	-
BE-355-FG	Flower Garden (FG)	383	15	15	14	13	224	328	102	132	-	-	-	-	-	-
BE-355-FY	Front Yard (FY)	1,713	15	14	20	43	207	76	132	115	-	-	-	-	-	-
BE-355-RG	Rock Garden (RG)	36	21	14	27	33	154	74	403	402	-	2.0	2.0	-	-	-
	TOTALS	3,523										2.0	2.0			

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

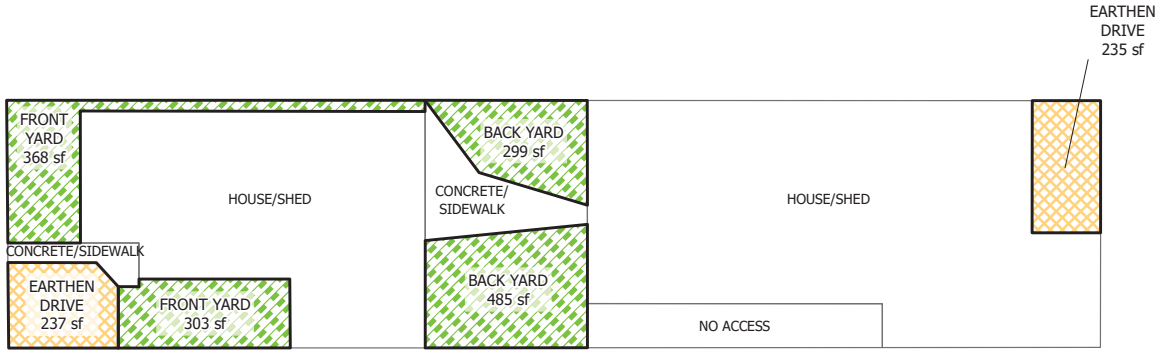
Legend
No Action
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-409

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-409			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-409-BY	Back Yard (BY)	784	13	14	15	31	123	127	86	85	-	-	-	-	-	-
BE-409-DZ	Drip Zone (DZ)	220	16	23	20	15	332	283	169	42	-	-	-	-	-	-
BE-409-ED	Earthen Drive (ED)	472	13	22	55	23	176	450	72	50	-	8.7	-	-	8.7	-
BE-409-FY	Front Yard (FY)	671	21	19	18	20	214	143	19	18	-	-	-	-	-	-
TOTALS		2,147										8.7			8.7	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

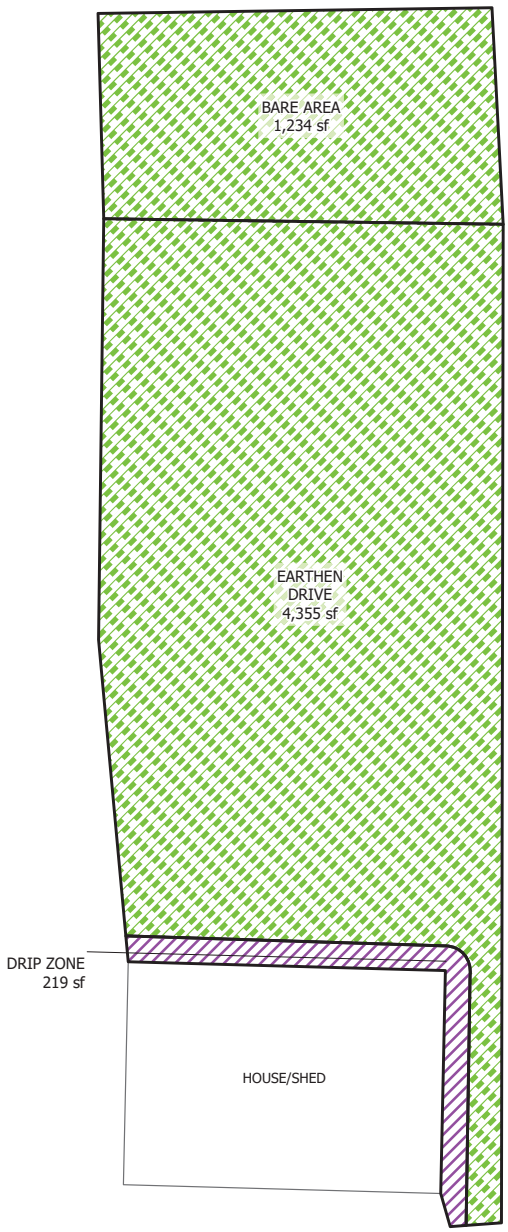
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-423

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-423			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-423-BA	Bare Area (BA)	1,234	12	19	34	42	357	216	261	68	-	-	-	-	-	-
BE-423-DZ	Drip Zone (DZ)	219	7	8	51	56	28	24	874	104	-	8.1	8.1	219	-	-
BE-423-ED	Earthen Drive (ED)	4,355	15	27	53	70	352	256	240	98	-	-	-	-	-	-
	TOTALS	5,808										8.1	8.1	219		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

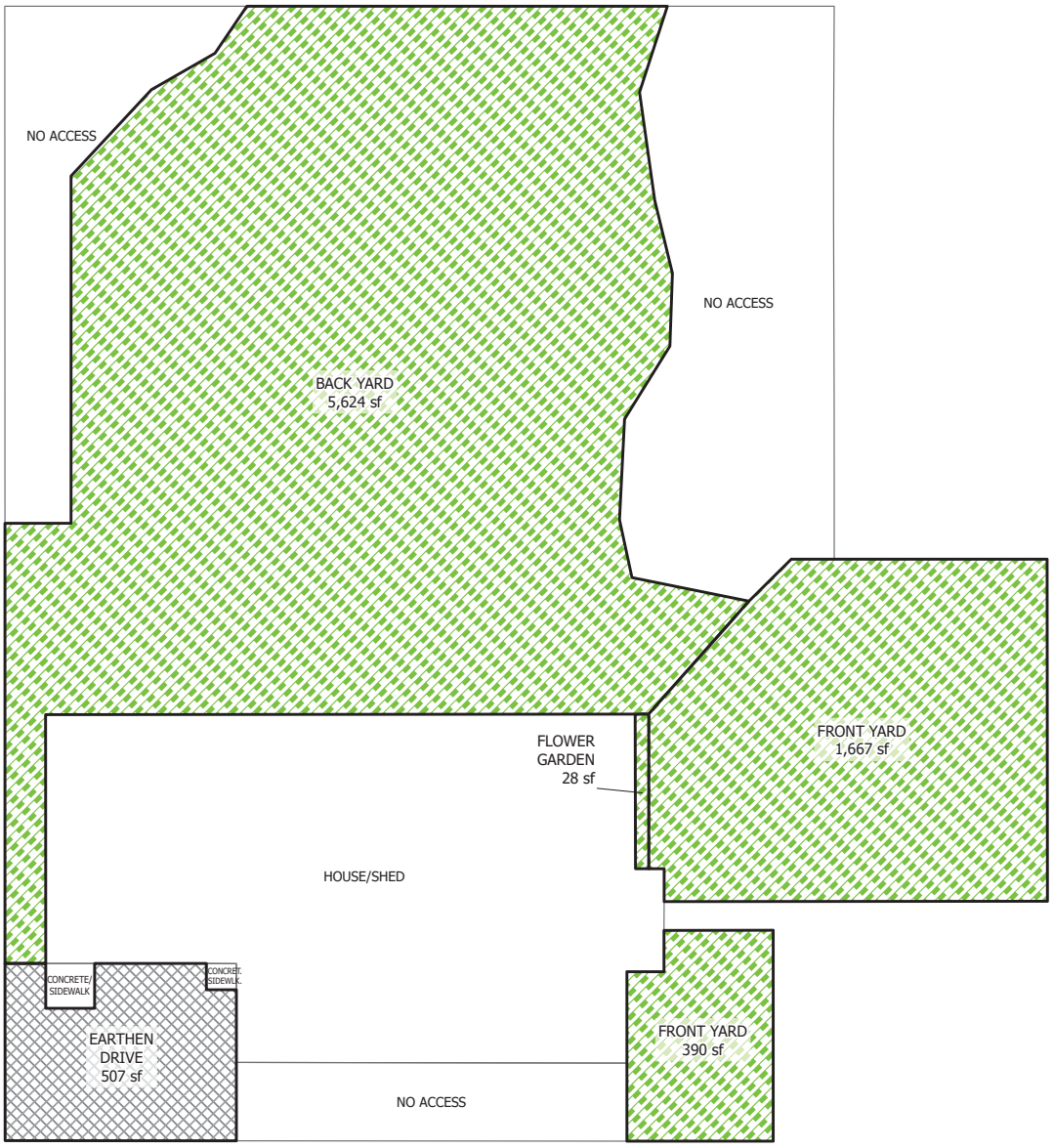
Legend
No Action
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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NOTE: ED Sampling refusal at 6 or 12 inches during sampling. Concentrations to 18 inches assumed based upon the 0 to 6 inch samples. No further sampling planned.

Resident ID
BE-424

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-424			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-424-BY	Back Yard (BY)	5,624	21	29	29	26	120	153	157	80	-	-	-	-	-	-
BE-424-DZ	Drip Zone (DZ)	220	29	39	37	37	231	152	45	48	-	-	-	-	-	-
BE-424-ED	Earthen Drive (ED)	507	20	24	N/A	N/A	451	1100	N/A	N/A	-	28.2	18.8	-	9.4	-
BE-424-FG	Flower Garden (FG)	28	9	12	21	26	23	22	53	57	-	-	-	-	-	-
BE-424-FY	Front Yard (FY)	2,057	21	39	52	86	85	122	123	60	-	-	-	-	-	-
	TOTALS	8,436										28.2	18.8		9.4	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

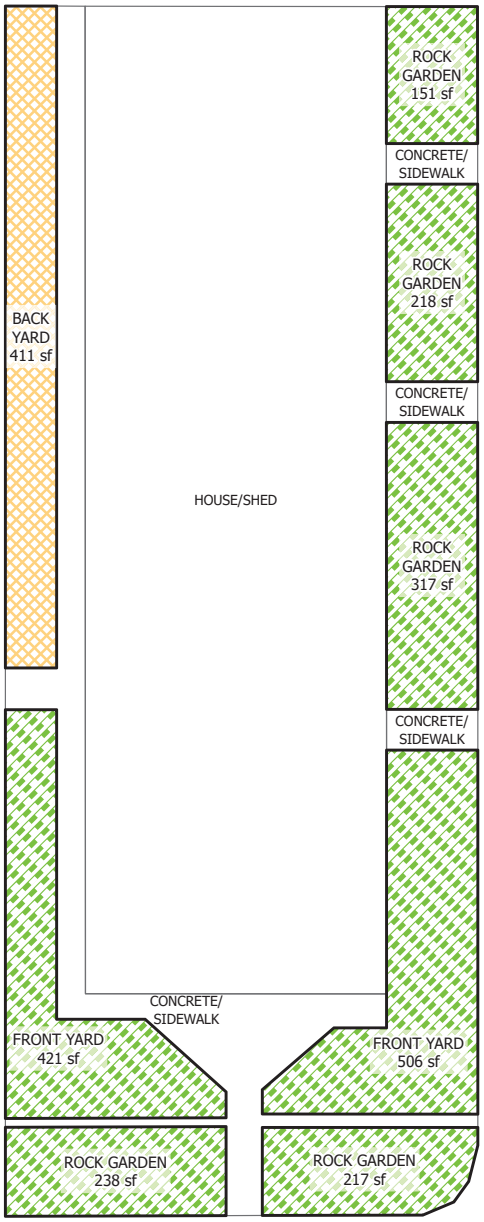
Legend
No Action
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-430

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL: COMPONENT ARSENIC CONCENTRATION (mg/kg)				STEP 1 REMOVAL: COMPONENT LEAD CONCENTRATION (mg/kg)				STEP 2 REMOVAL	ESTIMATED QUANTITIES				
BE-430			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-430-BY	Back Yard (BY)	411	19	16	40	29	546	105	54	24	-	7.6	7.6	411	-	-
BE-430-DZ	Drip Zone (DZ)	220	22	25	37	51	128	288	384	145	-	-	-	-	-	-
BE-430-FY	Front Yard (FY)	927	22	57	96	74	242	177	229	80	-	-	-	-	-	-
BE-430-RG	Rock Garden (RG)	1,141	15	21	25	30	208	114	100	87	-	-	-	-	-	-
	TOTALS	2,699										7.6	7.6	411		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

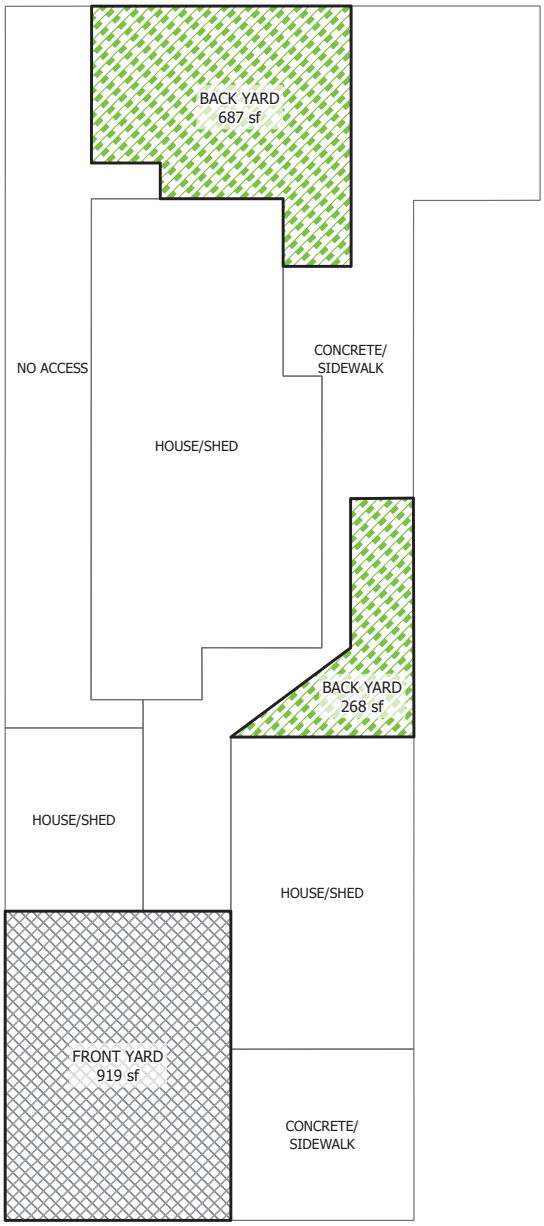
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-433B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-433B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-433B-BY	Back Yard (BY)	955	9	10	11	14	31	27	32	30	-	-	-	-	-	-
BE-433B-FY	Front Yard (FY)	919	14	13	13	29	75	93	237	639	-	51.1	51.1	919	-	-
	TOTALS	1,874										51.1	51.1	919		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

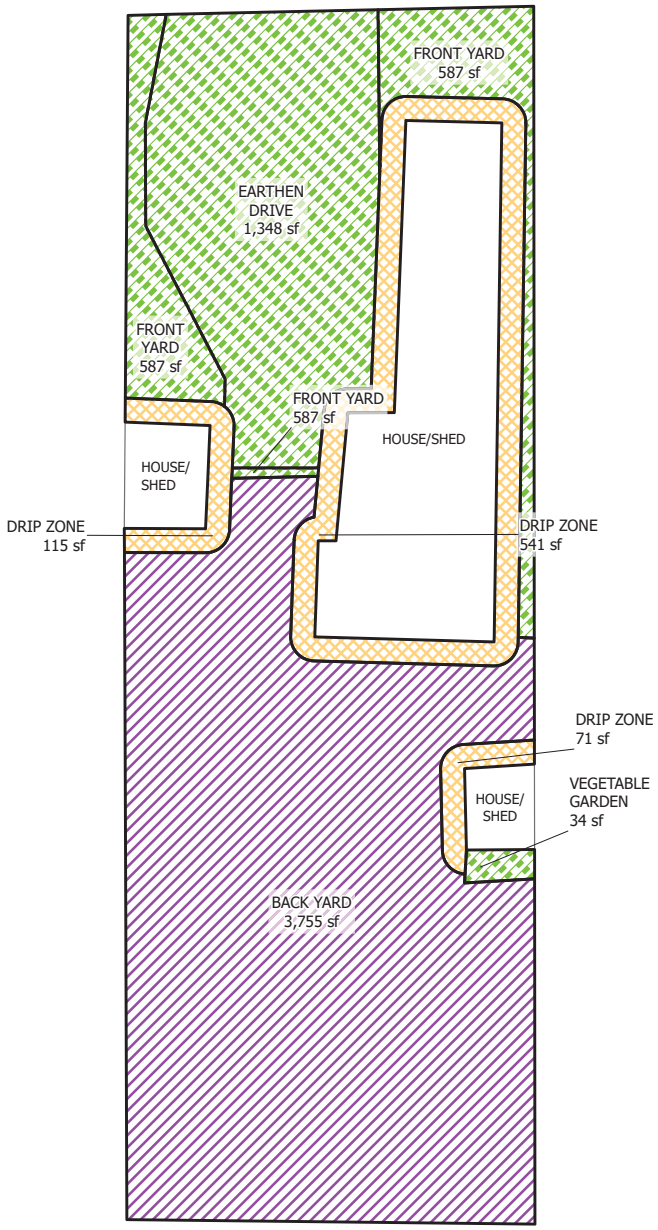
Legend
No Action
18" RA

N

0 10 20 Feet

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-437

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-437			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-437-BY	Back Yard (BY)	3,755	18	60	264	75	26	35	62	42	-	139.1	139.1	3,755	-	-
BE-437-DZ	Drip Zone (DZ)	726	23	114	246	132	23	28	43	47	Yes	13.4	13.4	726	-	-
BE-437-ED	Earthen Drive (ED)	1,348	16	38	32	35	30	35	37	29	-	-	-	-	-	-
BE-437-FY	Front Yard (FY)	587	21	13	47	63	23	22	25	23	-	-	-	-	-	-
BE-437-VG	Vegetable Garden (VG)	34	20	44	59	46	28	25	26	25	-	-	-	-	-	-
	TOTALS	6,450										152.5	152.5	4,481		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

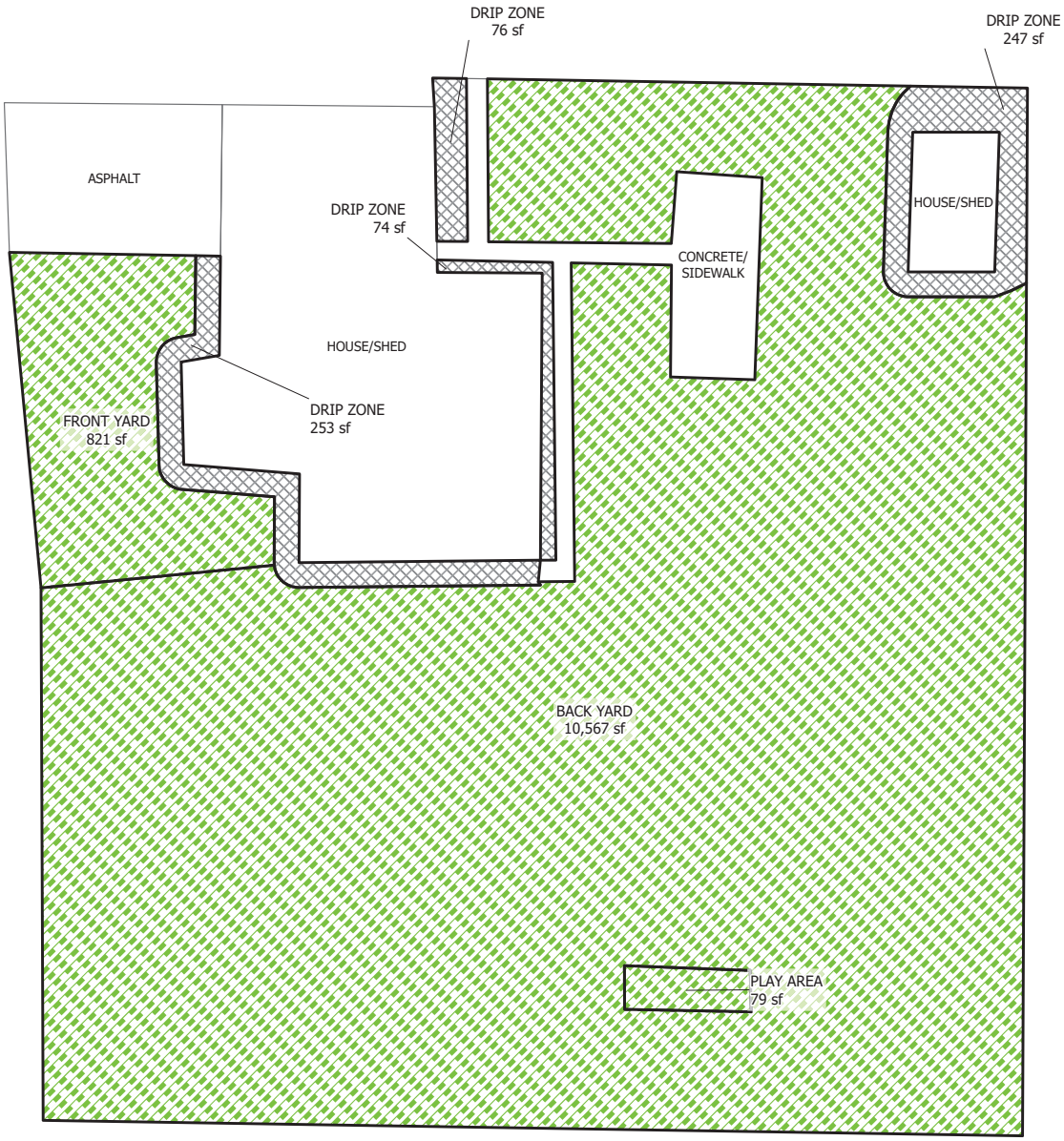
Legend
No Action
6" RA
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-459

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-459			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-459-BY	Back Yard (BY)	10,567	23	28	42	55	183	140	94	51	-	-	-	-	-	-
BE-459-DZ	Drip Zone (DZ)	650	11	23	22	53	170	546	183	551	-	36.1	36.1	650	-	-
BE-459-FY	Front Yard (FY)	821	12	32	19	118	107	114	157	54	-	-	-	-	-	-
BE-459-PA	Play Area (PA)	79	16	11	11	66	49	23	45	106	-	-	-	-	-	-
	TOTALS	12,117										36.1	36.1	650		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

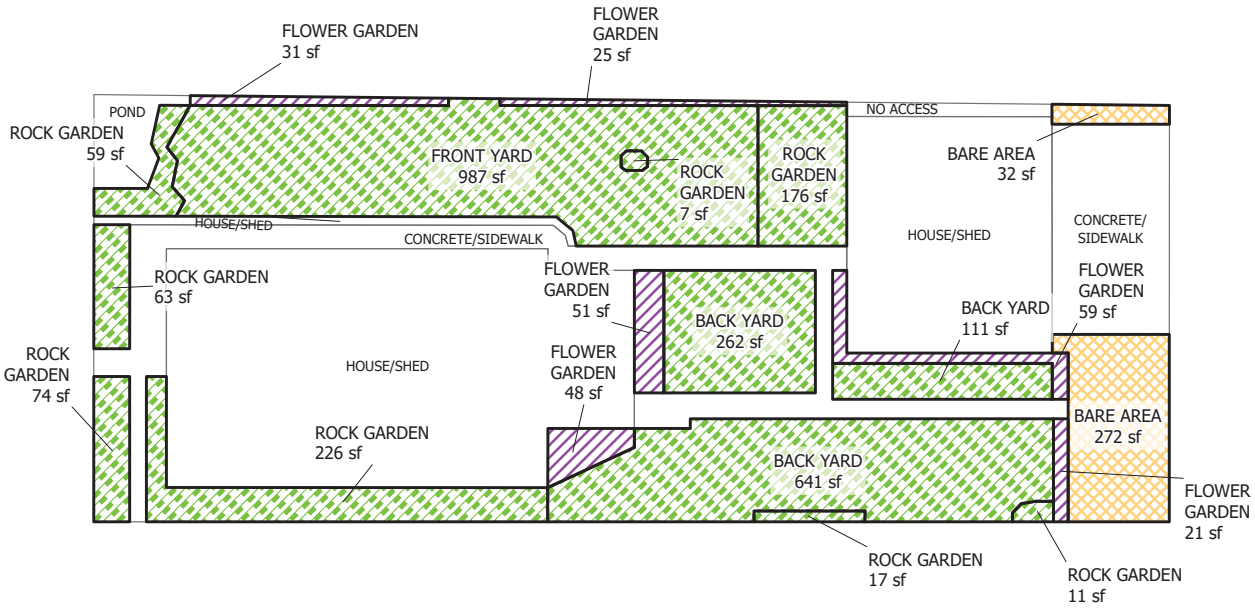
Legend
No Action
18" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-506

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-506			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-506-BA	Bare Area (BA)	304	25	30	47	38	404	366	49	115	-	5.6	5.6	304	-	-
BE-506-BY	Back Yard (BY)	1,014	30	33	36	10	70	283	170	76	-	-	-	-	-	-
BE-506-DZ	Drip Zone (DZ)	220	36	40	52	56	219	196	186	214	-	-	-	-	-	-
BE-506-FG	Flower Garden (FG)	235	31	12	31	30	173	95	555	331	-	8.7	8.7	235	-	-
BE-506-FY	Front Yard (FY)	987	24	41	46	37	178	259	120	192	-	-	-	-	-	-
BE-506-RG	Rock Garden (RG)	633	18	28	31	32	170	181	172	75	-	-	-	-	-	-
	TOTALS	3,393										14.3	14.3	539		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

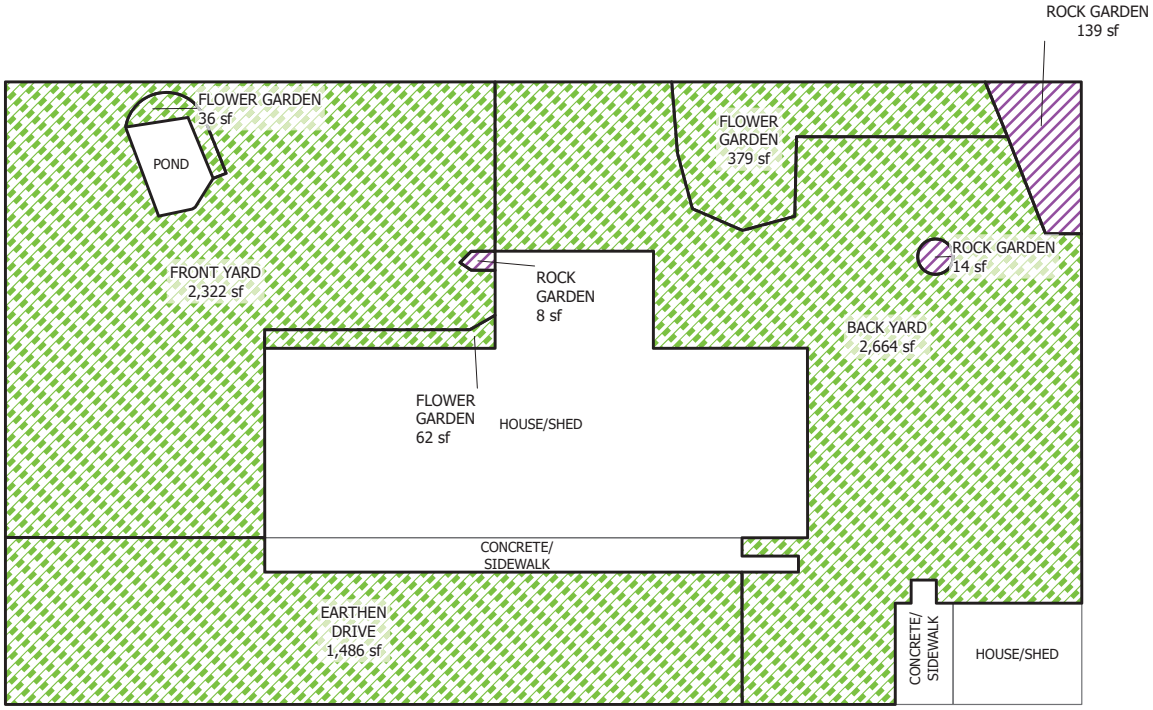
Legend
No Action
6" RA
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-508

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-508			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-508-BY	Back Yard (BY)	2,664	19	30	36	30	93	119	117	69	-	-	-	-	-	-
BE-508-DZ	Drip Zone (DZ)	220	17	30	47	89	112	239	186	146	-	-	-	-	-	-
BE-508-ED	Earthen Drive (ED)	1,486	11	22	37	33	119	106	94	62	-	-	-	-	-	-
BE-508-FG	Flower Garden (FG)	477	15	105	55	93	82	212	156	179	-	-	-	-	-	-
BE-508-FY	Front Yard (FY)	2,322	16	22	36	32	100	177	203	123	-	-	-	-	-	-
BE-508-RG	Rock Garden (RG)	161	75	158	161	103	259	721	636	216	-	6.0	6.0	-	-	-
	TOTALS	7,330										6.0	6.0			

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

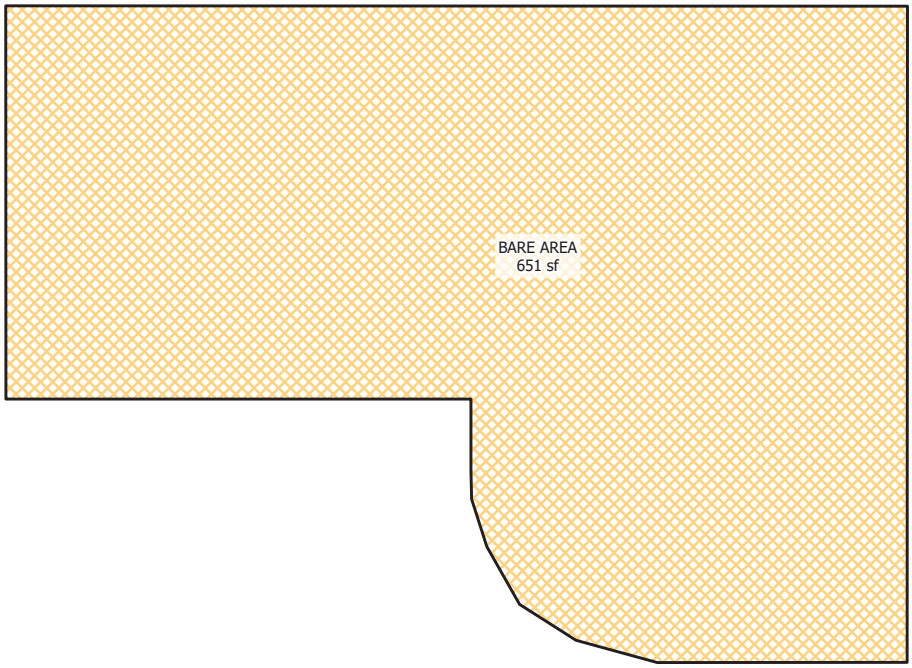
Legend
No Action
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-516A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-516A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-516A-BA	Bare Area (BA)	651	19.1	29	36	53	692	92	64	137	-	12.1	12.1	651	-	-
BE-516A-DZ	Drip Zone (DZ)	220	14	15	12	10	78	18	16	13	-	-	-	-	-	-
	TOTALS	871										12.1	12.1	651		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

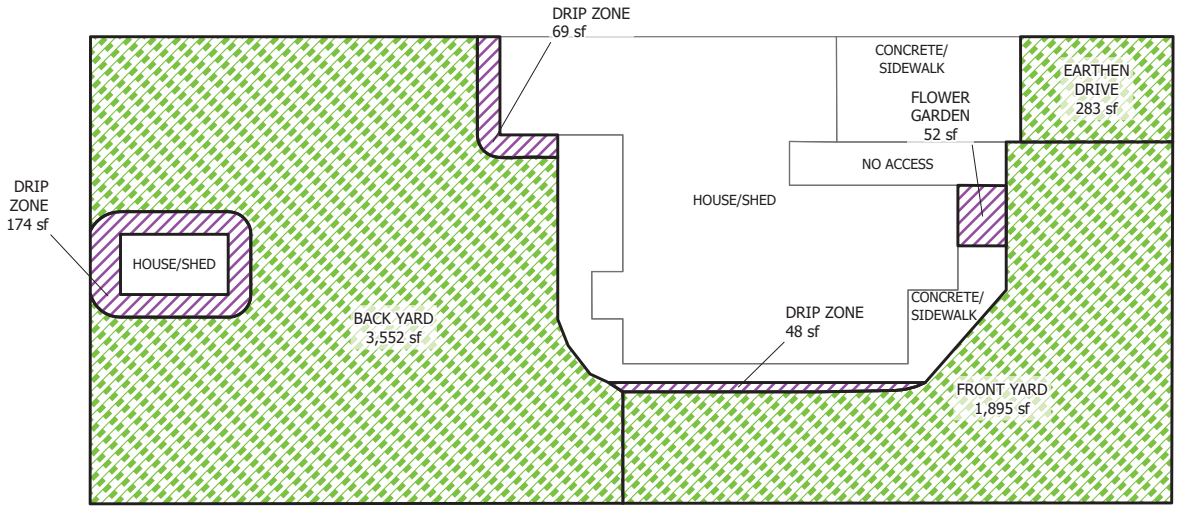
Legend
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-517

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-517			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-517-BY	Back Yard (BY)	3,552	17	96	67	27	137	213	155	61	-	-	-	-	-	-
BE-517-DZ	Drip Zone (DZ)	291	18	21	25	22	403	616	417	80	-	10.8	10.8	291	-	-
BE-517-ED	Earthen Drive (ED)	283	12	13	20	18	214	55	62	48	-	-	-	-	-	-
BE-517-FG	Flower Garden (FG)	52	16	24	27	31	346	611	601	186	-	1.9	1.9	52	-	-
BE-517-FY	Front Yard (FY)	1,895	14	15	21	27	161	107	149	201	-	-	-	-	-	-
	TOTALS	6,073										12.7	12.7	343		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

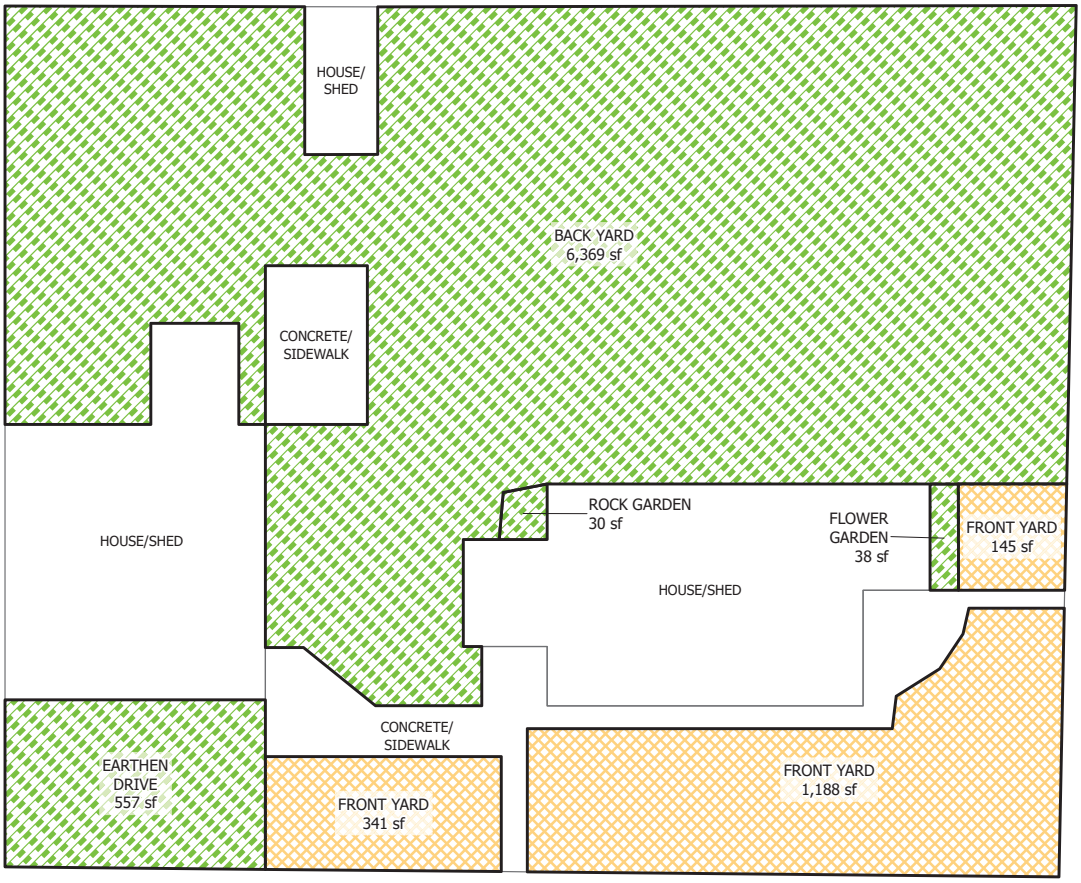
Legend
No Action
12" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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NOTE: RG Not sampled due to gas line. No further sampling planned.

Resident ID
BE-521

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-521			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-521-BY	Back Yard (BY)	6,369	28	36	45	38	151	126	73	31	-	-	-	-	-	-
BE-521-DZ	Drip Zone (DZ)	220	24	32	36	52	239	188	97	123	-	-	-	-	-	-
BE-521-ED	Earthen Drive (ED)	557	12	15	24	50	173	101	126	31	-	-	-	-	-	-
BE-521-FG	Flower Garden (FG)	38	27	35	43	42	376	196	135	272	-	-	-	-	-	-
BE-521-FY	Front Yard (FY)	1,674	18	52	1	53	407	123	0	110	-	31.0	31.0	1,674	-	-
BE-521-RG	Rock Garden (RG)	30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	-	-	-	-	-
	TOTALS	8,888										31.0	31.0	1,674		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

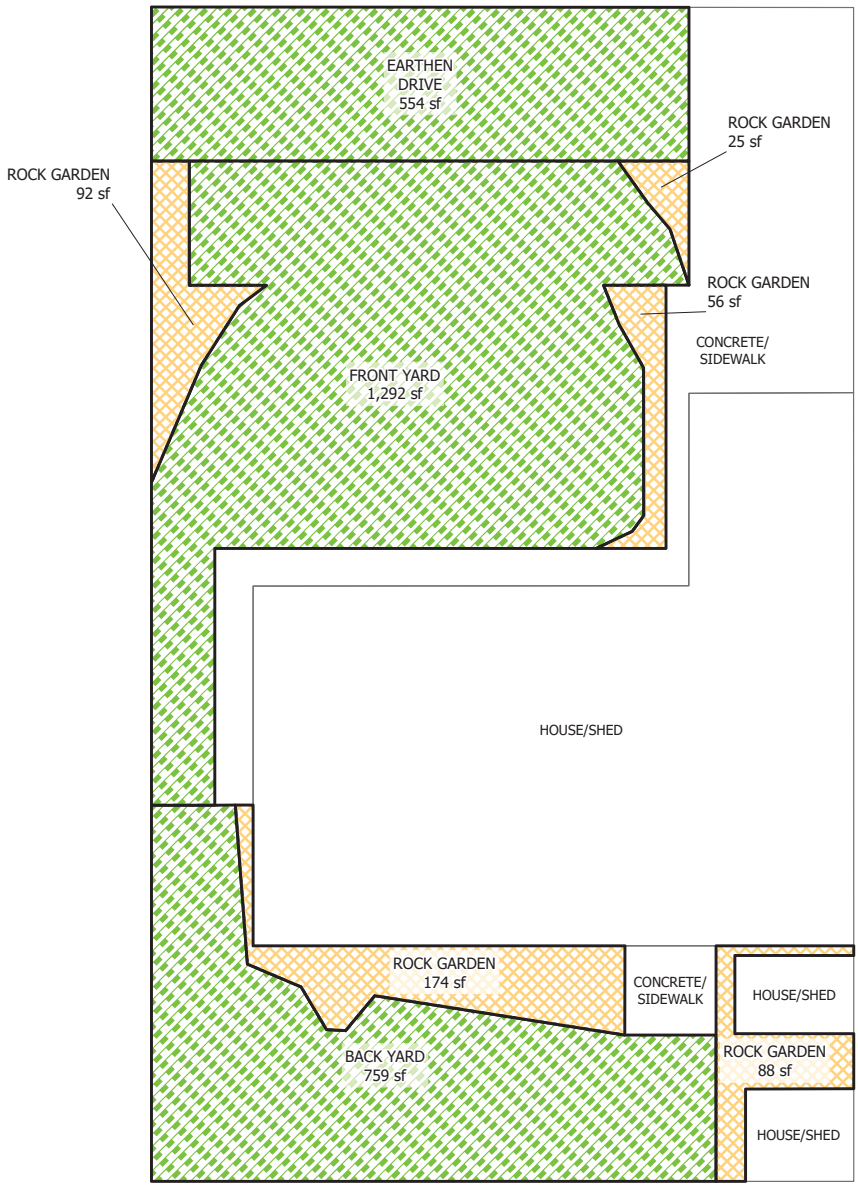
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-523

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-523			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-523-BY	Back Yard (BY)	759	35	27	36	60	202	159	184	169	-	-	-	-	-	-
BE-523-DZ	Drip Zone (DZ)	220	44	63	44	40	174	201	239	152	-	-	-	-	-	-
BE-523-ED	Earthen Drive (ED)	554	10	13	23	100	42	114	59	96	-	-	-	-	-	-
BE-523-FY	Front Yard (FY)	1,292	20	19	39	40	167	81	105	52	-	-	-	-	-	-
BE-523-RG	Rock Garden (RG)	435	25	82	41	114	164	610	54	34	-	8.1	8.1	-	-	-
	TOTALS	3,260										8.1	8.1			

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

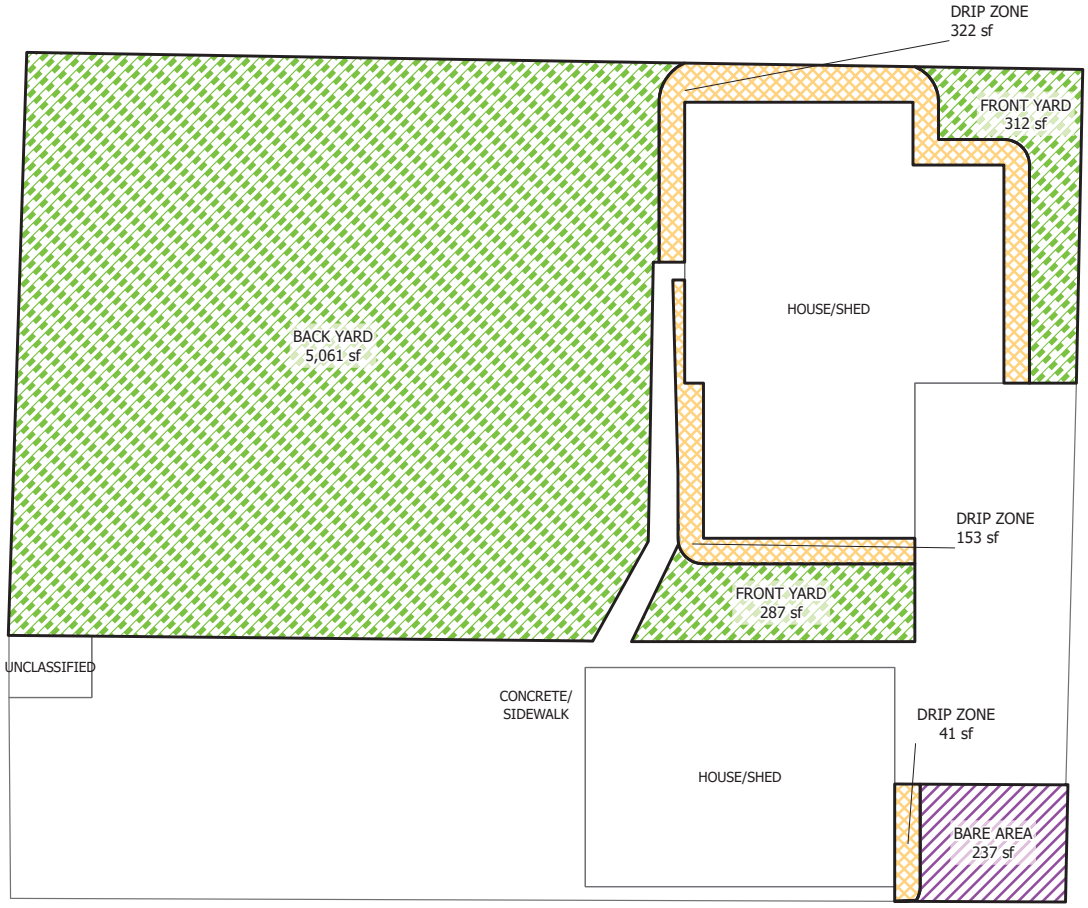
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-528

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-528			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-528-BA	Bare Area (BA)	237	11	23	133	90	118	481	1530	174	-	8.8	8.8	237	-	-
BE-528-BY	Back Yard (BY)	5,061	16	26	32	34	72	125	86	48	-	-	-	-	-	-
BE-528-DZ	Drip Zone (DZ)	516	16	31	48	45	236	434	235	160	-	9.6	9.6	516	-	-
BE-528-FY	Front Yard (FY)	599	20	32	88	80	175	163	276	88	-	-	-	-	-	-
	TOTALS	6,413										18.4	18.4	753		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

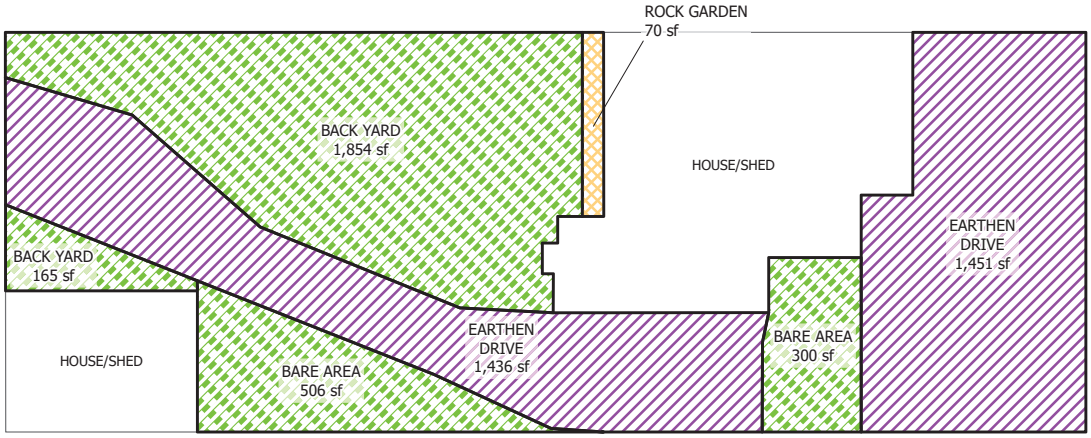
Legend
- No Action
- 6" RA
- 12" RA

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N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-534

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-534			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-534-BA	Bare Area (BA)	806	27	35	69	49	86	180	139	109	-	-	-	-	-	-
BE-534-BY	Back Yard (BY)	2,019	22	43	55	32	53	108	100	35	-	-	-	-	-	-
BE-534-DZ	Drip Zone (DZ)	220	32	46	40	35	134	124	54	32	-	-	-	-	-	-
BE-534-ED	Earthen Drive (ED)	2,887	14	65	62	58	82	104	605	188	-	106.9	53.5	-	53.5	-
BE-534-RG	Rock Garden (RG)	70	45	104	38	32	51	59	17	13	Yes	1.3	1.3	-	-	-
	TOTALS	6,002										108.2	54.8		53.5	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

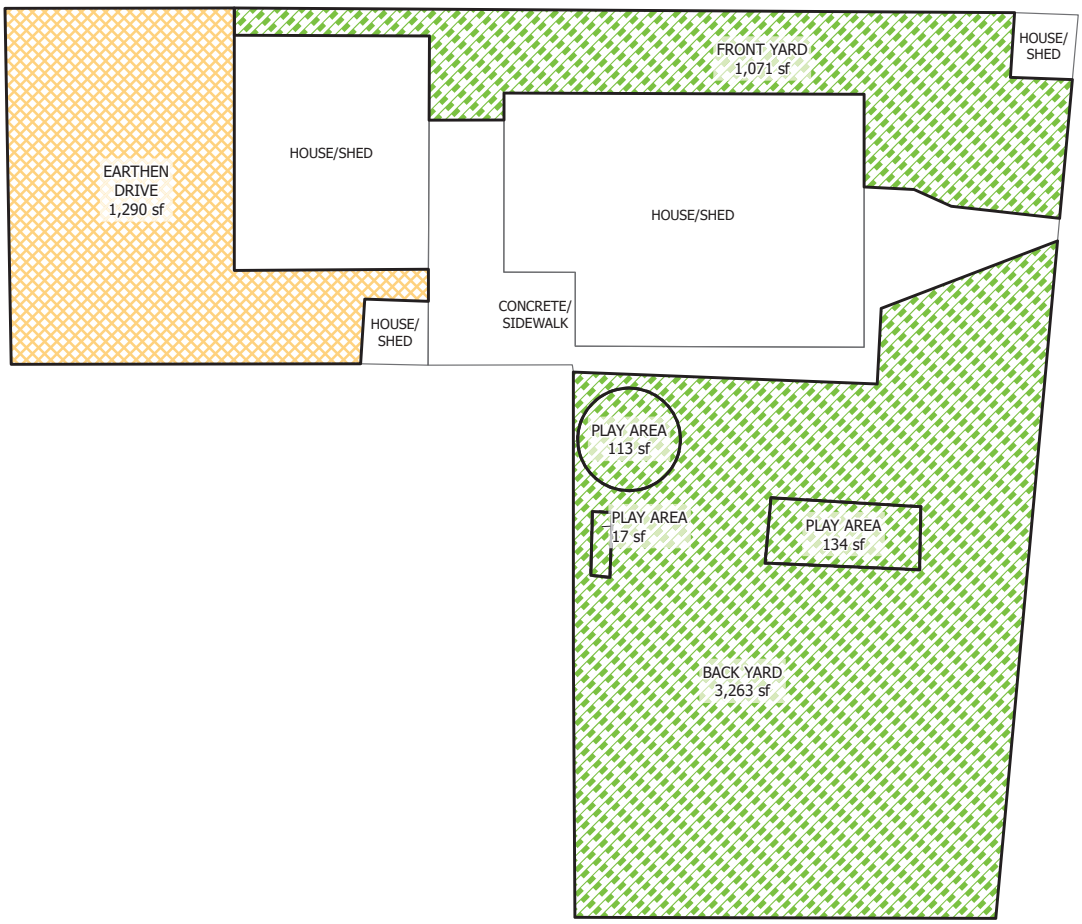
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6" RA
12" RA

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Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-538

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-538			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-538-BY	Back Yard (BY)	3,263	15	12	10	17	56	36	18	30	-	-	-	-	-	-
BE-538-DZ	Drip Zone (DZ)	220	17	17	24	31	76	43	35	46	-	-	-	-	-	-
BE-538-ED	Earthen Drive (ED)	1,290	21	49	37	21	293	430	86	21	-	23.9	-	-	23.9	-
BE-538-FY	Front Yard (FY)	1,071	20	16	20	25	84	27	27	51	-	-	-	-	-	-
BE-538-PA	Play Area (PA)	264	16	9	18	28	58	26	96	35	-	-	-	-	-	-
	TOTALS	6,108										23.9			23.9	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

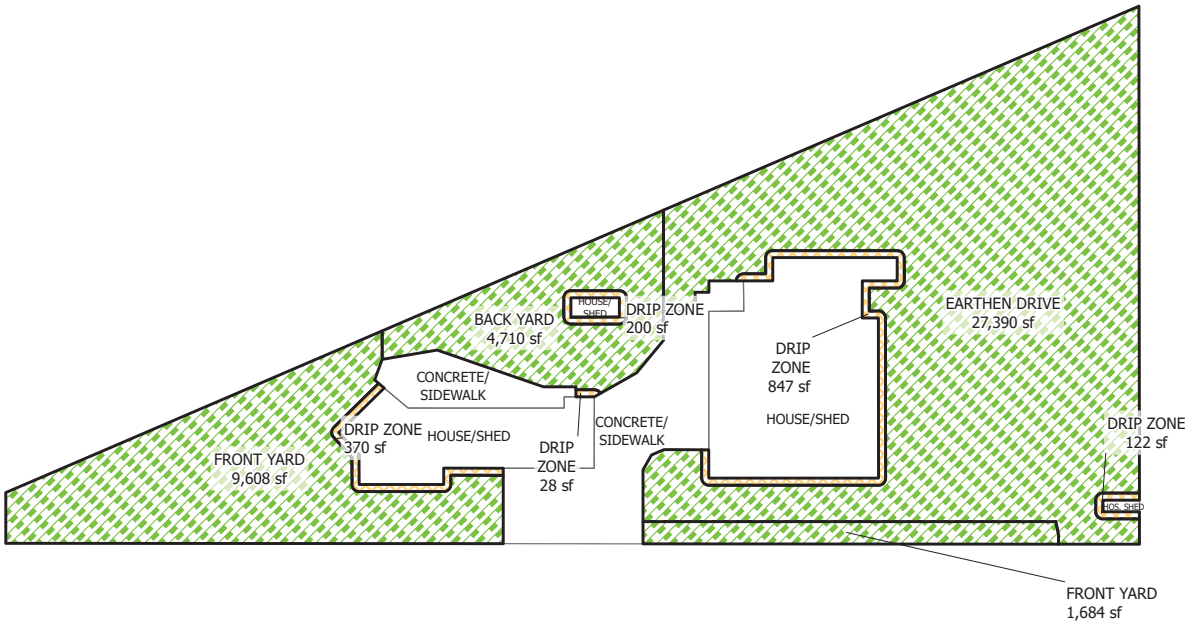
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6" RA

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Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-540

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-540			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-540-BY	Back Yard (BY)	4,710	12	12	8	6	137	32	11	9	-	-	-	-	-	-
BE-540-DZ	Drip Zone (DZ)	1,567	14	44	50	63	546	173	44	44	-	29.0	29.0	1,567	-	-
BE-540-ED	Earthen Drive (ED)	27,390	17	8	10	6	55	14	10	7	-	-	-	-	-	-
BE-540-FY	Front Yard (FY)	11,292	12	35	32	43	67	102	57	146	-	-	-	-	-	-
	TOTALS	44,959										29.0	29.0	1,567		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable **to 24 inches** below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

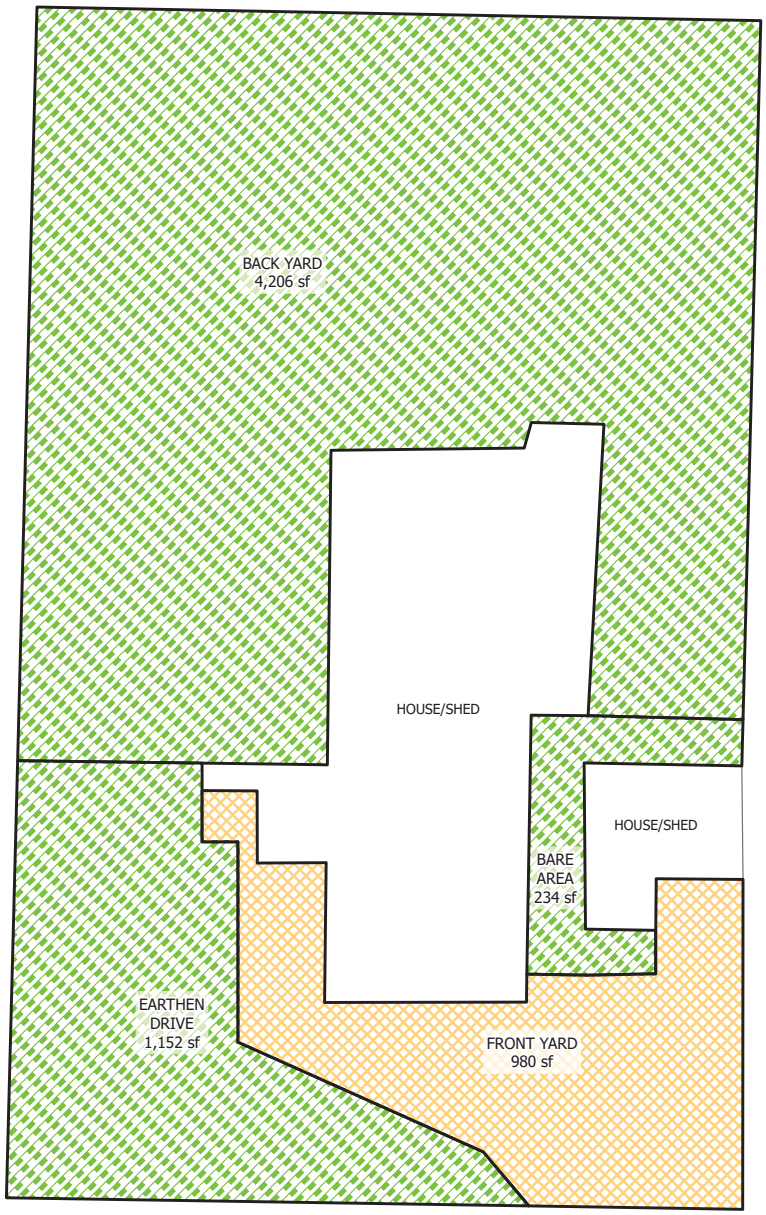
Legend
No Action
6" RA

0 10 20 Feet

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Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-542C

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-542C			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-542C-BA	Bare Area (BA)	234	6	21	22	19	10	47	61	82	-	-	-	-	-	-
BE-542C-BY	Back Yard (BY)	4,206	23	38	13	8	37	51	15	11	-	-	-	-	-	-
BE-542C-DZ	Drip Zone (DZ)	220	36	27	16	10	38	24	16	12	-	-	-	-	-	-
BE-542C-ED	Earthen Drive (ED)	1,152	11	46	9	15	29	38	12	16	-	-	-	-	-	-
BE-542C-FY	Front Yard (FY)	980	36	24	11	8	884	238	131	27	-	18.1	18.1	980	-	-
	TOTALS	6,792										18.1	18.1	980		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

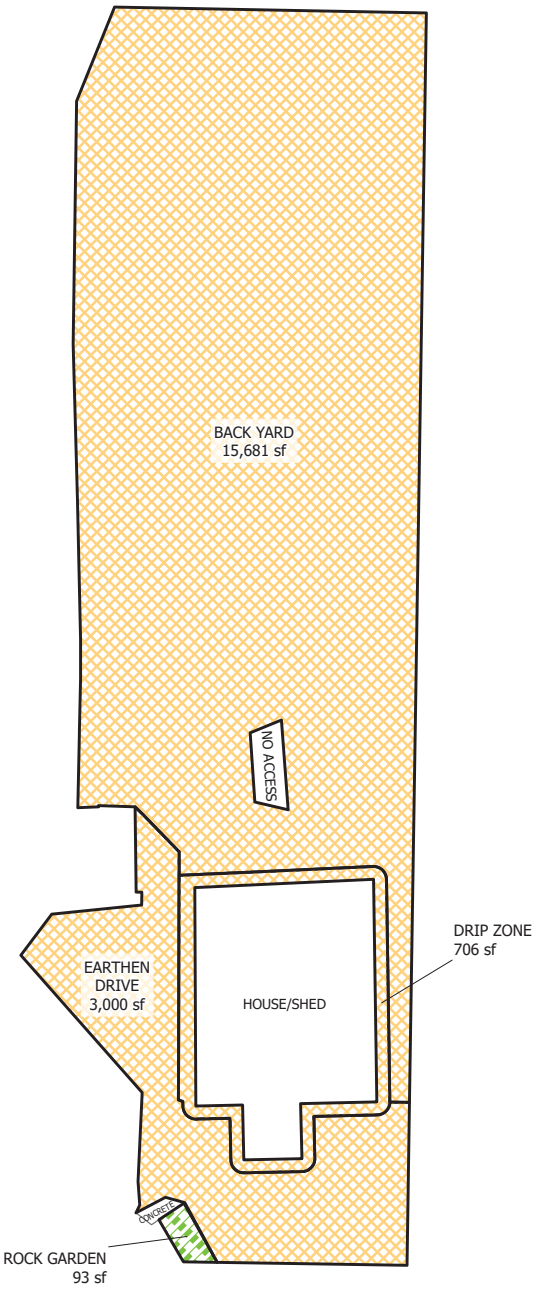
Legend
No Action
6" RA

0 10 20 Feet

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Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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NOTE: RG Could not sample due to access

Resident ID
BE-542L

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-542L			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-542L-BY	Back Yard (BY)	15,681	28	65	53	12	56	88	49	13	Yes	290.4	290.4	15,681	-	-
BE-542L-DZ	Drip Zone (DZ)	706	43	64	40	32	125	65	20	19	Yes	13.1	13.1	706	-	-
BE-542L-ED	Earthen Drive (ED)	3,000	46	84	29	13	70	26	17	13	Yes	55.6	-	-	55.6	-
BE-542L-RG	Rock Garden (RG)	93	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	-	-	-	-	-
TOTALS		19,480										359.1	303.5	16,387	55.6	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

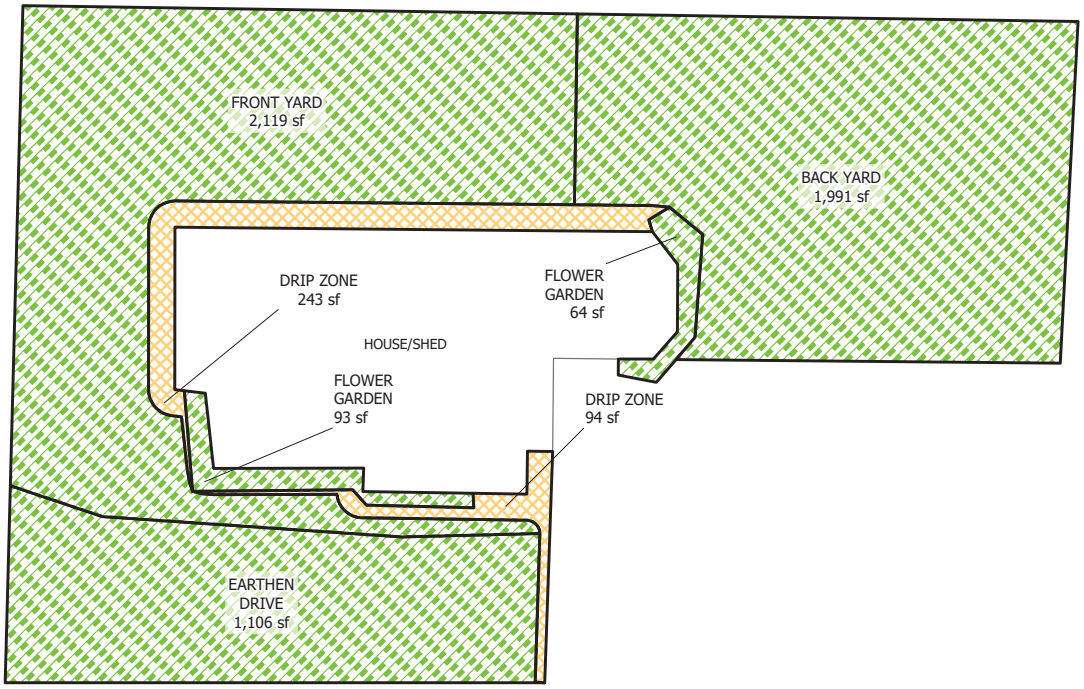
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No Action
6" RA

0 10 20 Feet

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Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-546A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-546A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-546A-BY	Back Yard (BY)	1,991	26	48	30	20	43	43	20	10	-	-	-	-	-	-
BE-546A-DZ	Drip Zone (DZ)	337	20	34	54	32	599	166	79	32	-	6.2	6.2	337	-	-
BE-546A-ED	Earthen Drive (ED)	1,106	15	24	43	49	82	174	99	112	-	-	-	-	-	-
BE-546A-FG	Flower Garden (FG)	157	22	25	25	19	59	47	21	14	-	-	-	-	-	-
BE-546A-FY	Front Yard (FY)	2,119	26	41	44	27	57	40	28	19	-	-	-	-	-	-
	TOTALS	5,710										6.2	6.2	337		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

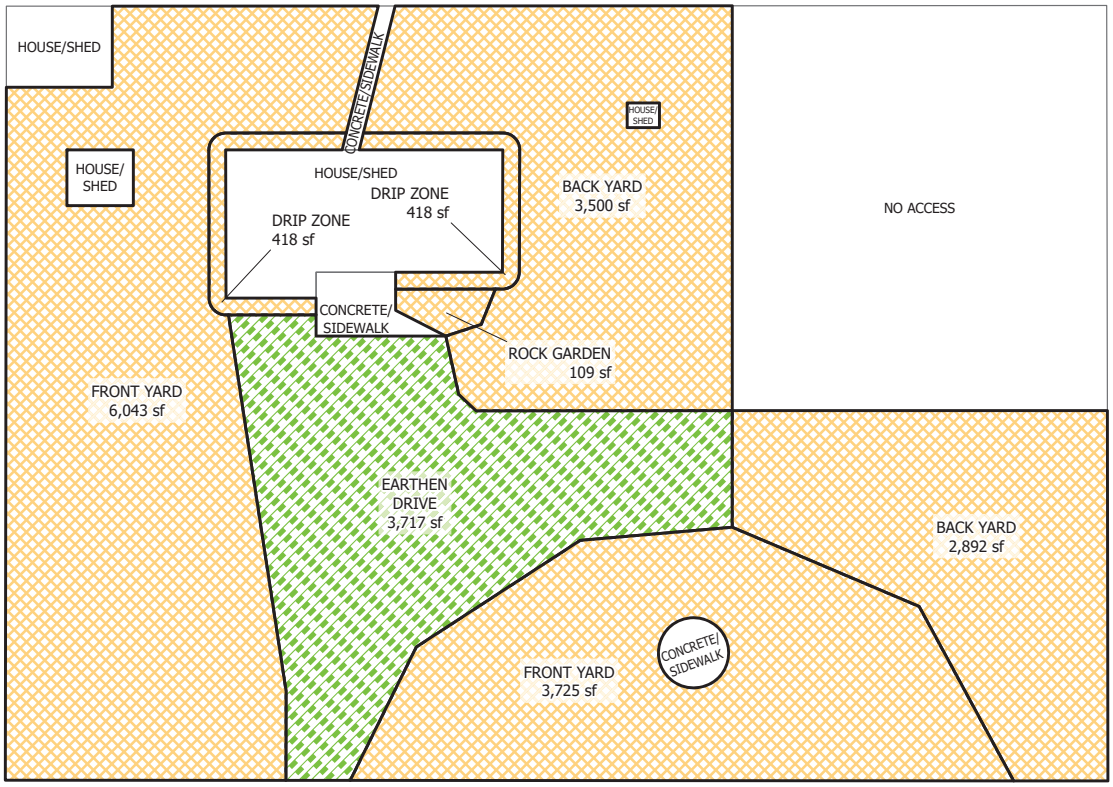
Legend
No Action
6" RA

0 10 20 Feet

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Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-702

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-702			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-702-BY	Back Yard (BY)	6,392	32	94	29	17	92	42	17	18	Yes	118.4	118.4	6,392	-	-
BE-702-DZ	Drip Zone (DZ)	418	21	39	19	50	139	384	132	19	Yes	7.7	7.7	418	-	-
BE-702-ED	Earthen Drive (ED)	3,717	34	79	78	18	107	122	41	20	-	-	-	-	-	-
BE-702-FY	Front Yard (FY)	9,768	29	84	84	24	90	97	22	41	Yes	180.9	180.9	9,768	-	-
BE-702-RG	Rock Garden (RG)	109	16	104	21	102	90	107	60	25	Yes	2.0	2.0	-	-	-
	TOTALS	20,404										309.0	309.0	16,578		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

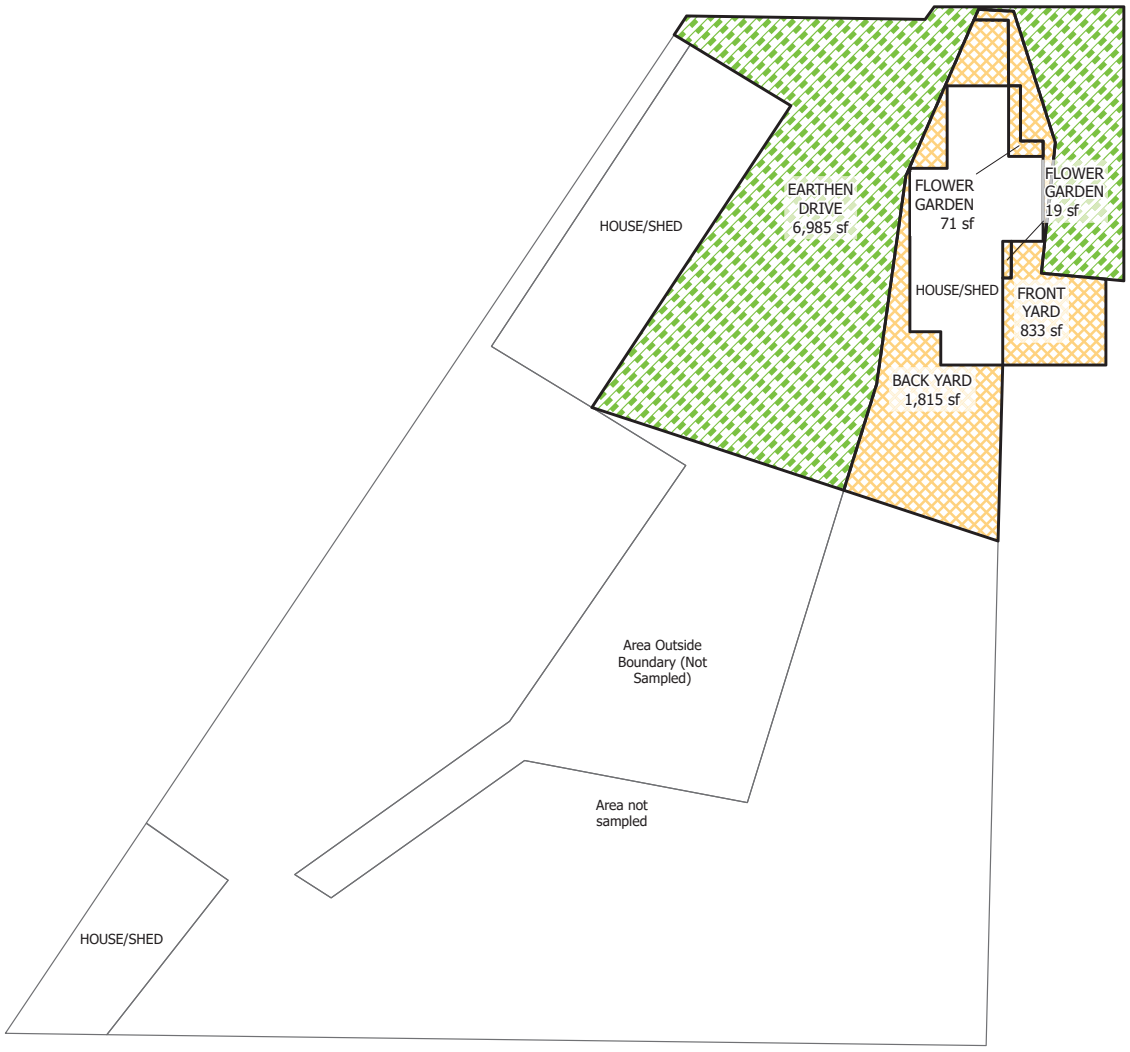
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-703

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-703			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-703-BY	Back Yard (BY)	1,815	31	57	120	75	59	103	72	8	Yes	33.6	33.6	1,815	-	-
BE-703-DZ	Drip Zone (DZ)	220	17	47	84	64	36	77	30	9	-	-	-	-	-	-
BE-703-ED	Earthen Drive (ED)	6,985	32	65	53	19	136	175	49	12	-	-	-	-	-	-
BE-703-FG	Flower Garden (FG)	90	40	40	73	102	78	78	64	16	Yes	1.7	1.7	90	-	-
BE-703-FY	Front Yard (FY)	833	37	140	106	17	226	84	11	11	Yes	15.4	15.4	833	-	-
	TOTALS	9,943										50.7	50.7	2,738		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

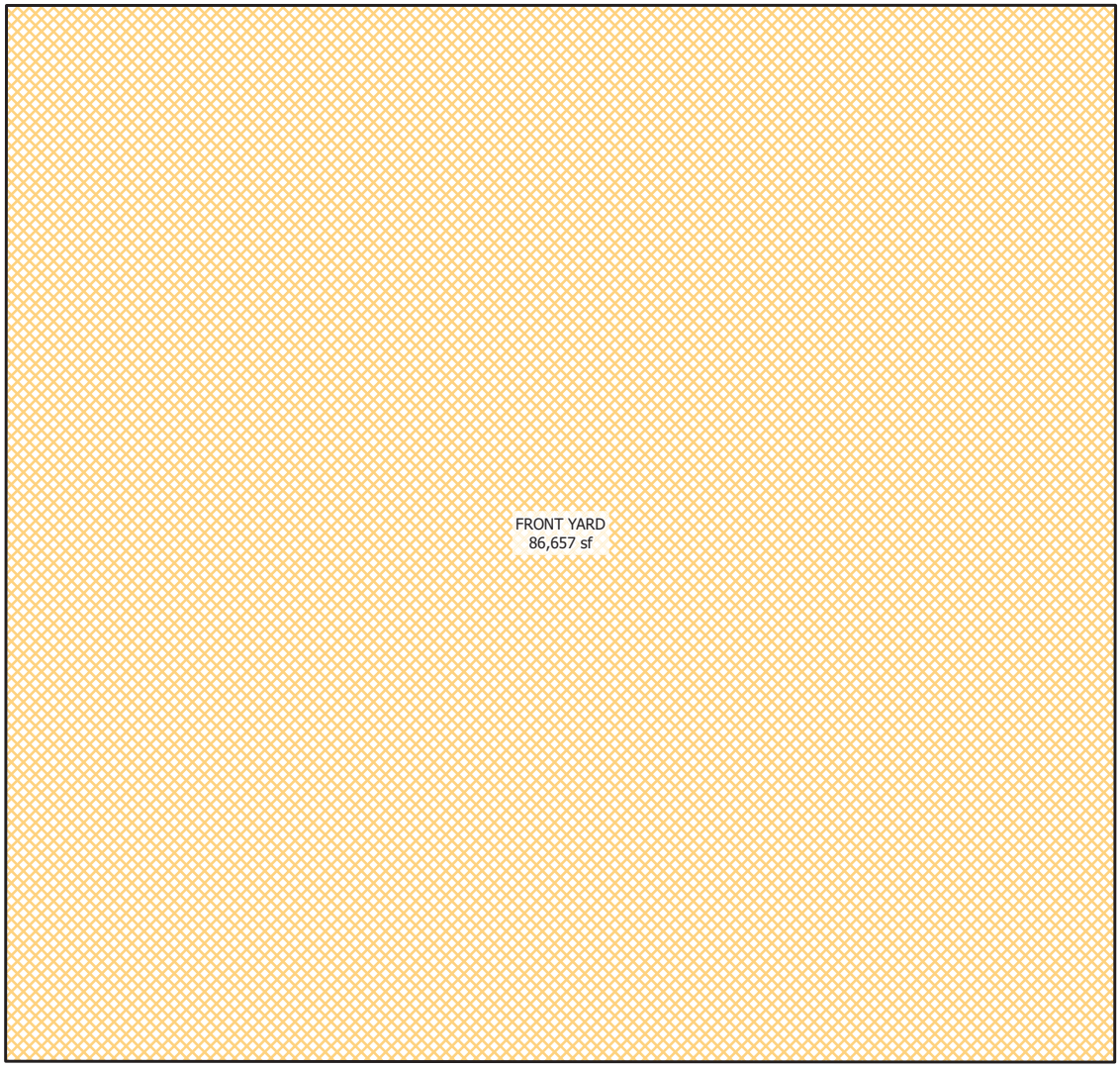
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6" RA

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Woodard & Curran
PROJECT #: 0231336
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Resident ID
BE-704

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-704			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-704-FY	Front Yard (FY)	86,657	90	94	21	18	195	52	30	31	Yes	1,604.8	1,604.8	86,657	-	-
	TOTALS	86,657										1,604.8	1,604.8	86,657		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/Flower garden component** sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable **to 24 inches** below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

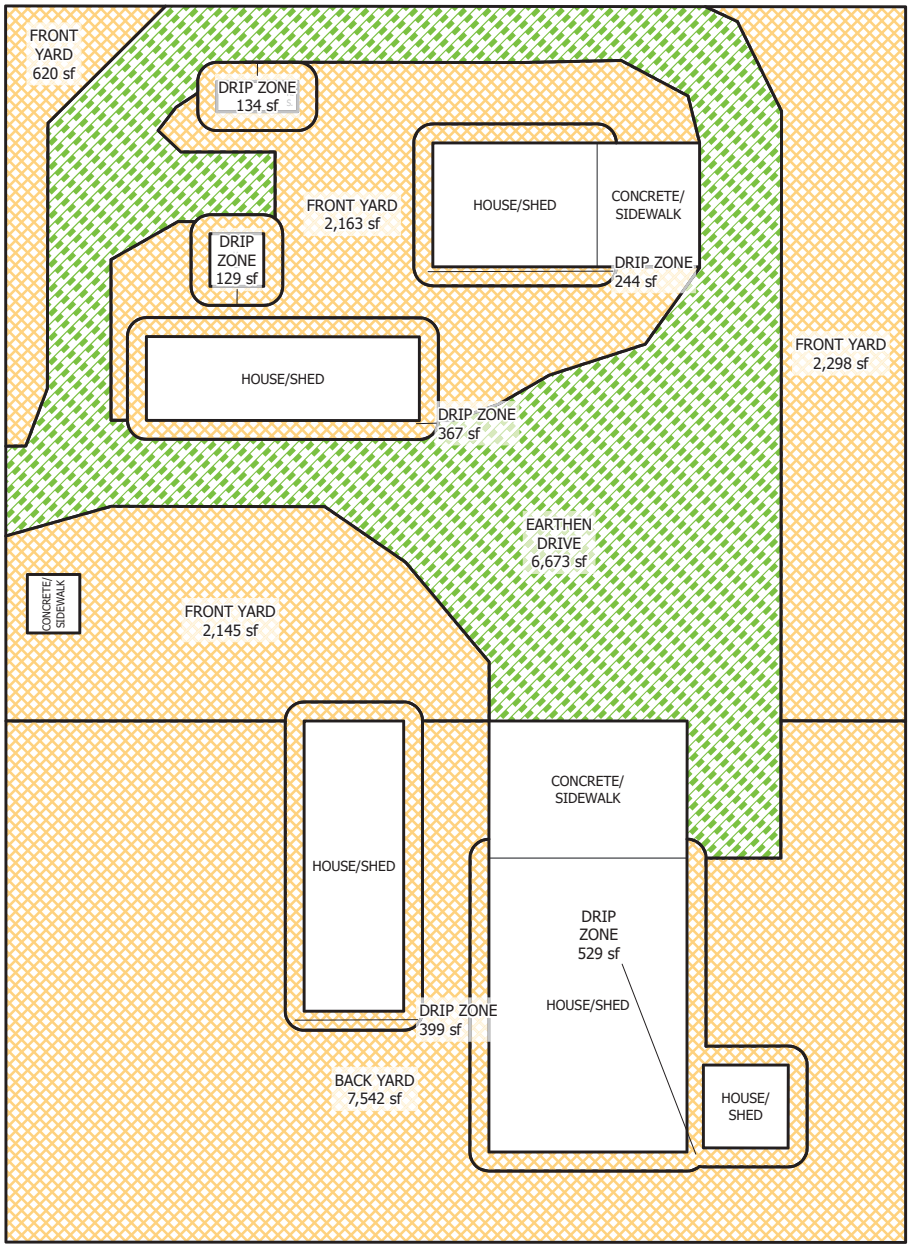
Legend
6" RA

0 10 20 Feet

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Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-705

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-705			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-705-BY	Back Yard (BY)	7,542	86	58	40	42	157	34	42	214	Yes	139.7	139.7	7,542	-	-
BE-705-DZ	Drip Zone (DZ)	1,802	171	814	99	25	288	634	43	26	-	33.4	33.4	1,802	-	-
BE-705-ED	Earthen Drive (ED)	6,673	24	64	65	21	31	101	35	17	-	-	-	-	-	-
BE-705-FY	Front Yard (FY)	7,226	64	89	77	36	131	112	128	28	Yes	133.8	133.8	7,226	-	-
	TOTALS	23,243										306.9	306.9	16,570		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

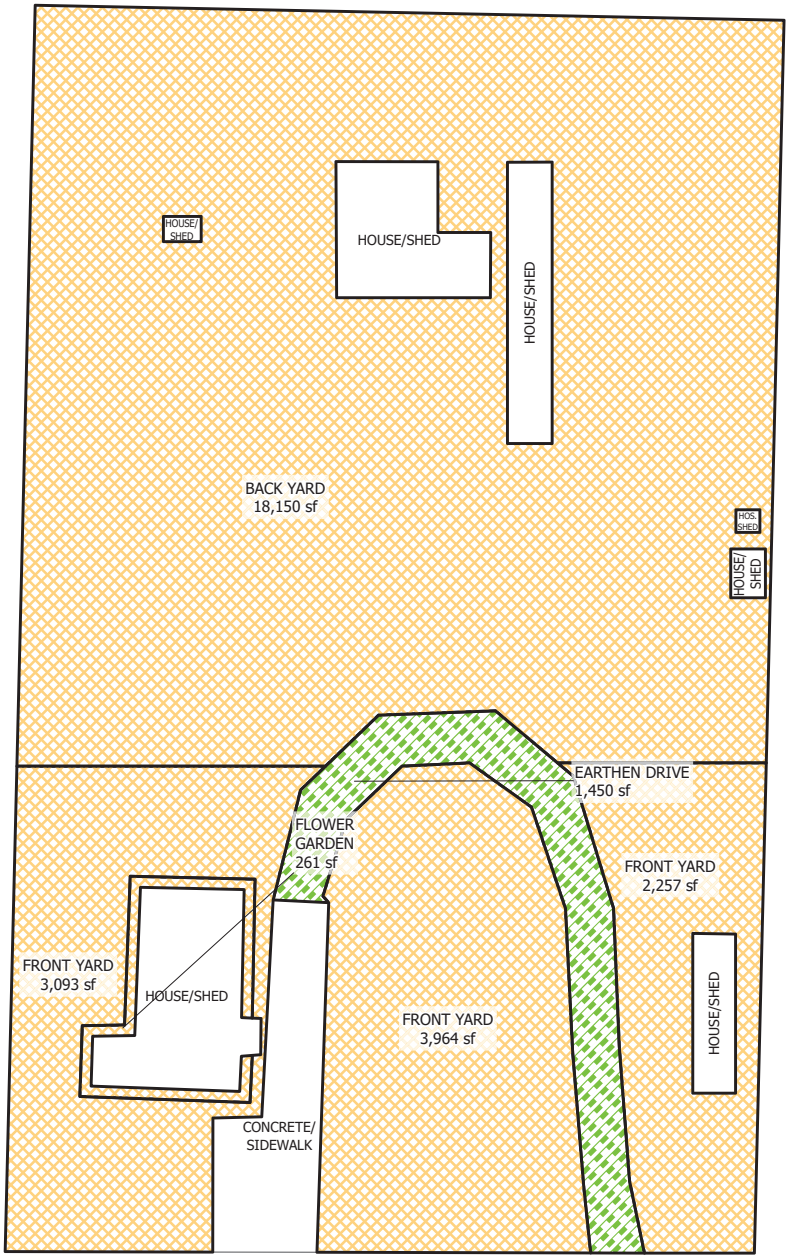
Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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Resident ID
BE-801

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	STEP 1 REMOVAL								STEP 2 REMOVAL	ESTIMATED QUANTITIES				
			COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)					Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-801			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	0-6"					
BE-801-BY	Back Yard (BY)	18,150	67	61	21	8	267	29	15	10	Yes	336.1	336.1	18,150	-	-
BE-801-DZ	Drip Zone (DZ)	220	25	32	76	44	38	61	93	39	-	-	-	-	-	-
BE-801-ED	Earthen Drive (ED)	1,450	56	52	11	11	51	17	13	14	-	-	-	-	-	-
BE-801-FG	Flower Garden (FG)	261	31	80	106	78	44	142	139	48	Yes	4.8	4.8	261	-	-
BE-801-FY	Front Yard (FY)	9,314	45	90	24	15	173	89	27	26	Yes	172.5	172.5	9,314	-	-
	TOTALS	29,395										513.4	513.4	27,725		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
Component Step 2 Removal

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

0 10 20 Feet

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: APR 2023

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ACM SMELTER & REFINERY SITE

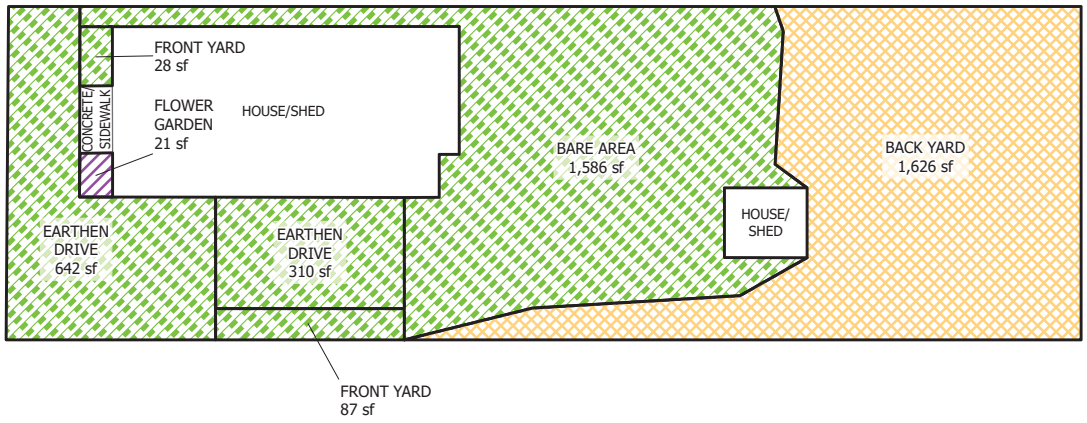
OU1 COMMMUNITY SOILS

Draft Final Appendix E, Individual Site Work Plans, Landowner Access Agreement and Data Notification Letter (Example) and Statement of Completion (Example)

Prepared for:
Atlantic Richfield Company
317 Anaconda Road
Butte, Montana 59701

Prepared by:
Woodard & Curran
601 Riverside Drive South
Great Falls, Montana 59405

0231336
Atlantic Richfield Company
March 2023



Resident ID
BE-001

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-001			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-001-BA	Bare Area (BA)	1,586	27	26	68	83	174	128	30	90	-	-	-	-	-
BE-001-BY	Back Yard (BY)	1,626	21	42	13	14	409	16	167	140	30.1	30.1	1,626	-	-
BE-001-DZ	Drip Zone (DZ)	220	14	9	18	39	53	204	49	187	-	-	-	-	-
BE-001-ED	Earthen Drive (ED)	952	26	17	58	66	130	143	147	10	-	-	-	-	-
BE-001-FG	Flower Garden (FG)	21	16	16	18	14	193	246	1500	248	0.8	0.8	21	-	-
BE-001-FY	Front Yard (FY)	115	41	8	11	11	48	59	75	16	-	-	-	-	-
	TOTALS	4,520									30.9	30.9	1,647		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

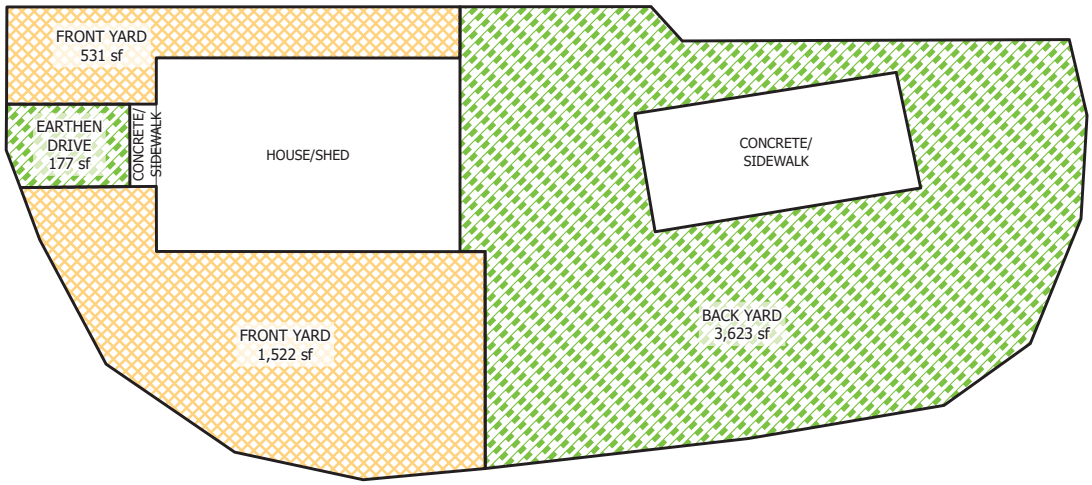
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-008B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-008B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-008B-BY	Back Yard (BY)	3,623	21	25	69	43	129	110	207	79	-	-	-	-	-
BE-008B-DZ	Drip Zone (DZ)	220	39	44	39	26	317	237	153	104	-	-	-	-	-
BE-008B-ED	Earthen Drive (ED)	177	16	35	59	30	106	130	158	8	-	-	-	-	-
BE-008B-FY	Front Yard (FY)	2,053	42	44	29	43	465	333	367	220	38.0	38.0	2,053	-	-
	TOTALS	6,073									38.0	38.0	2,053		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

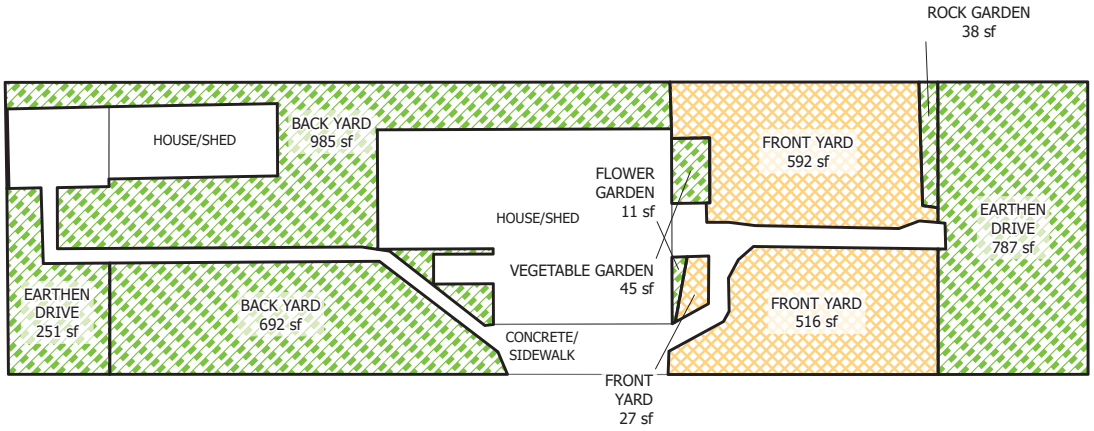
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-011

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-011			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-011-BY	Back Yard (BY)	1,677	22	32	55	41	225	138	113	14	-	-	-	-	-
BE-011-DZ	Drip Zone (DZ)	220	32	74	40	73	274	348	52	137	-	-	-	-	-
BE-011-ED	Earthen Drive (ED)	1,038	37	64	71	43	220	305	120	11	-	-	-	-	-
BE-011-FG	Flower Garden (FG)	11	25	18	17	38	224	187	102	121	-	-	-	-	-
BE-011-FY	Front Yard (FY)	1,135	33	24	35	110	559	83	52	310	21.0	21.0	1,135	-	-
BE-011-RG	Rock Garden (RG)	38	21	31	25	17	100	80	82	21	-	-	-	-	-
BE-011-VG	Vegetable Garden (VG)	45	22	32	41	32	190	82	173	226	-	-	-	-	-
	TOTALS	4,164									21.0	21.0	1,135		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

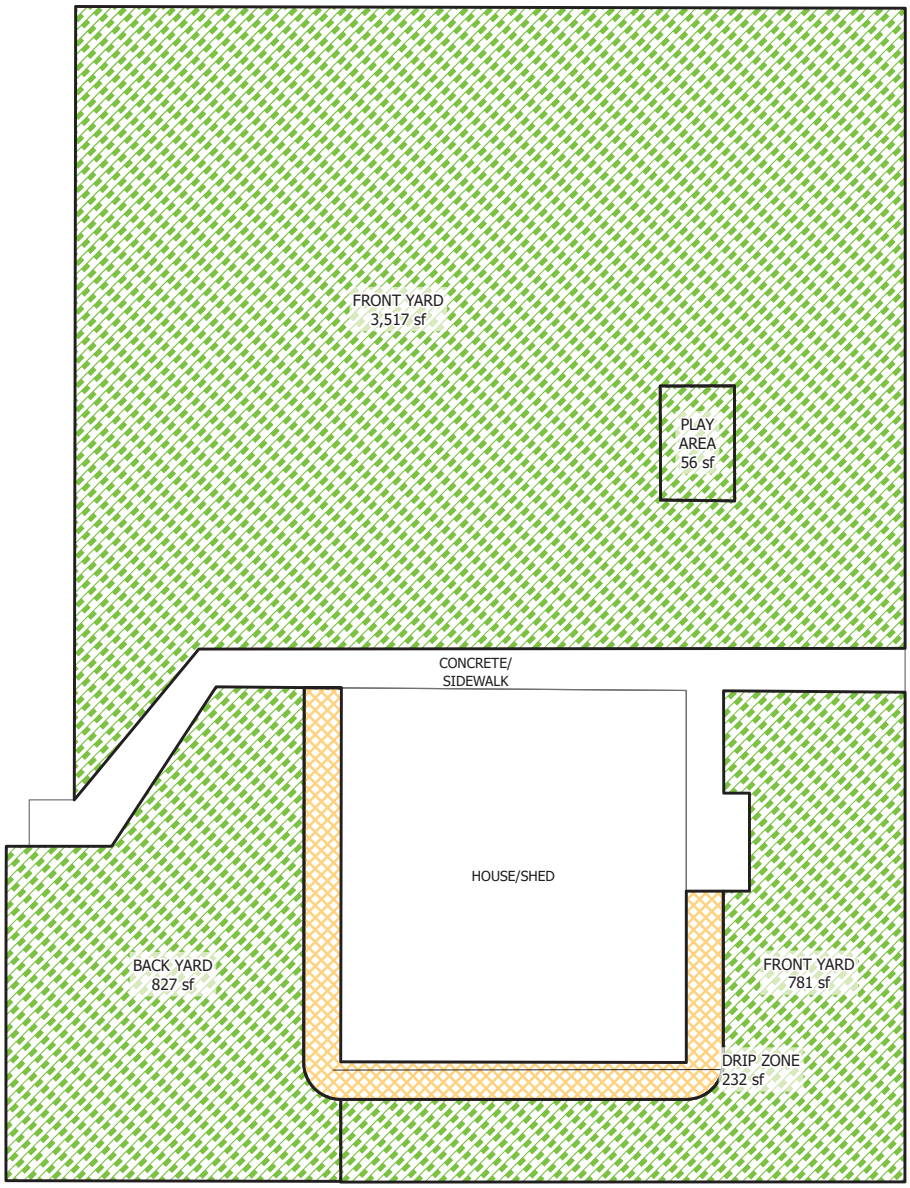
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-014

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-014			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-014-BY	Back Yard (BY)	827	22	37	51	43	219	202	104	43	-	-	-	-	-
BE-014-DZ	Drip Zone (DZ)	232	21	25	37	21	447	224	70	27	4.3	4.3	232	-	-
BE-014-FY	Front Yard (FY)	4,298	16	27	131	29	171	181	83	43	-	-	-	-	-
BE-014-PA	Play Area (PA)	56	15	26	32	47	135	177	157	53	-	-	-	-	-
	TOTALS	5,413									4.3	4.3	232		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

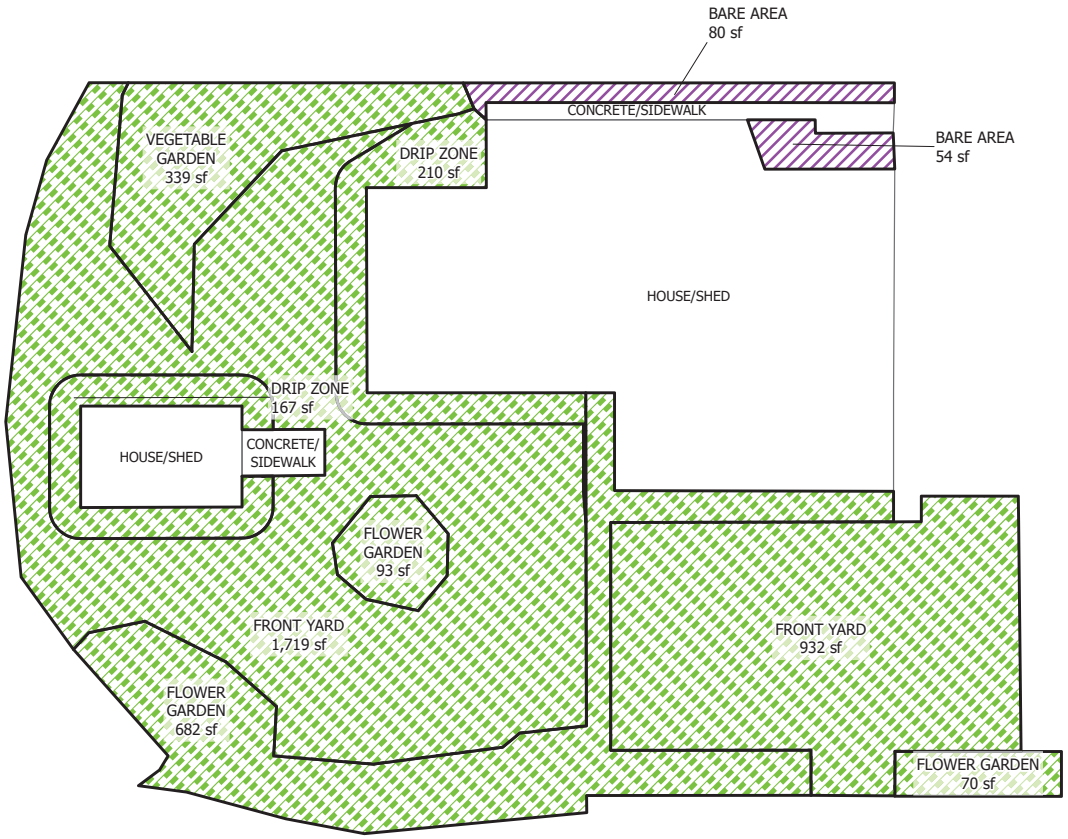
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-020A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-020A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-020A-BA	Bare Area (BA)	134	27	32	33	50	130	169	488	114	5.0	5.0	134	-	-
BE-020A-DZ	Drip Zone (DZ)	377	15	17	20	21	84	93	114	53	-	-	-	-	-
BE-020A-FG	Flower Garden (FG)	845	21	25	38	59	107	130	177	313	-	-	-	-	-
BE-020A-FY	Front Yard (FY)	2,651	21	19	24	51	122	93	156	204	-	-	-	-	-
BE-020A-VG	Vegetable Garden (VG)	339	20	18	14	13	101	57	52	69	-	-	-	-	-
	TOTALS	4,346									5.0	5.0	134		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.**

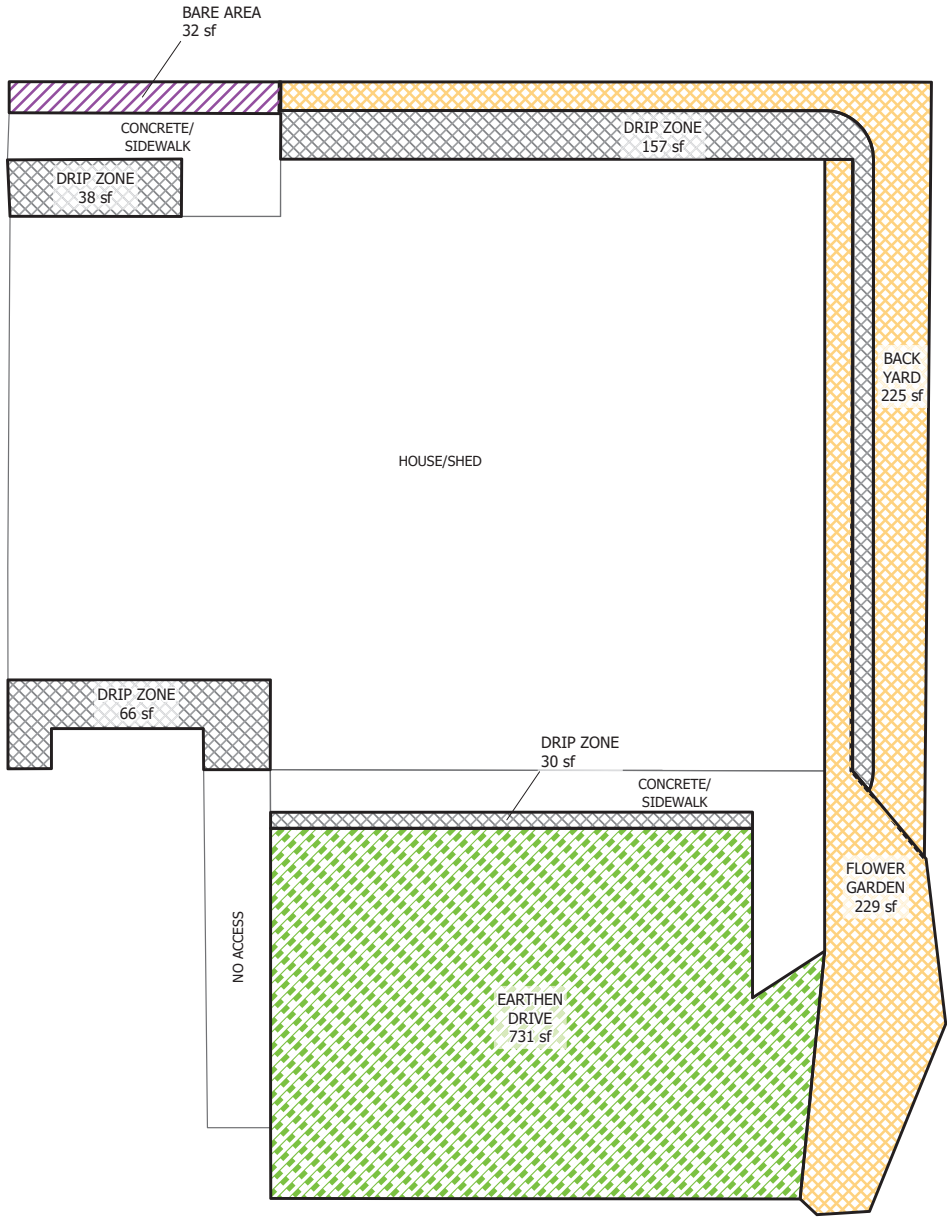
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-020B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-020B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-020B-BA	Bare Area (BA)	32	27	32	33	50	130	169	488	114	1.2	1.2	32	-	-
BE-020B-BY	Back Yard (BY)	225	28	39	50	22	92	478	356	33	4.2	4.2	225	-	-
BE-020B-DZ	Drip Zone (DZ)	291	19	41	45	48	76	223	451	1310	16.2	16.2	291	-	-
BE-020B-ED	Earthen Drive (ED)	731	33	41	32	31	156	167	96	108	-	-	-	-	-
BE-020B-FG	Flower Garden (FG)	229	31	57	39	27	89	713	207	99	4.2	4.2	229	-	-
	TOTALS	1,508									25.8	25.8	777		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

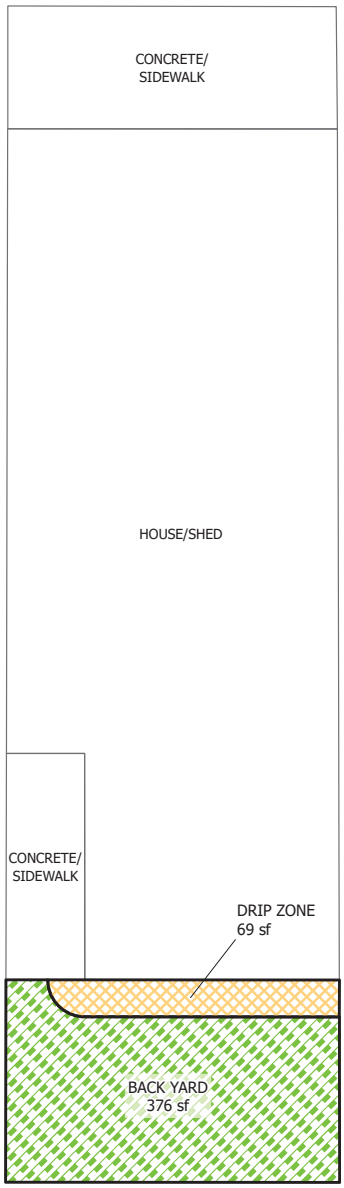
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-021A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-021A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-021A-BY	Back Yard (BY)	376	20	33	42	42	297	320	390	148	-	-	-	-	-
BE-021A-DZ	Drip Zone (DZ)	69	25	26	54	61	556	517	258	167	1.3	1.3	69	-	-
	TOTALS	445									1.3	1.3	69		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/**Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

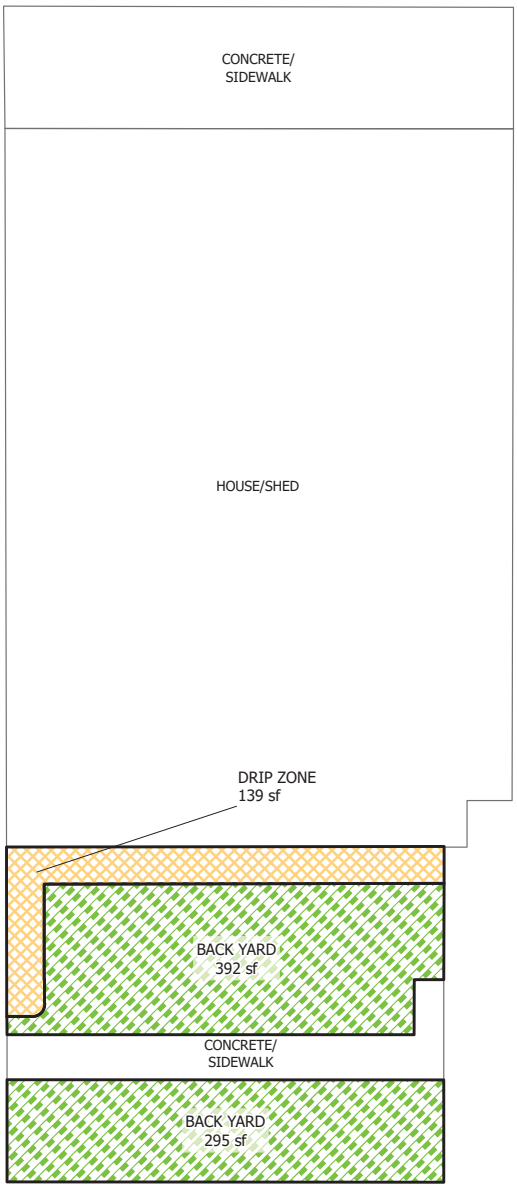
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-021B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-021B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-13"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-021B-BY	Back Yard (BY)	687	15	24	26	28	179	231	272	264	-	-	-	-	-
BE-021B-DZ	Drip Zone (DZ)	139	30	31	27	17	1270	394	219	37	2.6	2.6	139	-	-
	TOTALS	826									2.6	2.6	139		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

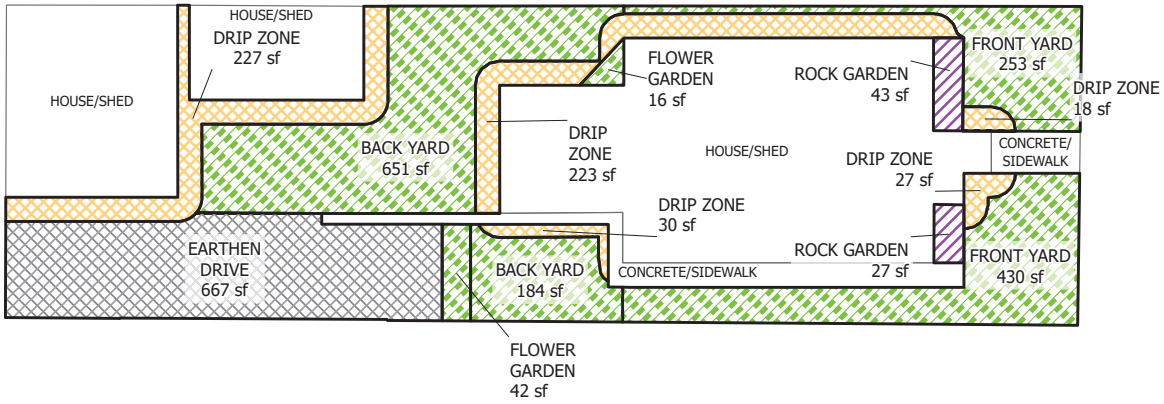
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-024

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-024			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-024-BY	Back Yard (BY)	835	14	17	24	26	139	224	186	125	-	-	-	-	-
BE-024-DZ	Drip Zone (DZ)	525	21	37	39	21	436	491	318	97	9.7	9.7	525	-	-
BE-024-ED	Earthen Drive (ED)	667	17	29	59	147	230	327	183	707	37.1	24.7	-	12.4	-
BE-024-FG	Flower Garden (FG)	58	55	77	22	27	117	128	74	237	-	-	-	-	-
BE-024-FY	Front Yard (FY)	683	18	22	25	17	313	335	228	50	-	-	-	-	-
BE-024-RG	Rock Garden (RG)	70	17	26	27	18	420	540	629	77	2.6	2.6	-	-	-
	TOTALS	2,838									49.4	37.0	525	12.4	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

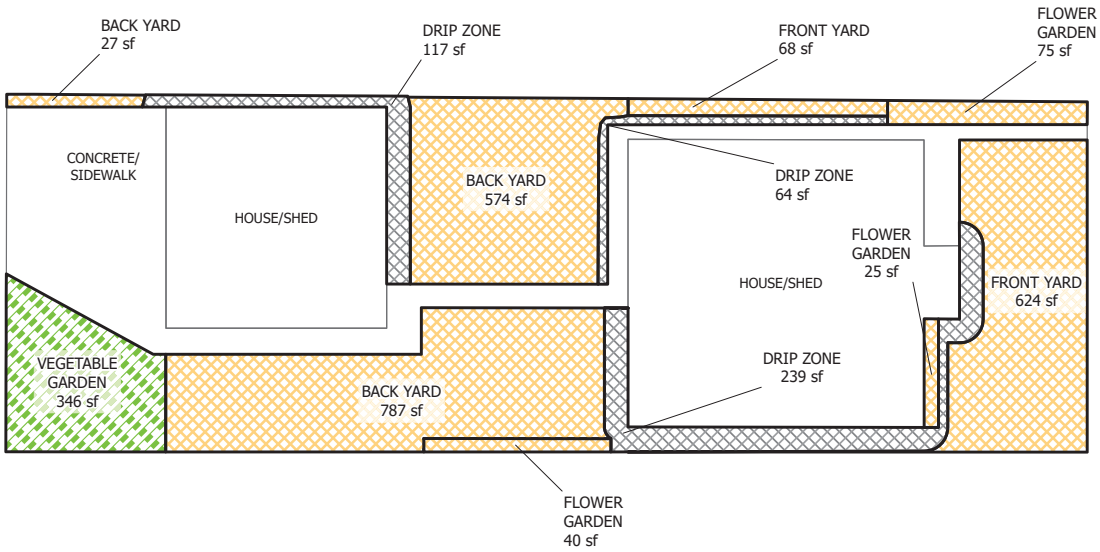
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-025

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-025			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-025-BY	Back Yard (BY)	1,388	23	20	26	17	481	131	55	16	25.7	25.7	1,388	-	-
BE-025-DZ	Drip Zone (DZ)	420	25	23	37	16	1180	438	135	426	23.3	23.3	420	-	-
BE-025-FG	Flower Garden (FG)	140	20	22	42	39	891	602	80	39	2.6	2.6	140	-	-
BE-025-FY	Front Yard (FY)	692	43	24	37	61	75	568	111	152	12.8	12.8	692	-	-
BE-025-VG	Vegetable Garden (VG)	346	19	19	15	9	222	206	129	14	-	-	-	-	-
	TOTALS	2,986									64.4	64.4	2,640		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

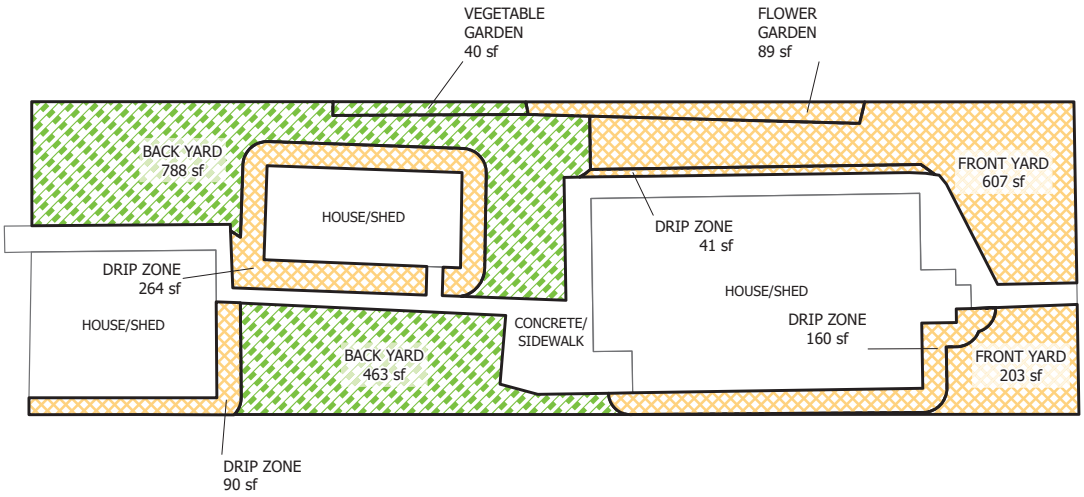
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-026

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-026			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-026-BY	Back Yard (BY)	1,251	31	30	36	25	399	220	89	19	-	-	-	-	-
BE-026-DZ	Drip Zone (DZ)	555	44	59	56	53	877	465	191	114	10.3	10.3	555	-	-
BE-026-FG	Flower Garden (FG)	89	33	39	52	41	527	184	121	50	1.6	1.6	89	-	-
BE-026-FY	Front Yard (FY)	810	33	34	36	61	810	160	118	79	15.0	15.0	810	-	-
BE-026-VG	Vegetable Garden (VG)	40	7	8	10	12	44	56	46	73	-	-	-	-	-
	TOTALS	2,745									26.9	26.9	1,454		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

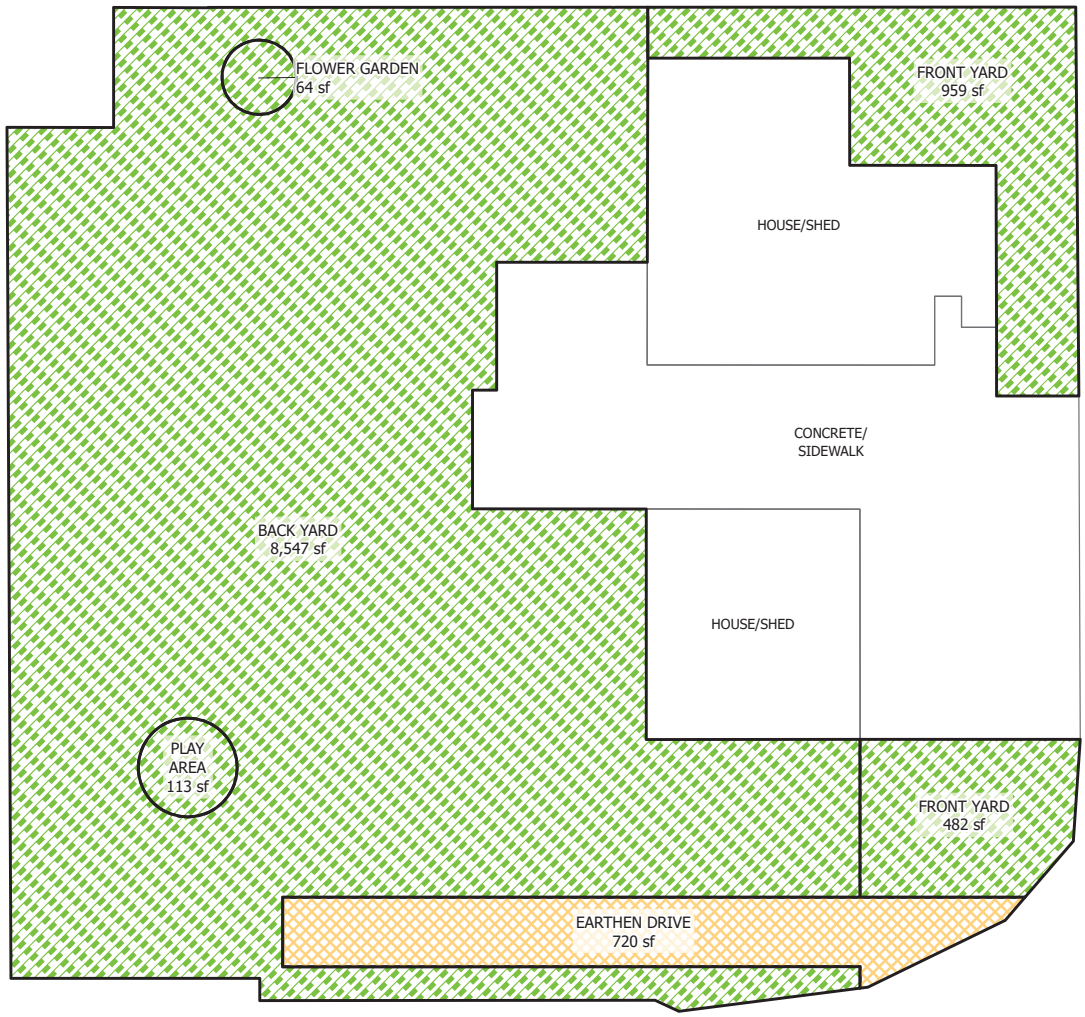
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-027

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-027			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-027-BY	Back Yard (BY)	8,547	21	19	47	49	160	93	33	20	-	-	-	-	-
BE-027-DZ	Drip Zone (DZ)	220	19	18	33	21	311	91	43	69	-	-	-	-	-
BE-027-ED	Earthen Drive (ED)	720	36	39	37	51	219	444	383	292	13.3	-	-	13.3	-
BE-027-FG	Flower Garden (FG)	64	21	16	61	75	230	136	341	213	-	-	-	-	-
BE-027-FY	Front Yard (FY)	1,441	18	21	31	47	219	173	133	124	-	-	-	-	-
BE-027-PA	Play Area (PA)	113	44	68	112	104	279	264	307	173	-	-	-	-	-
	TOTALS	11,105									13.3			13.3	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

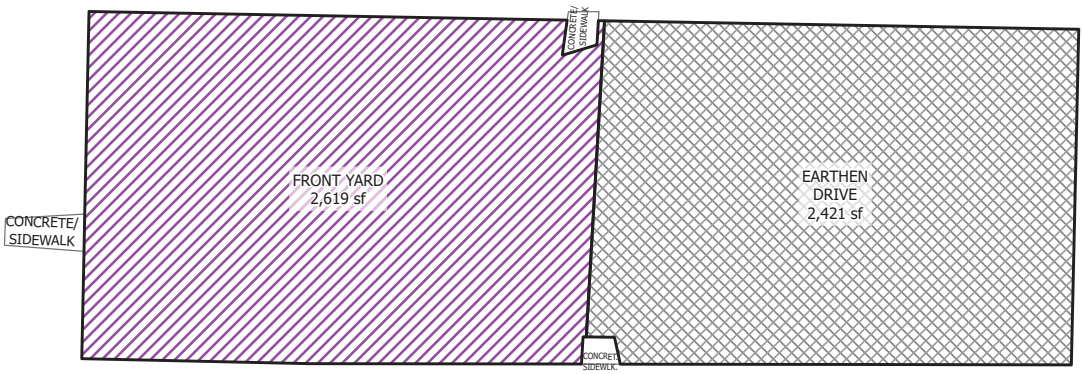
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-028

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-028			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-028-ED	Earthen Drive (ED)	2,421	8	15	32	52	25	327	362	804	134.5	89.7	-	44.8	-
BE-028-FY	Front Yard (FY)	2,619	29	38	57	19	348	788	877	125	97.0	97.0	2,619	-	-
	TOTALS	5,040									231.5	186.7	2,619	44.8	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

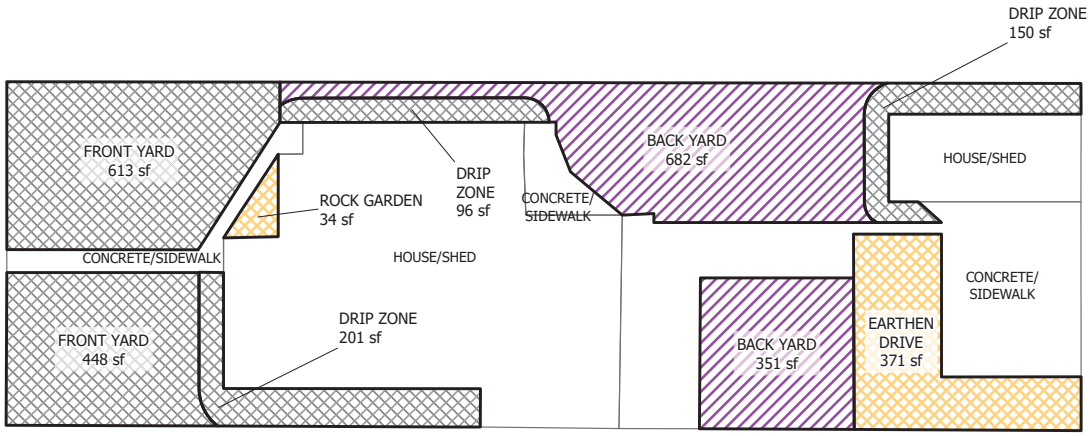
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
12" RA
18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-029

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-029			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-13"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-029-BY	Back Yard (BY)	1,033	25	23	55	45	522	405	507	215	38.3	38.3	1,033	-	-
BE-029-DZ	Drip Zone (DZ)	447	29	28	30	29	896	586	263	453	24.8	24.8	447	-	-
BE-029-ED	Earthen Drive (ED)	371	13	19	24	36	359	1900	250	225	6.9	-	-	6.9	-
BE-029-FY	Front Yard (FY)	1,061	23	27	43	98	483	634	307	466	58.9	58.9	1,061	-	-
BE-029-RG	Rock Garden (RG)	34	21	34	45	30	1030	792	127	58	0.6	0.6	-	-	-
	TOTALS	2,946									129.5	122.6	2,541	6.9	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

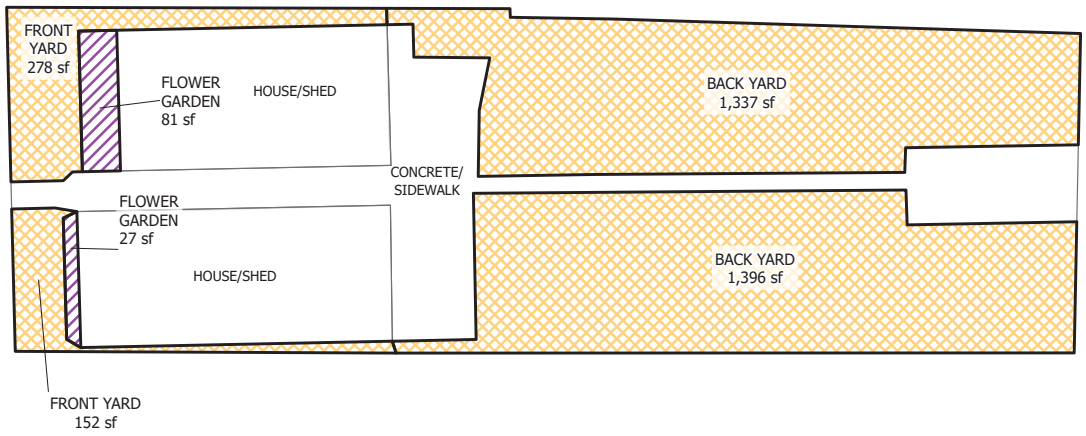
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- 6" RA
- 12" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-030

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-030			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-030-BY	Back Yard (BY)	2,733	31	50	59	88	530	587	335	254	50.6	50.6	2,733	-	-
BE-030-FG	Flower Garden (FG)	108	18	18	66	42	657	391	434	135	4.0	4.0	108	-	-
BE-030-FY	Front Yard (FY)	430	20	41	49	77	456	417	175	259	8.0	8.0	430	-	-
	TOTALS	3,271									62.6	62.6	3,271		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

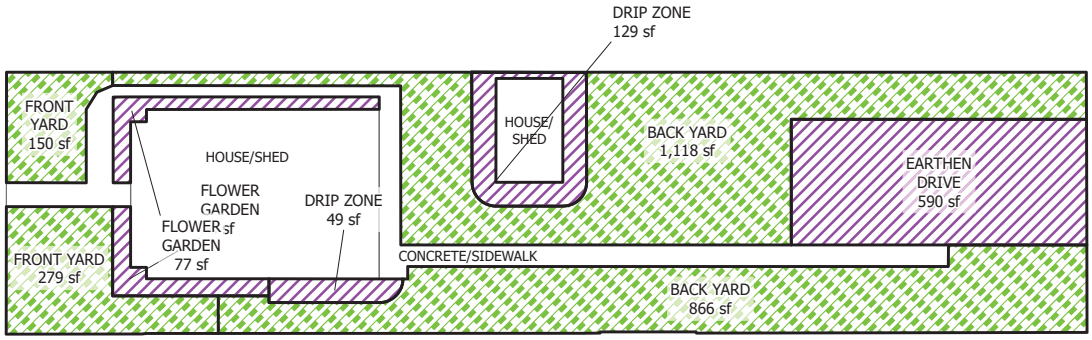
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
6" RA
12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-031

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-031			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-031-BY	Back Yard (BY)	1,984	28	39	48	29	367	389	201	13	-	-	-	-	-
BE-031-DZ	Drip Zone (DZ)	178	30	34	24	15	970	1210	460	151	6.6	6.6	178	-	-
BE-031-ED	Earthen Drive (ED)	590	41	80	103	97	432	569	509	384	21.9	10.9	-	10.9	-
BE-031-FG	Flower Garden (FG)	143	15	27	31	36	23	785	582	292	5.3	5.3	143	-	-
BE-031-FY	Front Yard (FY)	429	29	26	75	87	221	185	231	88	-	-	-	-	-
	TOTALS	3,324									33.8	22.8	321	10.9	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

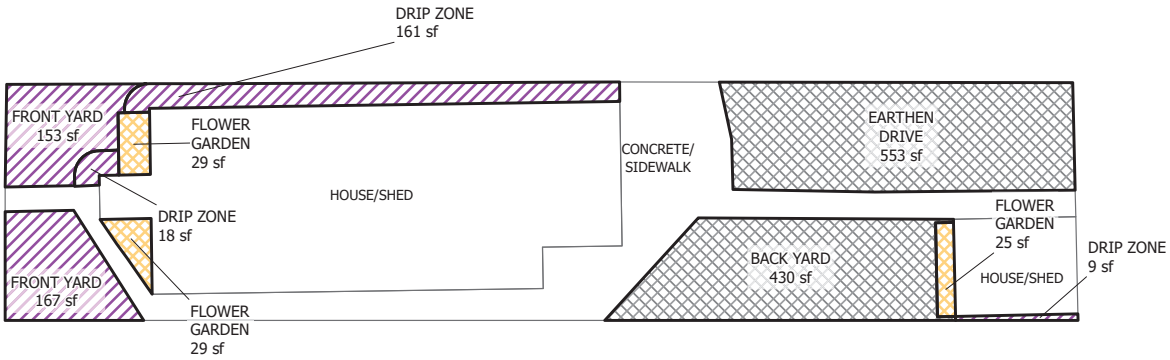
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-032

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-032			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-032-BY	Back Yard (BY)	430	25	31	23	40	185	229	292	621	23.9	23.9	430	-	-
BE-032-DZ	Drip Zone (DZ)	184	32	51	56	30	595	1120	710	297	6.8	6.8	184	-	-
BE-032-ED	Earthen Drive (ED)	553	23	71	31	59	681	653	438	638	30.7	20.5	-	10.2	-
BE-032-FG	Flower Garden (FG)	83	40	2	9	10	513	4	39	240	1.5	1.5	83	-	-
BE-032-FY	Front Yard (FY)	324	53	85	45	17	734	577	429	68	12.0	12.0	324	-	-
	TOTALS	1,574									74.9	64.7	1,021	10.2	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

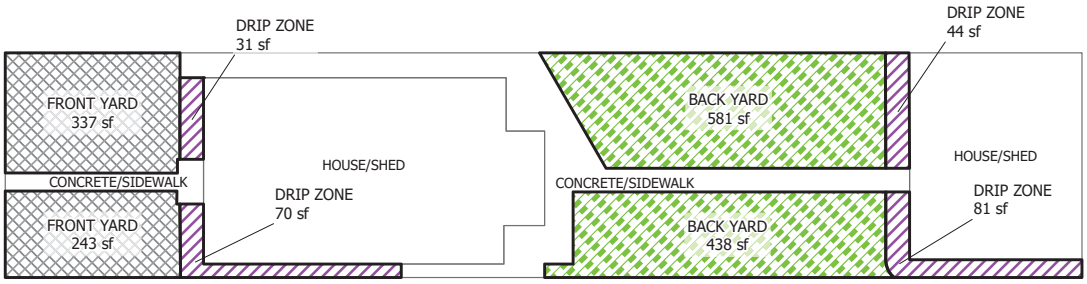
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- 6" RA
- 12" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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NOTE: BY Unable to sample due to tree and power line hazard. Additional sampling will be attempted.

Resident ID
BE-033

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-033			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-033-BY	Back Yard (BY)	1,019	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	-	-	-	-
BE-033-DZ	Drip Zone (DZ)	226	41	27	27	37	217	187	861	163	8.4	8.4	226	-	-
BE-033-FY	Front Yard (FY)	580	22	15	15	25	425	76	74	591	32.2	32.2	580	-	-
	TOTALS	1,825									40.6	40.6	806		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

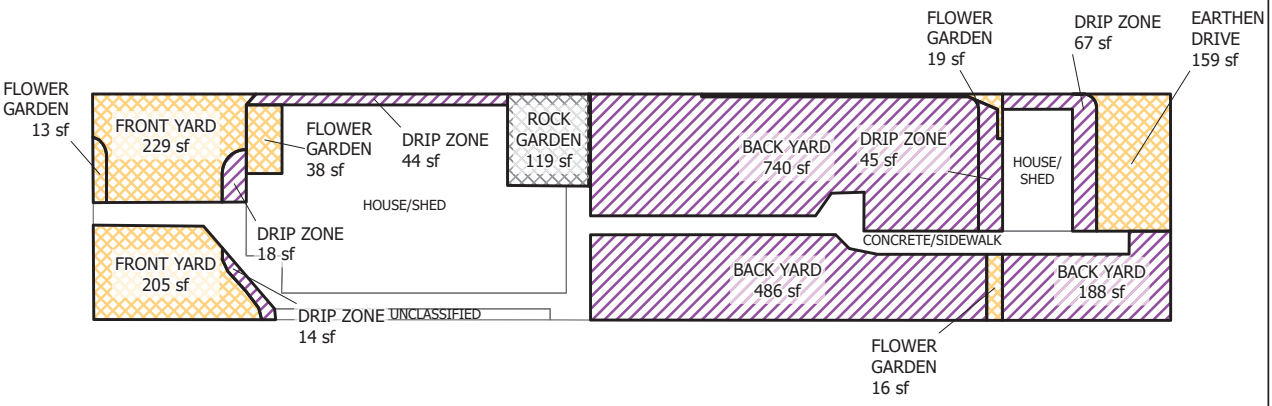
Legend

No Action
12" RA
18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-034

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-034			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-034-BY	Back Yard (BY)	1,414	42	36	53	42	289	333	426	199	52.4	52.4	1,414	-	-
BE-034-DZ	Drip Zone (DZ)	188	15	60	50	86	17	633	675	237	7.0	7.0	188	-	-
BE-034-ED	Earthen Drive (ED)	159	28	54	46	52	306	743	375	345	2.9	-	-	2.9	-
BE-034-FG	Flower Garden (FG)	86	46	39	42	30	437	387	268	79	1.6	1.6	86	-	-
BE-034-FY	Front Yard (FY)	434	60	37	41	65	405	418	302	293	8.0	8.0	434	-	-
BE-034-RG	Rock Garden (RG)	119	49	59	82	87	466	481	316	601	6.6	6.6	-	-	-
	TOTALS	2,400									78.5	75.6	2,122	2.9	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

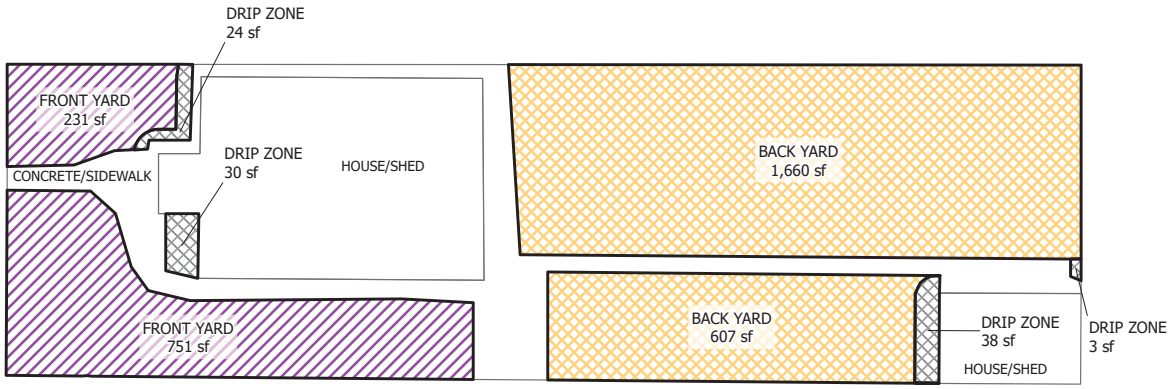
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- 6" RA
- 12" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-035

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-035			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-035-BY	Back Yard (BY)	2,267	46	59	43	24	581	653	356	78	42.0	42.0	2,267	-	-
BE-035-DZ	Drip Zone (DZ)	95	32	88	49	50	837	687	595	434	5.3	5.3	95	-	-
BE-035-FY	Front Yard (FY)	982	32	30	38	40	553	594	448	334	36.4	36.4	982	-	-
	TOTALS	3,344									83.7	83.7	3,344		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

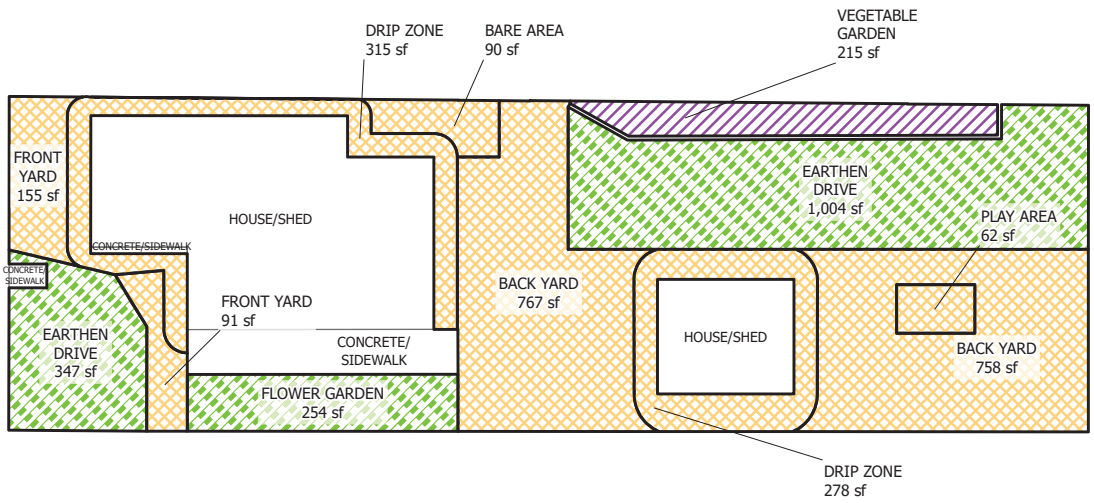
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
6" RA
12" RA
18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-036

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-036			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-036-BA	Bare Area (BA)	90	54	38	68	36	308	405	164	75	1.7	1.7	90	-	-
BE-036-BY	Back Yard (BY)	1,525	43	48	43	41	546	433	192	180	28.2	28.2	1,525	-	-
BE-036-DZ	Drip Zone (DZ)	593	31	49	35	45	255	409	152	90	11.0	11.0	593	-	-
BE-036-ED	Earthen Drive (ED)	1,351	31	77	46	24	365	363	85	10	-	-	-	-	-
BE-036-FG	Flower Garden (FG)	254	23	26	32	50	315	297	267	214	-	-	-	-	-
BE-036-FY	Front Yard (FY)	246	39	40	39	51	472	634	168	159	4.6	4.6	246	-	-
BE-036-PA	Play Area (PA)	62	58	91	49	58	538	401	67	9	1.1	1.1	62	-	-
BE-036-VG	Vegetable Garden (VG)	215	29	37	42	40	424	372	467	343	8.0	8.0	215	-	-
	TOTALS	4,336									54.6	54.6	2,731		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

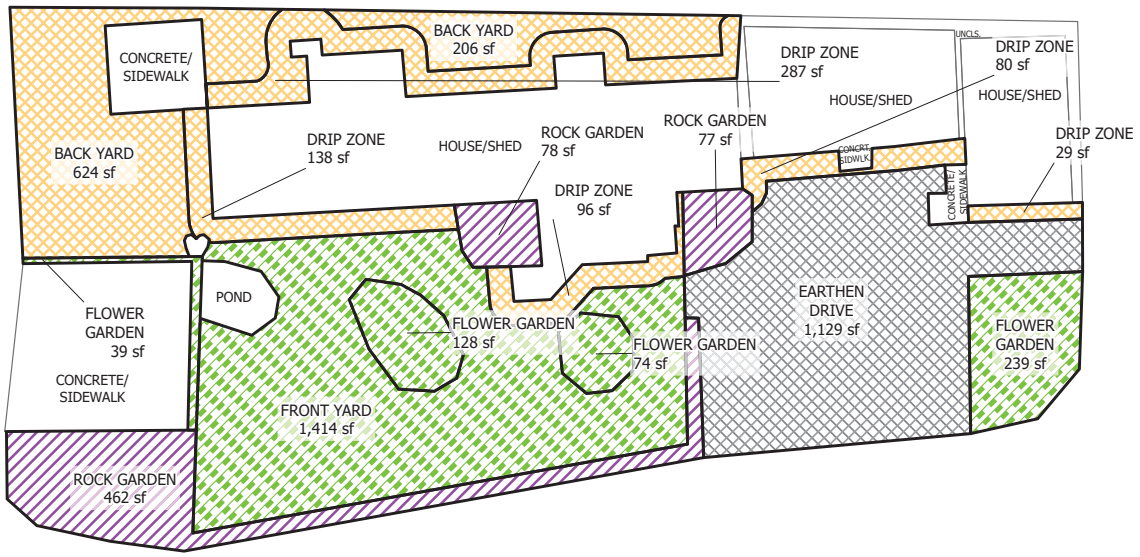
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-037

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-037			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-037-BY	Back Yard (BY)	830	37	14	20	34	408	112	168	162	15.4	15.4	830	-	-
BE-037-DZ	Drip Zone (DZ)	630	26	37	23	21	270	573	194	83	11.7	11.7	630	-	-
BE-037-ED	Earthen Drive (ED)	1,129	49	11	25	68	441	39	252	826	62.7	41.8	-	20.9	-
BE-037-FG	Flower Garden (FG)	480	28	8	7	8	226	41	55	44	-	-	-	-	-
BE-037-FY	Front Yard (FY)	1,414	7	7	9	7	15	11	309	149	-	-	-	-	-
BE-037-RG	Rock Garden (RG)	617	27	31	52	56	290	303	465	265	22.9	22.9	-	-	-
	TOTALS	5,100									112.7	91.8	1,460	20.9	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

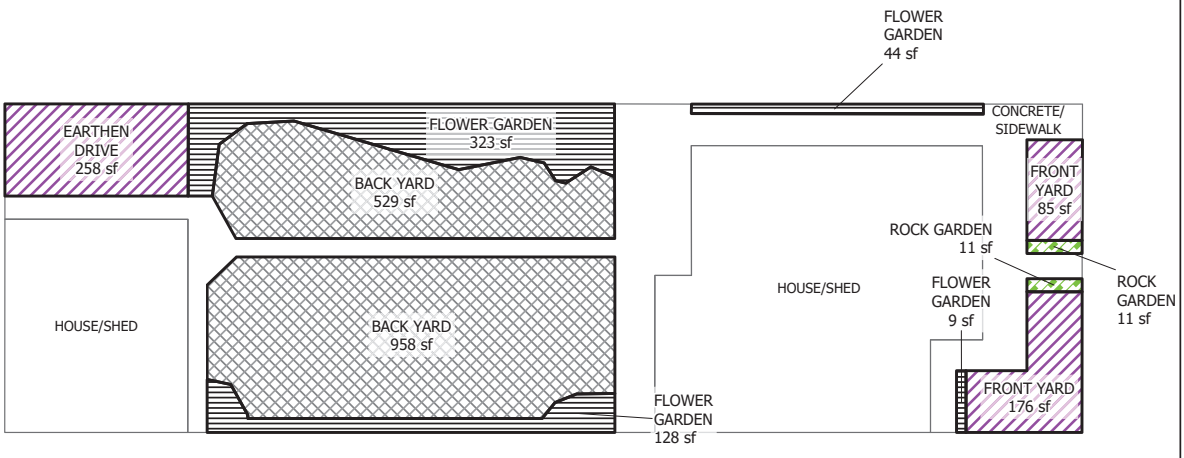
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-039

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-039			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-039-BY	Back Yard (BY)	1,487	27	36	61	88	297	361	552	414	82.6	82.6	1,487	-	-
BE-039-ED	Earthen Drive (ED)	258	46	66	141	82	457	579	580	225	9.6	4.8	-	4.8	-
BE-039-FG	Flower Garden (FG)	504	31	70	45	163	377	410	233	632	37.3	37.3	504	-	-
BE-039-FY	Front Yard (FY)	261	14	13	36	15	223	130	428	312	9.7	9.7	261	-	-
BE-039-RG	Rock Garden (RG)	22	20	31	13	6	249	317	17	7	-	-	-	-	-
	TOTALS	2,532									139.2	134.4	2,252	4.8	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

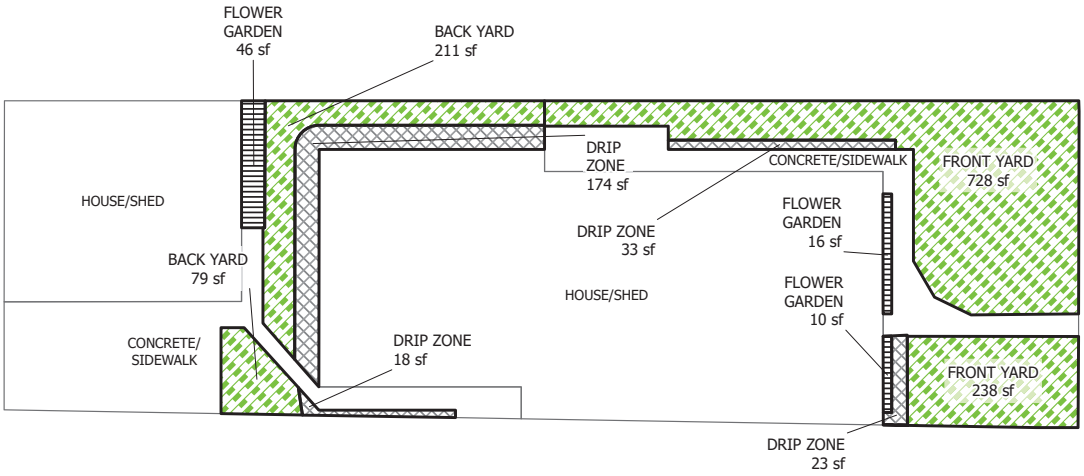
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 12" RA
- 18" RA
- 24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-040

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-040			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-13"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-040-BY	Back Yard (BY)	290	21	36	62	126	116	354	368	350	-	-	-	-	-
BE-040-DZ	Drip Zone (DZ)	248	18	21	28	39	206	191	313	496	13.8	13.8	248	-	-
BE-040-FG	Flower Garden (FG)	72	16	16	26	41	234	262	357	509	5.3	5.3	72	-	-
BE-040-FY	Front Yard (FY)	966	12	9	18	31	160	26	145	79	-	-	-	-	-
	TOTALS	1,576									19.1	19.1	320		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

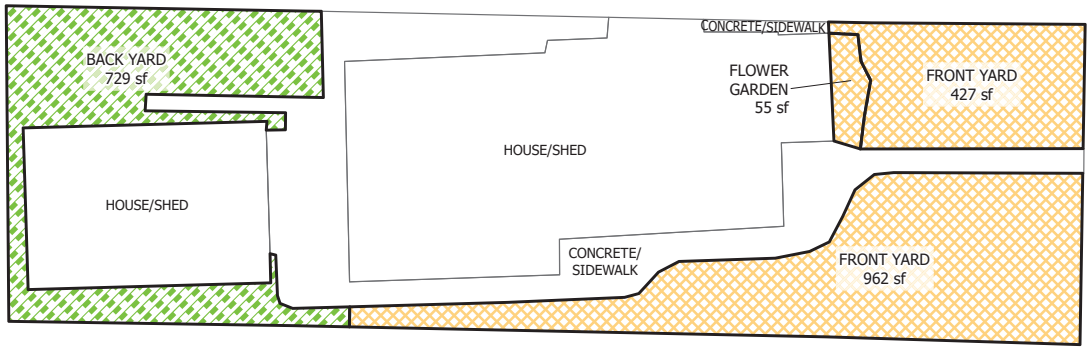
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 18" RA
- 24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-041

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-041			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-041-BY	Back Yard (BY)	729	21	29	37	41	281	315	323	92	-	-	-	-	-
BE-041-FG	Flower Garden (FG)	55	23	41	40	32	439	444	188	96	1.0	1.0	55	-	-
BE-041-FY	Front Yard (FY)	1,389	35	51	38	30	534	679	193	34	25.7	25.7	1,389	-	-
	TOTALS	2,173									26.7	26.7	1,444		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

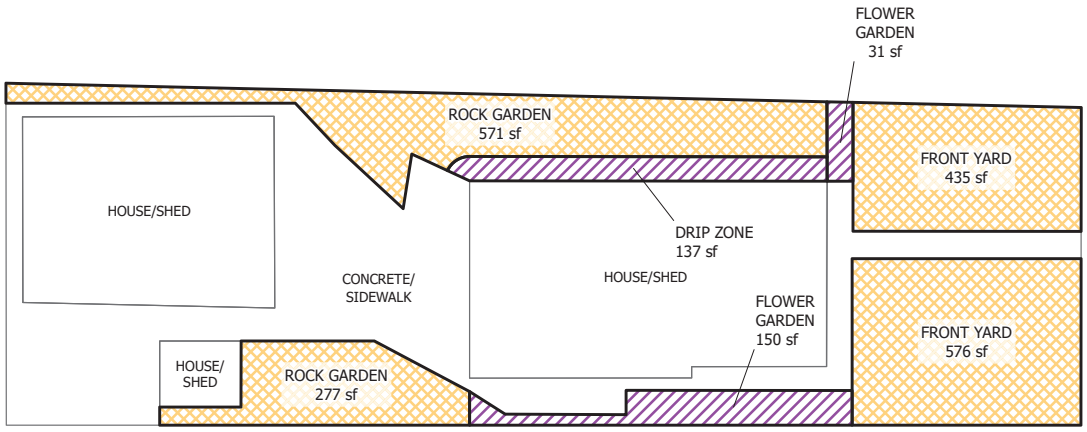
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-042

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-042			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-042-DZ	Drip Zone (DZ)	137	24	36	53	36	787	771	1030	91	5.1	5.1	137	-	-
BE-042-FG	Flower Garden (FG)	181	33	39	47	24	695	729	415	97	6.7	6.7	181	-	-
BE-042-FY	Front Yard (FY)	1,011	28	35	43	26	313	604	285	36	18.7	18.7	1,011	-	-
BE-042-RG	Rock Garden (RG)	848	47	69	71	51	365	400	320	172	15.7	15.7	-	-	-
	TOTALS	2,177									46.2	46.2	1,329		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

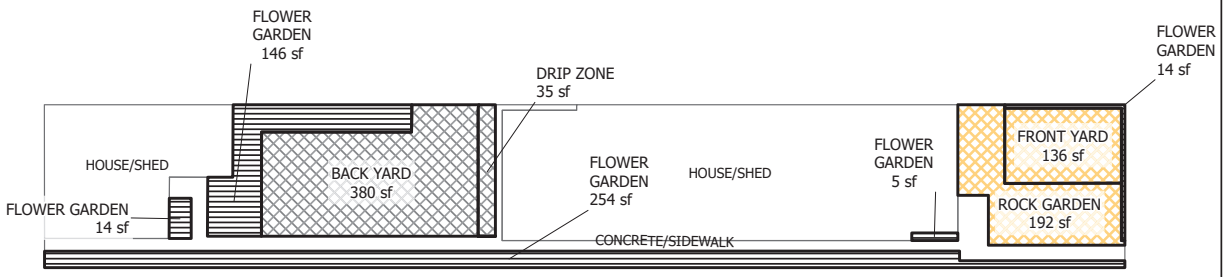
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
6" RA
12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-043

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-043			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-043-BY	Back Yard (BY)	380	47	40	53	71	819	630	436	456	21.1	21.1	380	-	-
BE-043-DZ	Drip Zone (DZ)	35	52	61	86	57	6270	1110	400	586	1.9	1.9	35	-	-
BE-043-FG	Flower Garden (FG)	433	46	42	56	46	1130	459	362	768	32.1	32.1	433	-	-
BE-043-FY	Front Yard (FY)	136	57	61	80	47	2090	453	116	35	2.5	2.5	136	-	-
BE-043-RG	Rock Garden (RG)	192	52	53	43	26	1010	547	47	14	3.6	3.6	-	-	-
	TOTALS	1,176									61.2	61.2	984		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

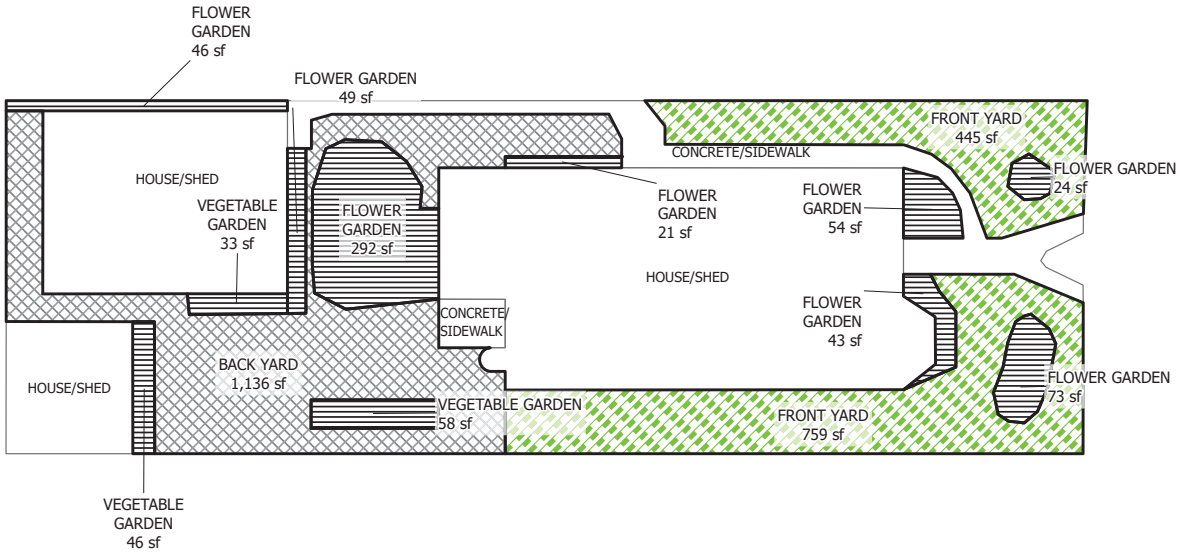
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
6" RA
18" RA
24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-044

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-044			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-044-BY	Back Yard (BY)	1,136	37	52	64	84	432	478	460	722	63.1	63.1	1,136	-	-
BE-044-DZ	Drip Zone (DZ)	220	18	18	28	27	129	110	179	199	-	-	-	-	-
BE-044-FG	Flower Garden (FG)	602	51	40	69	68	492	343	409	416	44.6	44.6	602	-	-
BE-044-FY	Front Yard (FY)	1,204	18	18	54	23	187	129	111	128	-	-	-	-	-
BE-044-VG	Vegetable Garden (VG)	137	108	81	50	45	715	641	579	467	10.1	10.1	137	-	-
	TOTALS	3,299									117.8	117.8	1,875		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

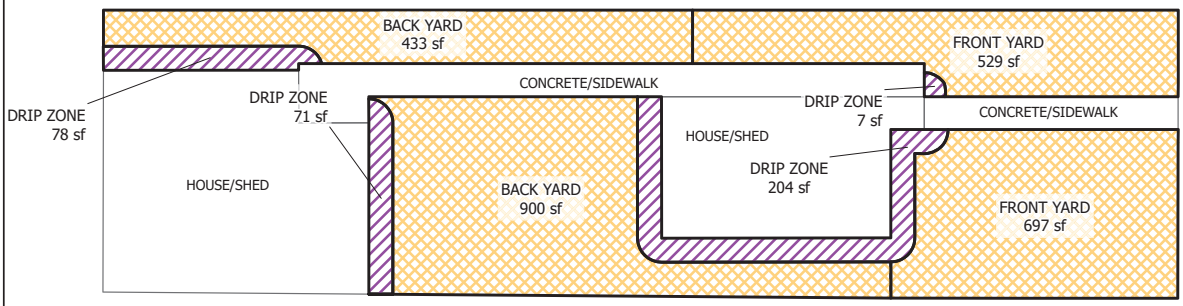
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 18" RA
- 24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-045

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-045			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-045-BY	Back Yard (BY)	1,333	39	44	51	50	1370	865	339	252	24.7	24.7	1,333	-	-
BE-045-DZ	Drip Zone (DZ)	360	28	46	32	25	699	764	501	235	13.3	13.3	360	-	-
BE-045-FY	Front Yard (FY)	1,226	37	47	88	92	489	509	351	167	22.7	22.7	1,226	-	-
	TOTALS	2,919									60.7	60.7	2,919		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

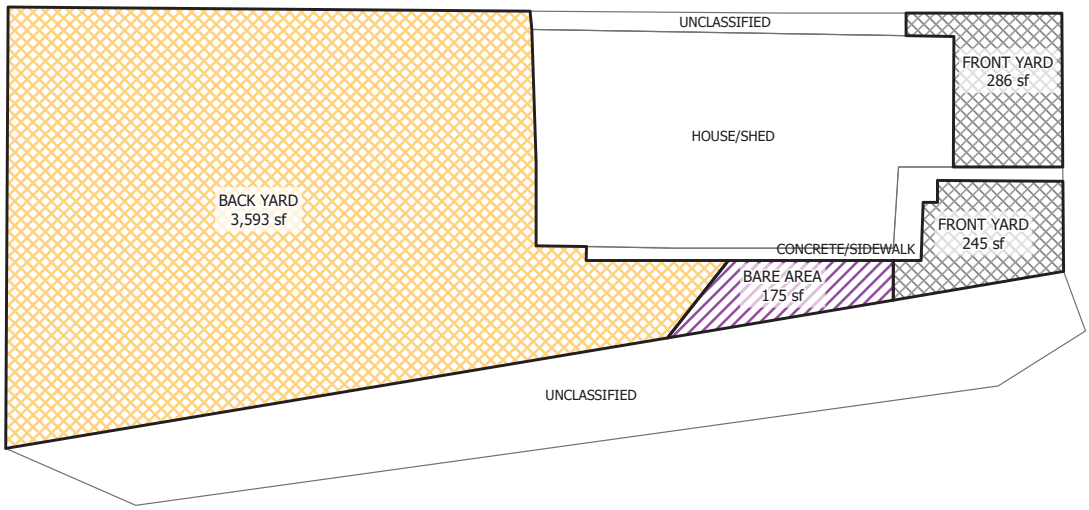
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
6" RA
12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-046

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-046			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-046-BA	Bare Area (BA)	175	77	64	67	63	799	805	504	244	6.5	6.5	175	-	-
BE-046-BY	Back Yard (BY)	3,593	121	91	77	71	845	691	290	196	66.5	66.5	3,593	-	-
BE-046-DZ	Drip Zone (DZ)	220	11	27	40	50	135	346	218	123	-	-	-	-	-
BE-046-FY	Front Yard (FY)	531	96	145	140	255	1360	1160	118	1480	29.5	29.5	531	-	-
	TOTALS	4,519									102.5	102.5	4,299		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

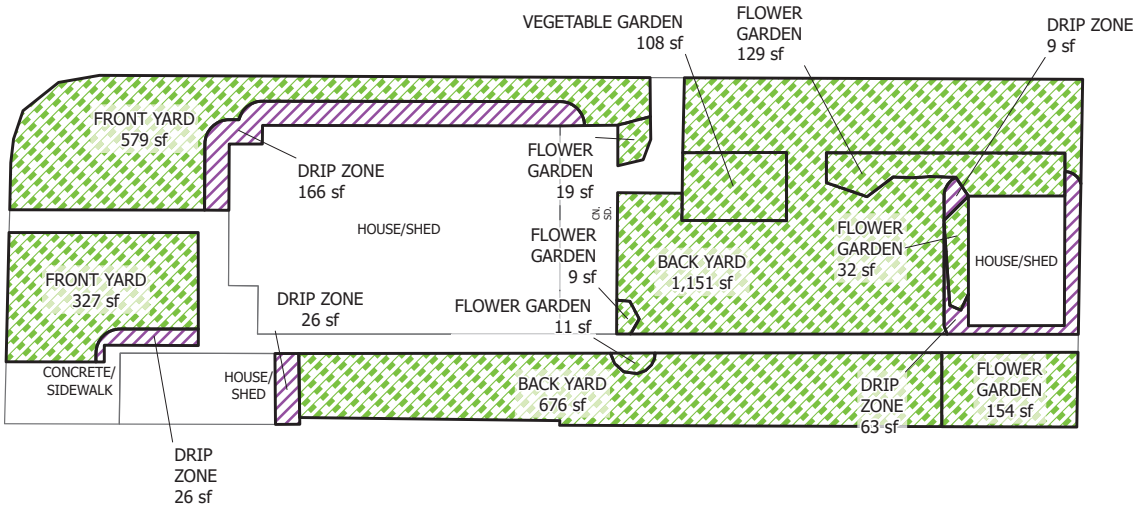
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- 6" RA
- 12" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-047

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-047			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-047-BY	Back Yard (BY)	1,827	18	20	23	59	242	234	165	260	-	-	-	-	-
BE-047-DZ	Drip Zone (DZ)	290	76	100	99	29	1580	1260	1220	124	10.7	10.7	290	-	-
BE-047-FG	Flower Garden (FG)	354	18	20	21	29	208	222	176	164	-	-	-	-	-
BE-047-FY	Front Yard (FY)	906	12	21	33	47	140	325	369	186	-	-	-	-	-
BE-047-VG	Vegetable Garden (VG)	108	25	25	34	57	207	194	157	190	-	-	-	-	-
	TOTALS	3,485									10.7	10.7	290		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

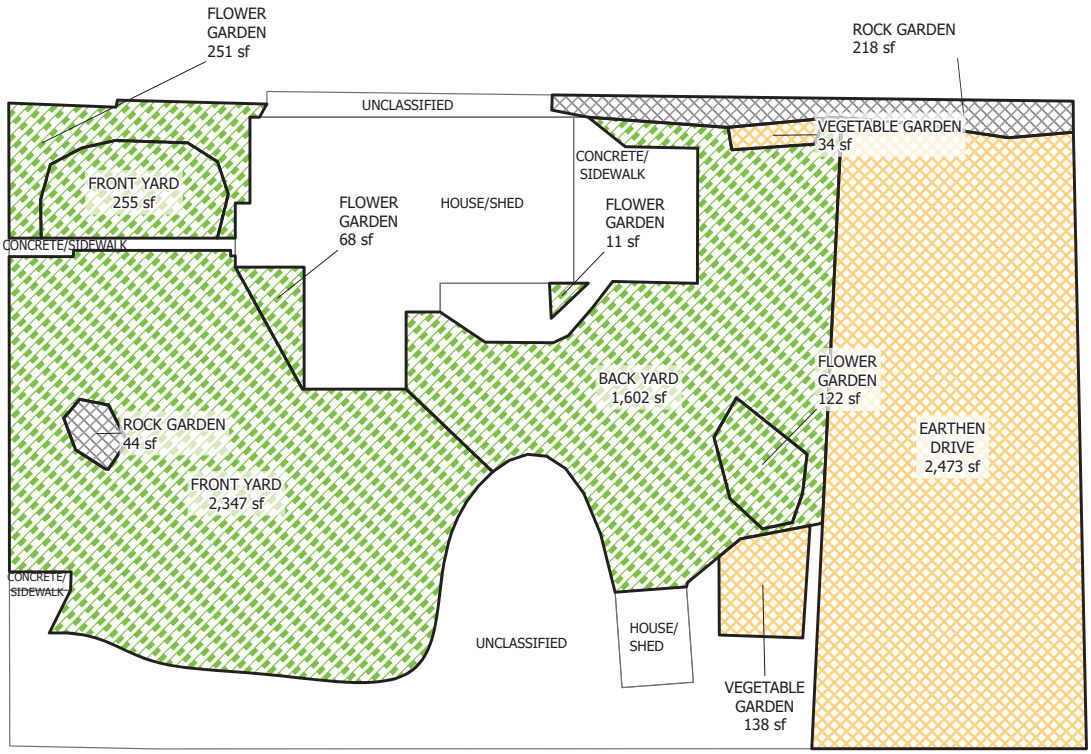
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 12" RA

N

Woodard & Curran
PROJECT #: 0231336
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Resident ID
BE-048

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-048			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-048-BY	Back Yard (BY)	1,602	23	27	50	128	193	104	18	22	-	-	-	-	-
BE-048-DZ	Drip Zone (DZ)	220	39	40	35	32	90	81	75	35	-	-	-	-	-
BE-048-ED	Earthen Drive (ED)	2,473	30	214	73	64	259	165	164	104	45.8	-	-	45.8	-
BE-048-FG	Flower Garden (FG)	452	25	34	80	77	39	4	79	51	-	-	-	-	-
BE-048-FY	Front Yard (FY)	2,602	30	40	38	19.1	334	330	143	53	-	-	-	-	-
BE-048-RG	Rock Garden (RG)	262	18	36	65	104	244	626	587	461	14.6	14.6	-	-	-
BE-048-VG	Vegetable Garden (VG)	172	30	33	50	86	438	431	309	237	3.2	3.2	172	-	-
	TOTALS	7,783									63.6	17.8	172	45.8	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

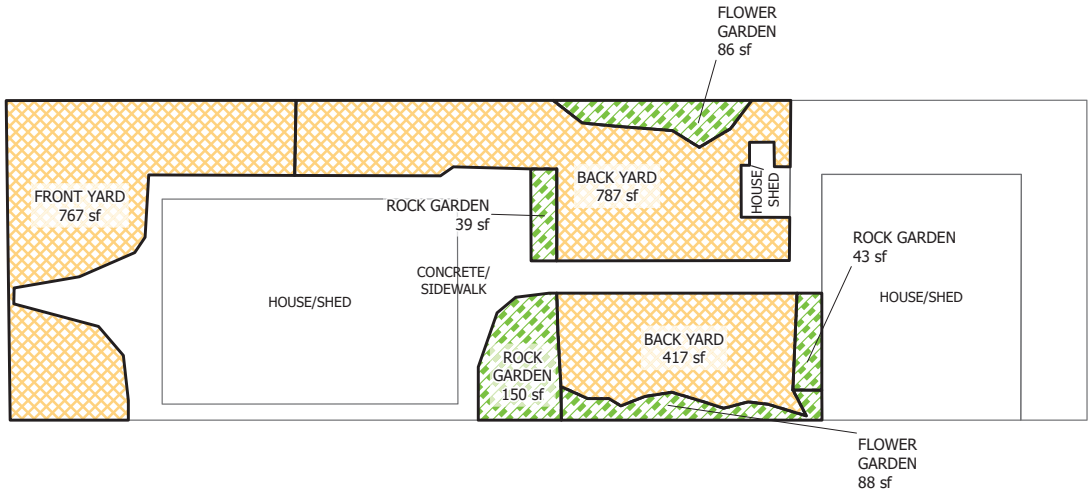
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-049

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-049			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-049-BY	Back Yard (BY)	1,204	21	25	36	69	512	206	175	257	22.3	22.3	1,204	-	-
BE-049-FG	Flower Garden (FG)	174	11	28	40	56	57	254	223	235	-	-	-	-	-
BE-049-FY	Front Yard (FY)	767	22	39	20	22	770	338	26	300	14.2	14.2	767	-	-
BE-049-RG	Rock Garden (RG)	232	15	26	43	85	12	291	375	382	-	-	-	-	-
	TOTALS	2,377									36.5	36.5	1,971		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

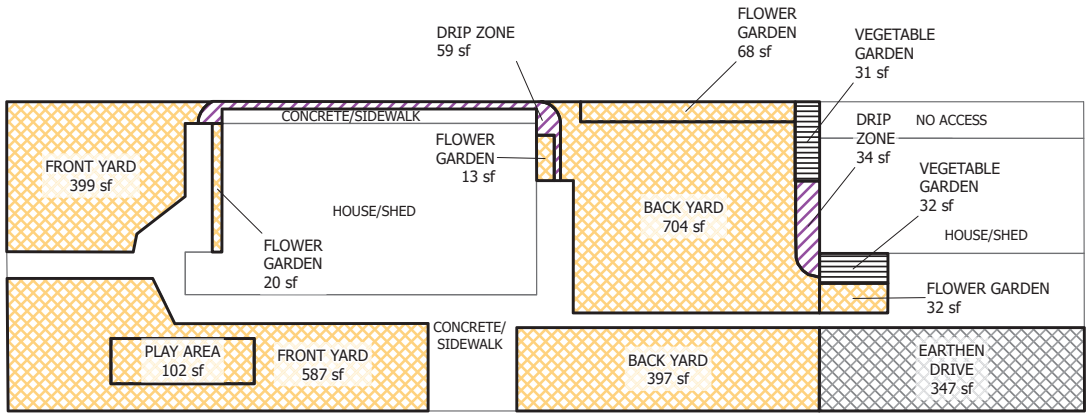
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-050

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-050			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-050-BY	Back Yard (BY)	1,101	26	54	47	34	333	576	302	117	20.4	20.4	1,101	-	-
BE-050-DZ	Drip Zone (DZ)	93	33	21	32	85	829	161	939	296	3.4	3.4	93	-	-
BE-050-ED	Earthen Drive (ED)	347	29	41	54	216	150	177	631	3100	19.3	12.9	-	6.4	-
BE-050-FG	Flower Garden (FG)	133	37	43	38	31	495	414	186	65	2.5	2.5	133	-	-
BE-050-FY	Front Yard (FY)	986	19	41	36	15	246	489	267	26	18.3	18.3	986	-	-
BE-050-PA	Play Area (PA)	102	29	35	52	57	394	407	332	387	1.9	1.9	102	-	-
BE-050-VG	Vegetable Garden (VG)	63	57	61	104	48	955	1150	679	427	4.7	4.7	63	-	-
	TOTALS	2,825									70.5	64.1	2,478	6.4	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

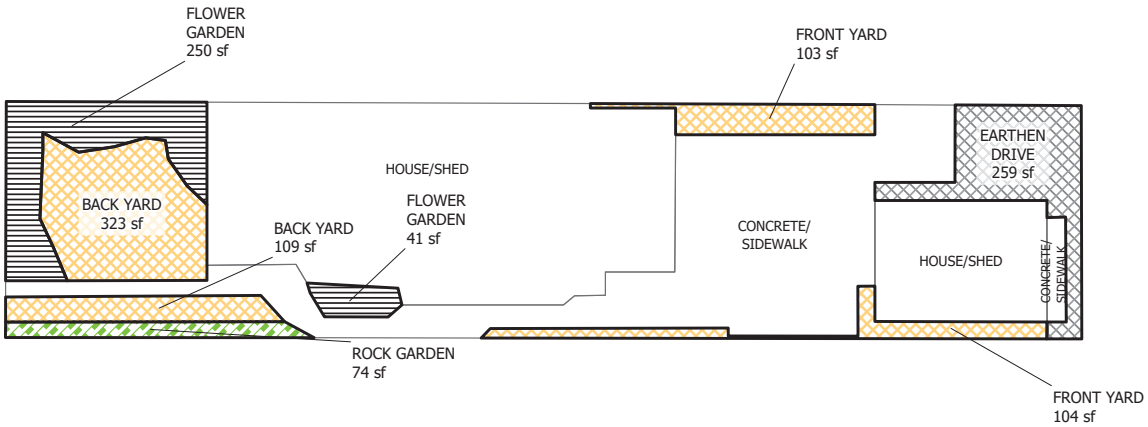
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- 6" RA
- 12" RA
- 18" RA
- 24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-052

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-052			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-052-BY	Back Yard (BY)	432	83	42	55	62	392	465	288	239	8.0	8.0	432	-	-
BE-052-DZ	Drip Zone (DZ)	220	110	16	17	14	262	38	40	39	-	-	-	-	-
BE-052-ED	Earthen Drive (ED)	259	31	195	170	88	306	293	1220	491	14.4	9.6	-	4.8	-
BE-052-FG	Flower Garden (FG)	291	47	99	247	43	312	484	154	524	21.6	21.6	291	-	-
BE-052-FY	Front Yard (FY)	207	61	61	16	45	612	591	43	387	3.8	3.8	207	-	-
BE-052-RG	Rock Garden (RG)	74	17	17	41	64	32	124	37	279	-	-	-	-	-
	TOTALS	1,483									47.8	43.0	930	4.8	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

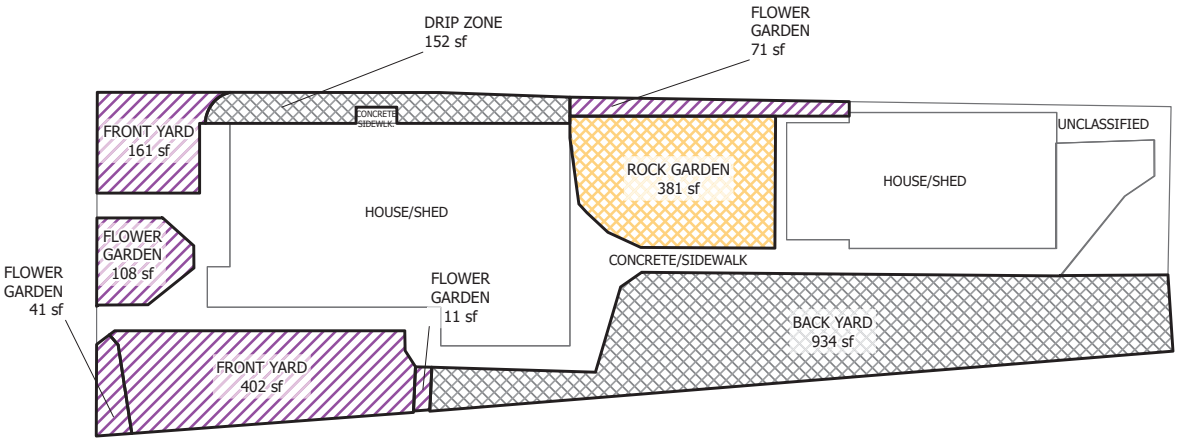
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 18" RA
- 24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-053

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-053			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-053-BY	Back Yard (BY)	934	21	28	51	42	288	346	441	550	51.9	51.9	934	-	-
BE-053-DZ	Drip Zone (DZ)	152	41	57	71	80	445	710	483	689	8.4	8.4	152	-	-
BE-053-FG	Flower Garden (FG)	231	46	61	46	108	402	437	505	338	8.6	8.6	231	-	-
BE-053-FY	Front Yard (FY)	563	40	38	49	43	380	352	434	276	20.9	20.9	563	-	-
BE-053-RG	Rock Garden (RG)	381	32	20	27	32	548	235	299	313	7.1	7.1	-	-	-
	TOTALS	2,261									96.9	96.9	1,880		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

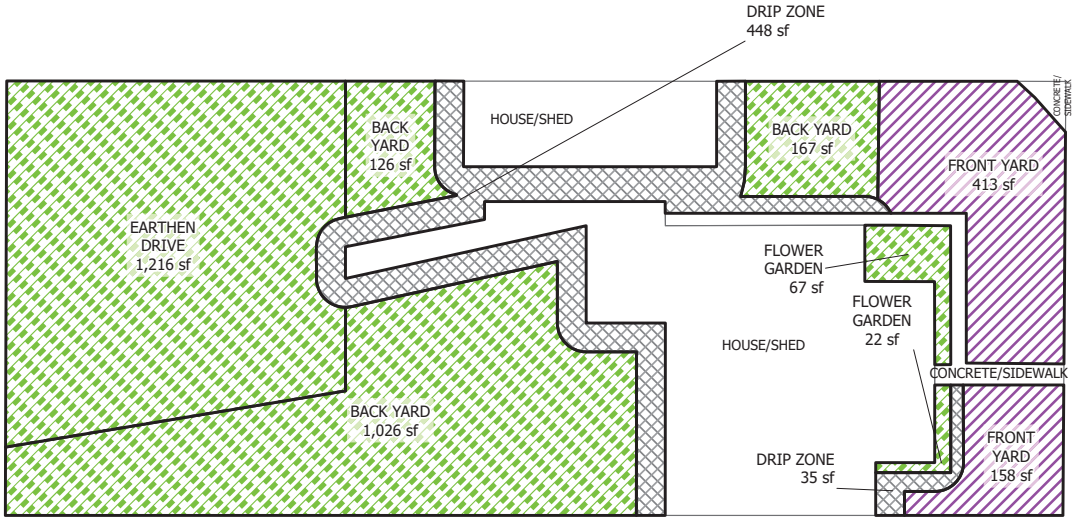
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- 6" RA
- 12" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-055

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-055			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-055-BY	Back Yard (BY)	1,319	30	32	49	52	338	331	290	228	-	-	-	-	-
BE-055-DZ	Drip Zone (DZ)	483	58	116	40	45	401	664	500	534	26.8	26.8	483	-	-
BE-055-ED	Earthen Drive (ED)	1,216	40	18	18	10	184	18	17	16	-	-	-	-	-
BE-055-FG	Flower Garden (FG)	89	21	29	34	38	236	230	193	134	-	-	-	-	-
BE-055-FY	Front Yard (FY)	571	581	774	382	120	2040	2110	994	393	21.1	21.1	571	-	-
	TOTALS	3,678									47.9	47.9	1,054		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

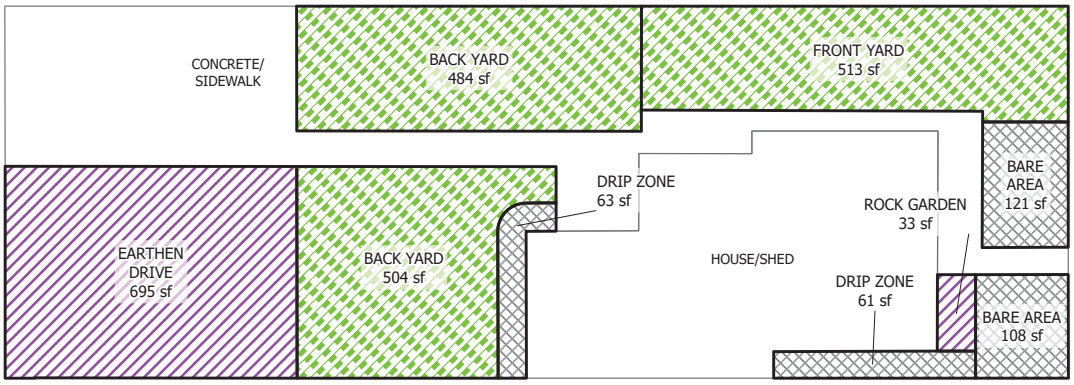
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 12" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-056

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-056			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-056-BA	Bare Area (BA)	229	35	38	66	105	408	388	230	439	12.7	12.7	229	-	-
BE-056-BY	Back Yard (BY)	988	29	46	54	75	357	307	292	211	-	-	-	-	-
BE-056-DZ	Drip Zone (DZ)	124	51	55	78	89	886	668	3280	657	6.9	6.9	124	-	-
BE-056-ED	Earthen Drive (ED)	695	12	8	15	21	41	9	601	367	25.7	12.9	-	12.9	-
BE-056-FY	Front Yard (FY)	513	24	42	60	43	299	249	346	358	-	-	-	-	-
BE-056-RG	Rock Garden (RG)	33	33	30	61	123	606	524	683	382	1.2	1.2	-	-	-
	TOTALS	2,582									46.5	33.7	353	12.9	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

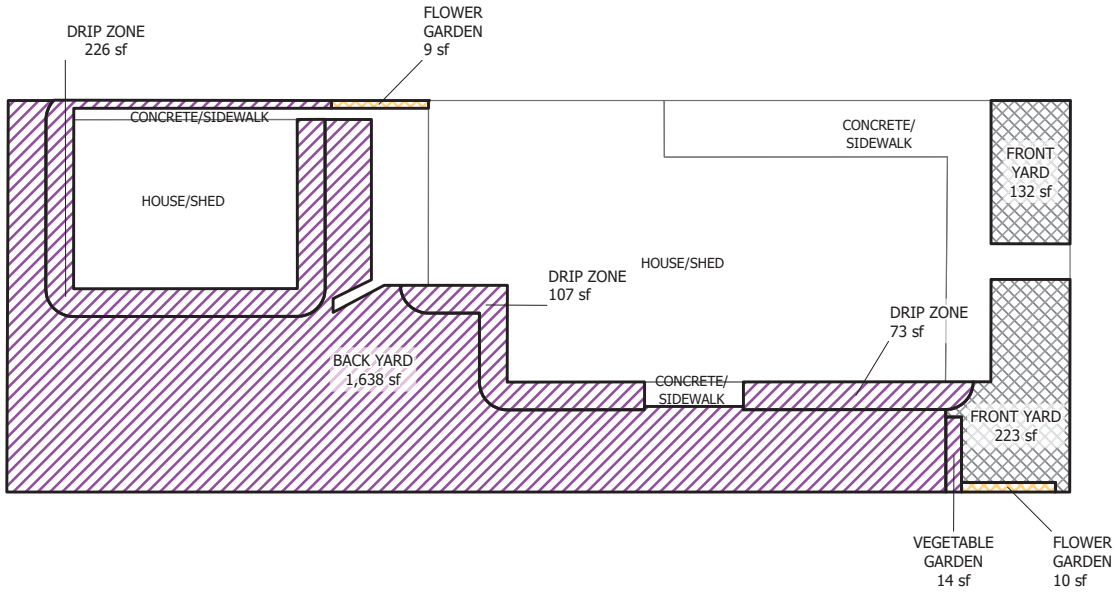
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 12" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-057

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-057			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-057-BY	Back Yard (BY)	1,638	36	52	47	45	634	563	508	228	60.7	60.7	1,638	-	-
BE-057-DZ	Drip Zone (DZ)	406	32	34	40	59	1390	1080	502	384	15.0	15.0	406	-	-
BE-057-FG	Flower Garden (FG)	19	28	37	60	30	394	674	258	130	0.4	0.4	19	-	-
BE-057-FY	Front Yard (FY)	355	36	35	37	106	125	37	41	1150	19.7	19.7	355	-	-
BE-057-VG	Vegetable Garden (VG)	14	22	31	29	28	377	416	507	346	0.5	0.5	14	-	-
	TOTALS	2,432									96.3	96.3	2,432		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

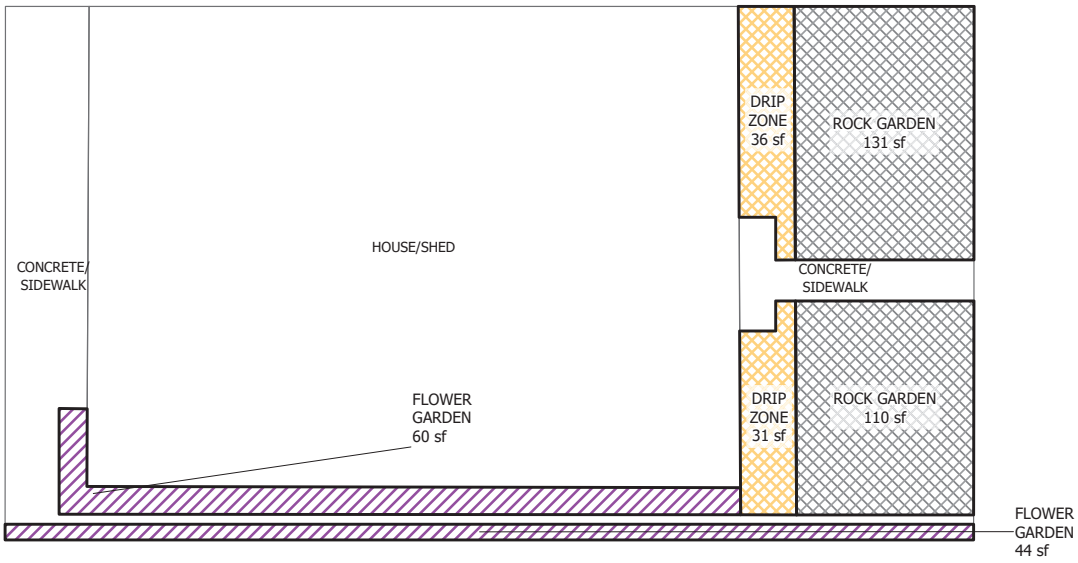
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- 6" RA
- 12" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-058A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-058A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-058A-DZ	Drip Zone (DZ)	67	54	67	54	49	976	1450	312	267	1.2	1.2	67	-	-
BE-058A-FG	Flower Garden (FG)	104	60	55	72	107	591	473	623	276	3.9	3.9	104	-	-
BE-058A-RG	Rock Garden (RG)	241	23	29	46	85	253	302	319	510	13.4	13.4	-	-	-
	TOTALS	412									18.5	18.5	171		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

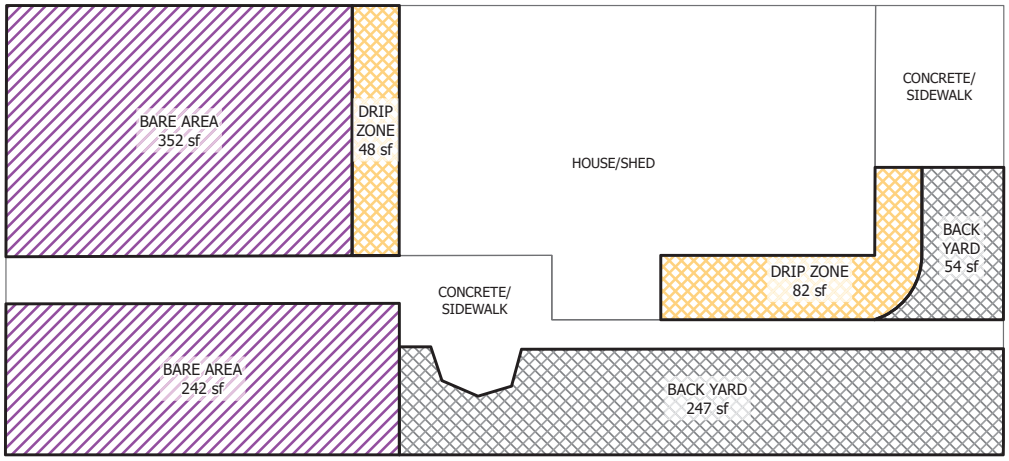
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
6" RA
12" RA
18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-058B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-058B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-058B-BA	Bare Area (BA)	594	20	26	29	30	199	313	433	350	22.0	22.0	594	-	-
BE-058B-BY	Back Yard (BY)	301	48	54	71	87	452	482	552	407	16.7	16.7	301	-	-
BE-058B-DZ	Drip Zone (DZ)	130	55	109	30	135	1020	761	247	281	2.4	2.4	130	-	-
	TOTALS	1,025									41.1	41.1	1,025		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

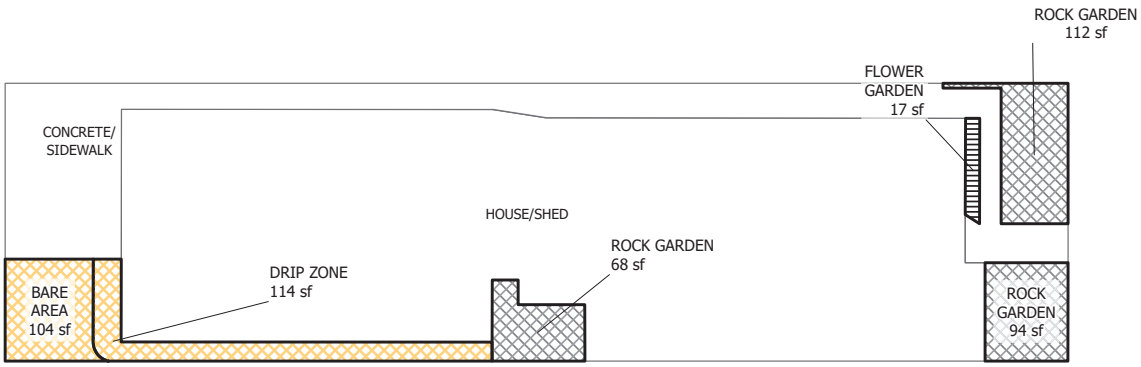
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
6" RA
12" RA
18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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NOTE: FG Sampling refusal at 6 inches during sampling. Exceedance to 24 inches assumed based upon the 0 to 6 inch samples.

Resident ID
BE-059

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-059			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-059-BA	Bare Area (BA)	104	66	62	88	84	575	387	291	246	1.9	1.9	104	-	-
BE-059-DZ	Drip Zone (DZ)	114	44	67	106	37	606	664	347	60	2.1	2.1	114	-	-
BE-059-FG	Flower Garden (FG)	17	43	43	N/A	N/A	461	461	N/A	N/A	1.3	1.3	17	-	-
BE-059-RG	Rock Garden (RG)	274	66	82	97	107	745	764	494	427	15.2	15.2	-	-	-
	TOTALS	509									20.5	20.5	235		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

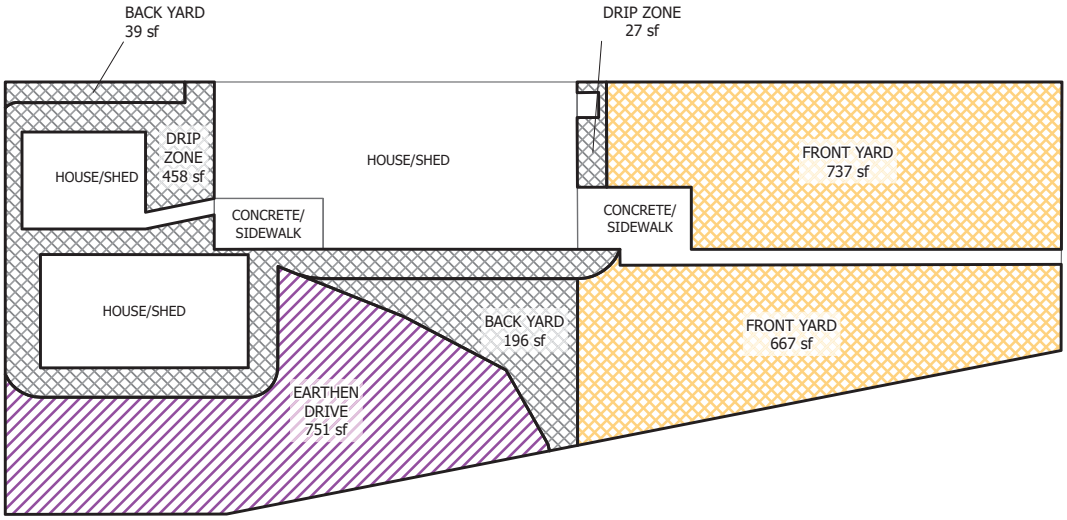
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
6" RA
18" RA
24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-060

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-060			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-060-BY	Back Yard (BY)	235	18	18	66	110	162	124	461	3610	13.1	13.1	235	-	-
BE-060-DZ	Drip Zone (DZ)	485	30	44	47	106	319	518	546	775	26.9	26.9	485	-	-
BE-060-ED	Earthen Drive (ED)	751	22	22	66	116	268	236	532	312	27.8	13.9	-	13.9	-
BE-060-FY	Front Yard (FY)	1,404	30	41	51	84	380	442	275	376	26.0	26.0	1,404	-	-
	TOTALS	2,875									93.8	79.9	2,124	13.9	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

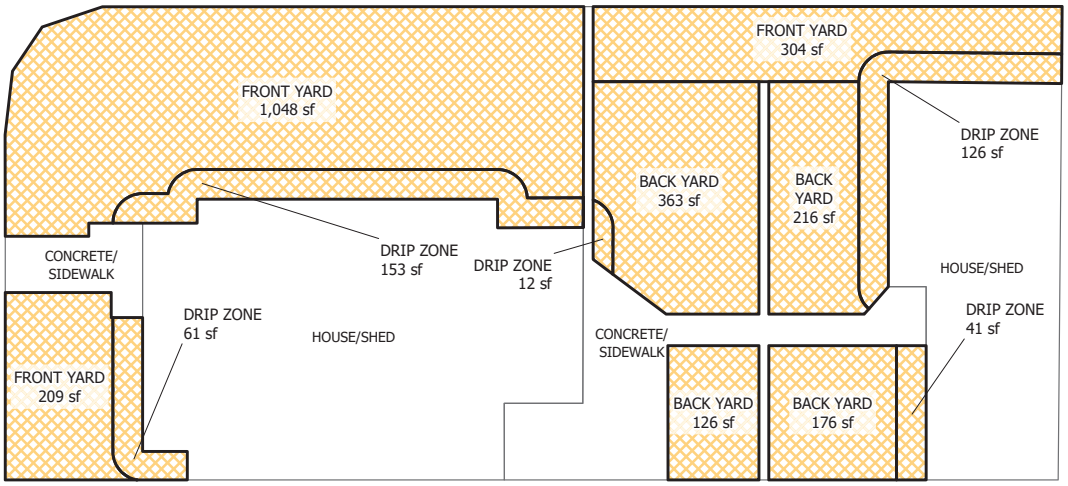
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- 6" RA
- 12" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-061

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-061			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-061-BY	Back Yard (BY)	881	23	35	44	23	451	350	255	51	16.3	16.3	881	-	-
BE-061-DZ	Drip Zone (DZ)	393	26	31	24	7	1230	759	204	42	7.3	7.3	393	-	-
BE-061-FY	Front Yard (FY)	1,561	22	15	15	37	846	60	61	56	28.9	28.9	1,561	-	-
	TOTALS	2,835									52.5	52.5	2,835		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

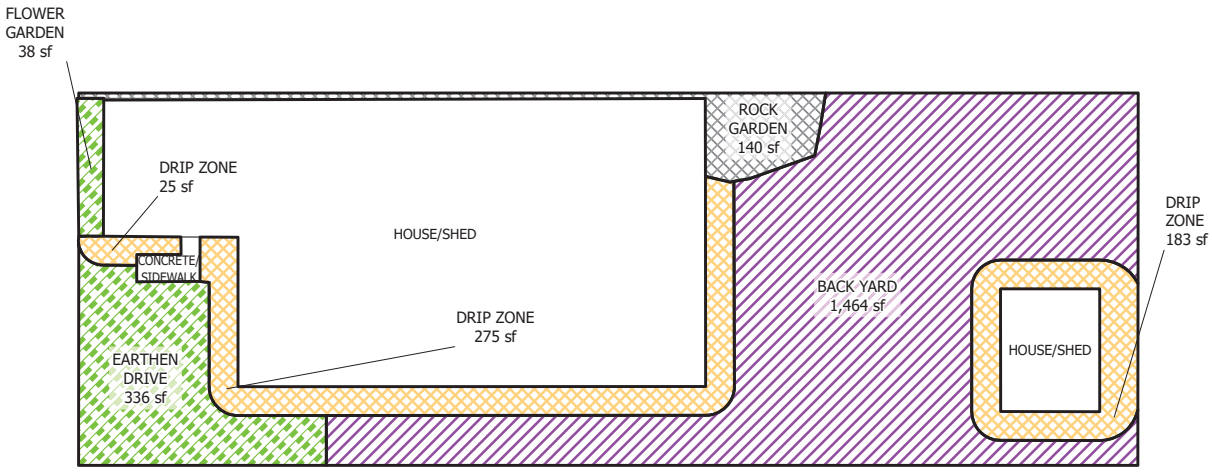
Legend

6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-062

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-062			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-062-BY	Back Yard (BY)	1,464	33	60	82	102	461	398	430	281	54.2	54.2	1,464	-	-
BE-062-DZ	Drip Zone (DZ)	483	20	32	49	22	715	460	324	78	8.9	8.9	483	-	-
BE-062-ED	Earthen Drive (ED)	336	11	11	20	21	26	61	189	218	-	-	-	-	-
BE-062-FG	Flower Garden (FG)	38	24	30	45	105	203	253	212	327	-	-	-	-	-
BE-062-RG	Rock Garden (RG)	140	35	34	27	64	763	480	301	455	7.8	7.8	-	-	-
	TOTALS	2,461									70.9	70.9	1,947		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

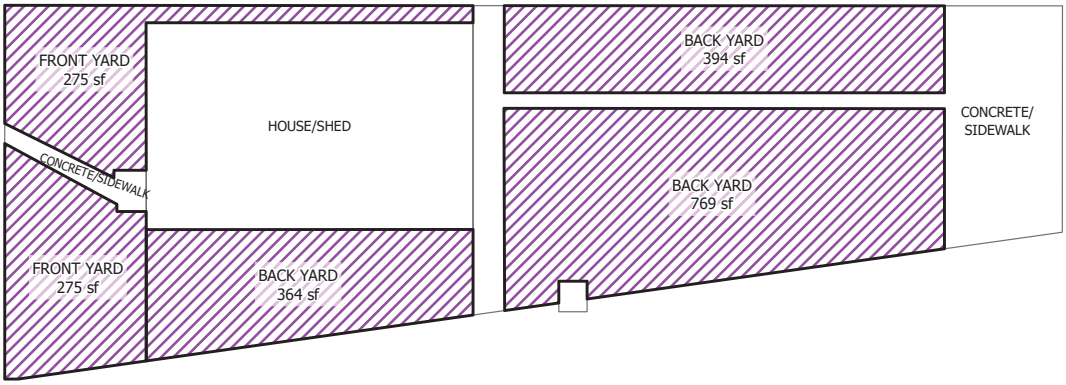
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-064

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-064			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-13"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-064-BY	Back Yard (BY)	1,527	53	134	323	26	470	598	327	17	56.6	56.6	1,527	-	-
BE-064-DZ	Drip Zone (DZ)	220	34	40	45	20	301	267	46	14	-	-	-	-	-
BE-064-FY	Front Yard (FY)	550	53	130	307	33	452	1040	708	60	20.4	20.4	550	-	-
	TOTALS	2,297									77.0	77.0	2,077		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

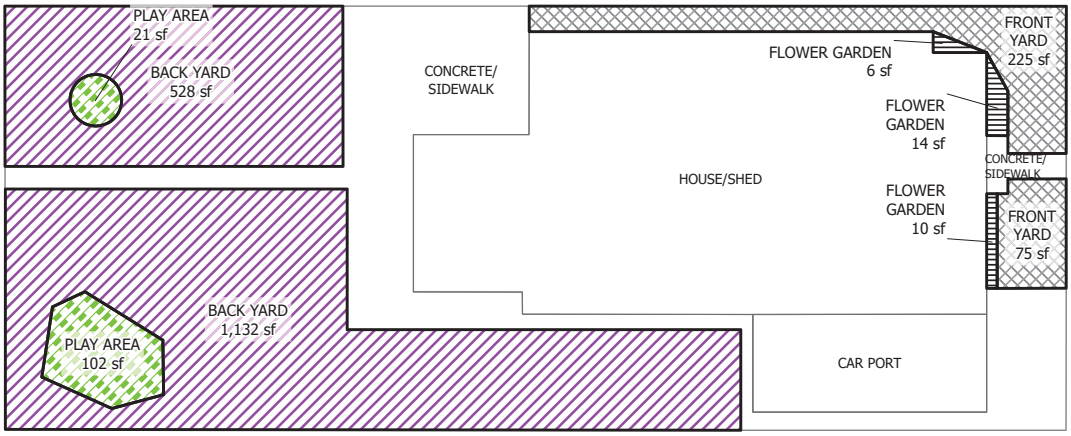
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-066

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-066			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-066-BY	Back Yard (BY)	1,660	30	43	62	91	279	304	404	131	61.5	61.5	1,660	-	-
BE-066-DZ	Drip Zone (DZ)	220	16	17	23	34	266	252	320	309	-	-	-	-	-
BE-066-FG	Flower Garden (FG)	30	15	22	31	76	437	518	430	835	2.2	2.2	30	-	-
BE-066-FY	Front Yard (FY)	300	10	8	42	113	97	55	167	1090	16.7	16.7	300	-	-
BE-066-PA	Play Area (PA)	123	34	52	71	114	284	349	329	184	-	-	-	-	-
	TOTALS	2,333									80.4	80.4	1,990		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

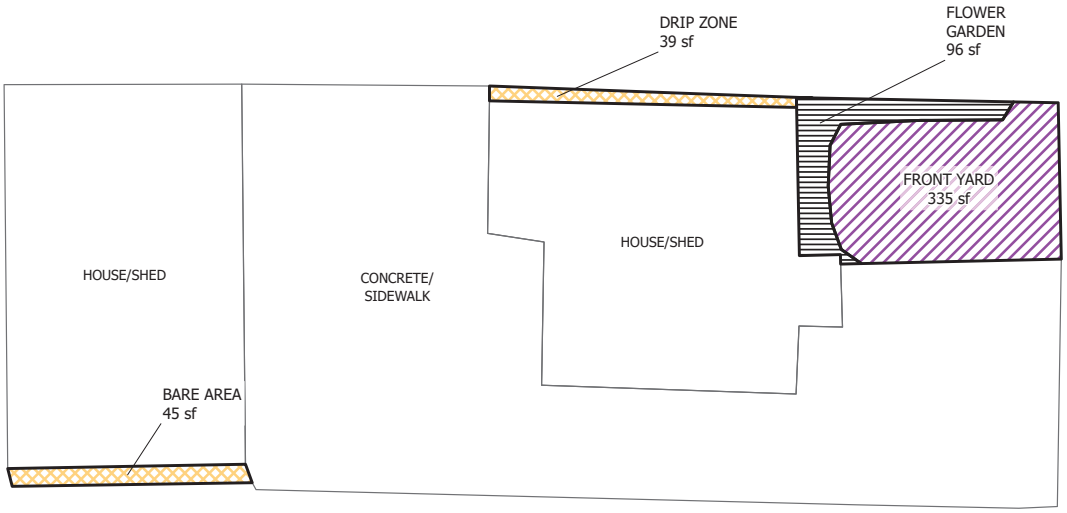
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 12" RA
- 18" RA
- 24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-067

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-067			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-067-BA	Bare Area (BA)	45	70	102	91	23	818	757	355	27	0.8	0.8	45	-	-
BE-067-DZ	Drip Zone (DZ)	39	56	68	59	77	578	788	379	353	0.7	0.7	39	-	-
BE-067-FG	Flower Garden (FG)	96	39	50	87	167	350	408	705	458	7.1	7.1	96	-	-
BE-067-FY	Front Yard (FY)	335	23	48	70	69	224	431	445	185	12.4	12.4	335	-	-
	TOTALS	515									21.0	21.0	515		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

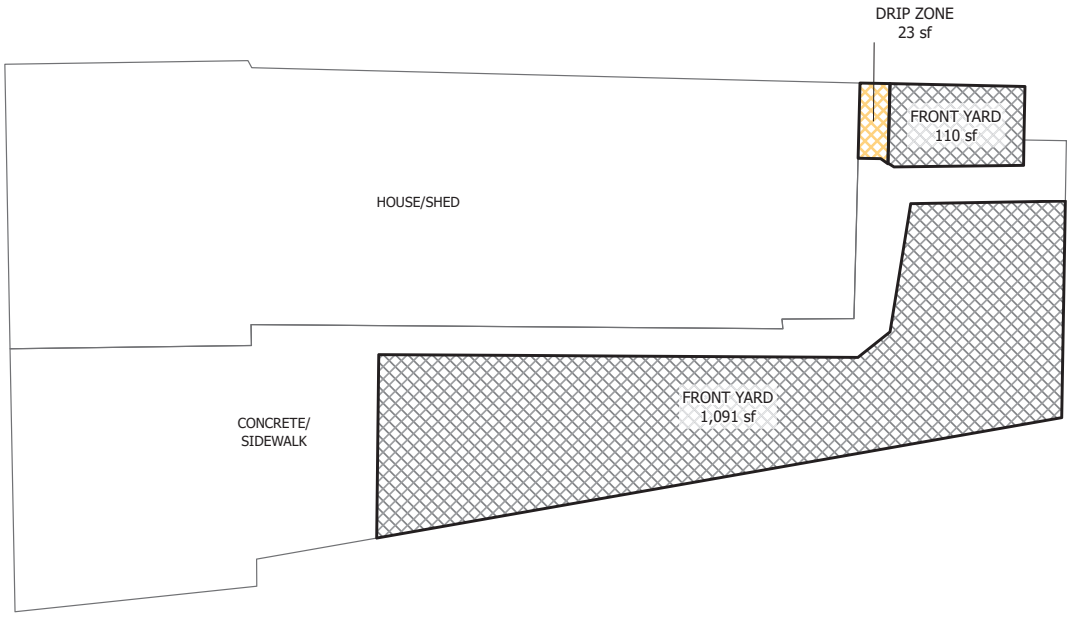
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
6" RA
12" RA
24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-068

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-068			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-068-DZ	Drip Zone (DZ)	23	17	47	48	44	110	481	318	47	0.4	0.4	23	-	-
BE-068-FY	Front Yard (FY)	1,201	69	86	110	449	601	948	277	655	66.7	66.7	1,201	-	-
	TOTALS	1,224									67.1	67.1	1,224		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

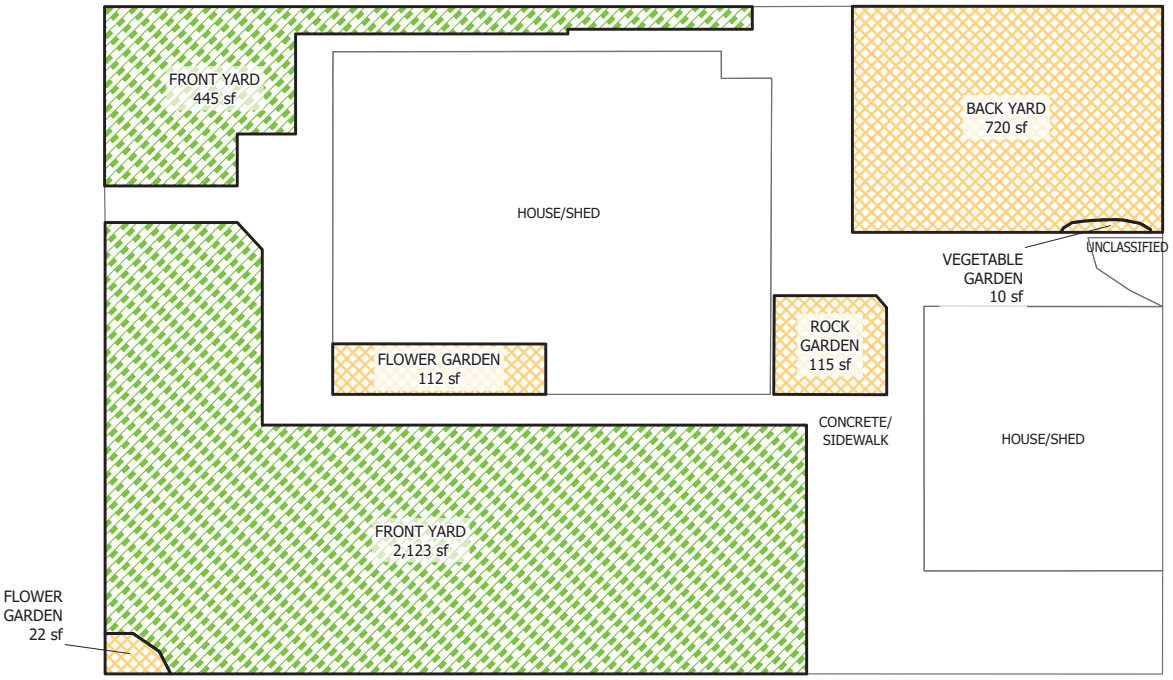
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
6" RA
18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-069

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-069			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-069-BY	Back Yard (BY)	720	36	62	80	73	222	264	265	252	13.3	13.3	720	-	-
BE-069-DZ	Drip Zone (DZ)	220	41	41	47	54	283	291	260	39	-	-	-	-	-
BE-069-FG	Flower Garden (FG)	134	49	71	60	17	406	488	395	76	2.5	2.5	134	-	-
BE-069-FY	Front Yard (FY)	2,568	37	46	51	98	322	386	319	146	-	-	-	-	-
BE-069-RG	Rock Garden (RG)	115	42	51	75	102	330	327	362	163	2.1	2.1	-	-	-
BE-069-VG	Vegetable Garden (VG)	10	69	69	84	76	441	399	253	226	0.2	0.2	10	-	-
	TOTALS	3,767									18.1	18.1	864		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

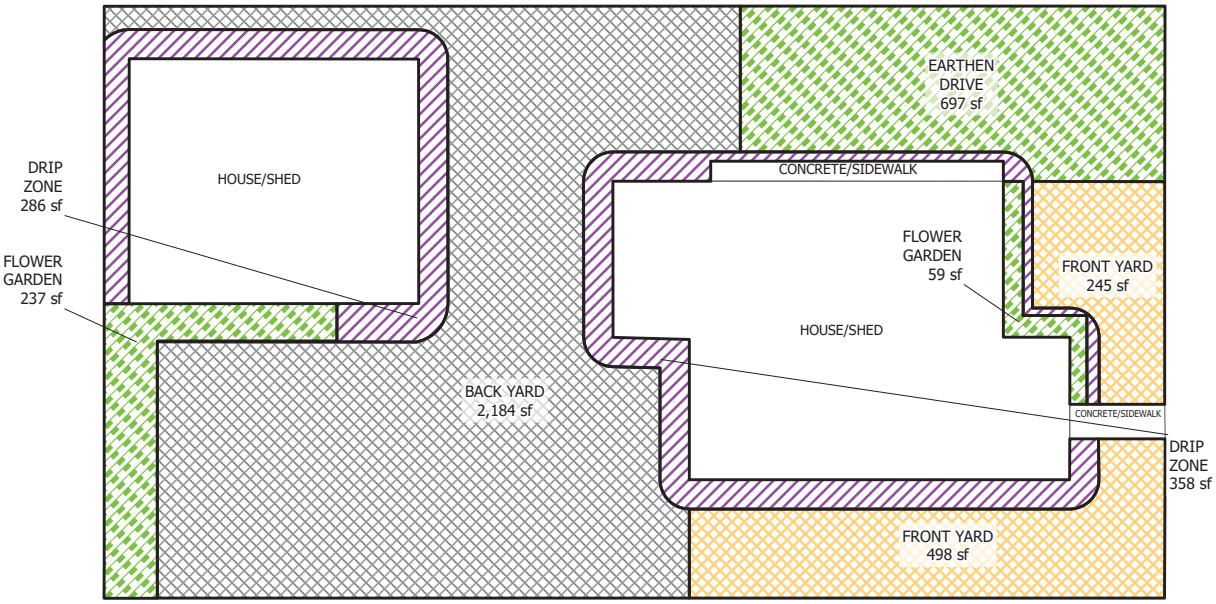
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-070

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-070			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-070-BY	Back Yard (BY)	2,184	50	81	140	101	295	412	385	433	121.3	121.3	2,184	-	-
BE-070-DZ	Drip Zone (DZ)	644	31	30	81	88	571	167	565	359	23.9	23.9	644	-	-
BE-070-ED	Earthen Drive (ED)	697	28	37	85	66	171	207	248	73	-	-	-	-	-
BE-070-FG	Flower Garden (FG)	296	24	22	18	12	194	184	154	53	-	-	-	-	-
BE-070-FY	Front Yard (FY)	743	40	39	73	85	433	163	187	200	13.8	13.8	743	-	-
	TOTALS	4,564									159.0	159.0	3,571		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

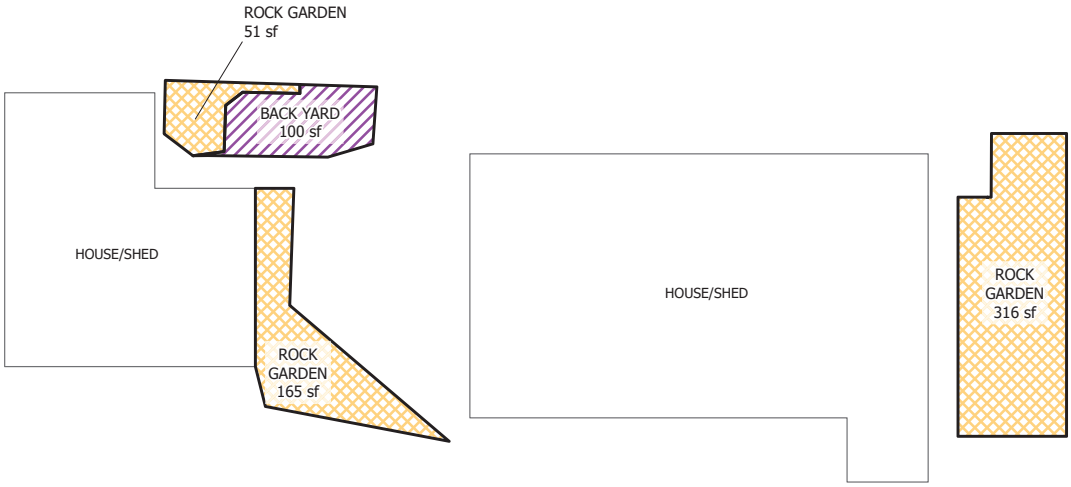
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-071

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-071			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-071-BY	Back Yard (BY)	100	9	13	46	38	52	83	611	260	3.7	3.7	100	-	-
BE-071-RG	Rock Garden (RG)	532	4	47	49	74	37	709	179	297	9.9	9.9	-	-	-
	TOTALS	632									13.6	13.6	100		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/**Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

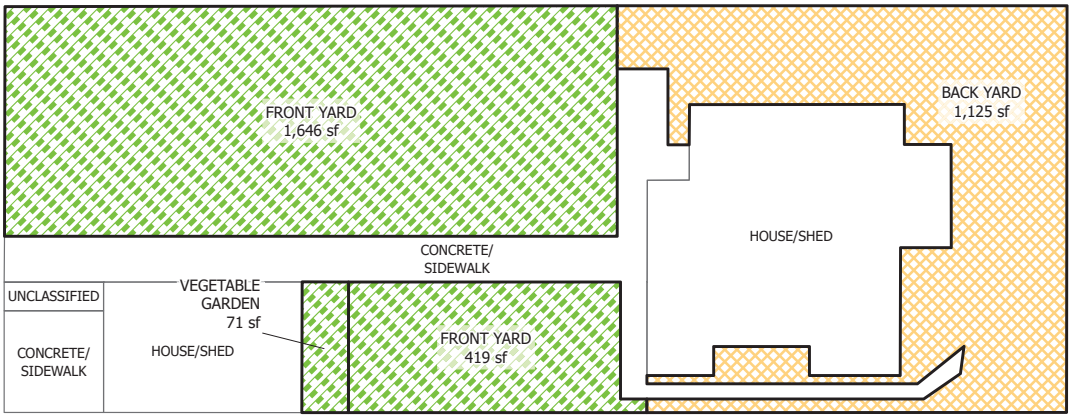
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
6" RA
12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-072A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-072A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-072A-BY	Back Yard (BY)	1,125	42	52	39	15	396	369	124	29	20.8	20.8	1,125	-	-
BE-072A-DZ	Drip Zone (DZ)	220	23	29	23	14	301	260	107	35	-	-	-	-	-
BE-072A-FY	Front Yard (FY)	2,065	29	30	33	36	289	265	156	82	-	-	-	-	-
BE-072A-VG	Vegetable Garden (VG)	71	24	30	29	13	207	219	107	9	-	-	-	-	-
	TOTALS	3,481									20.8	20.8	1,125		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

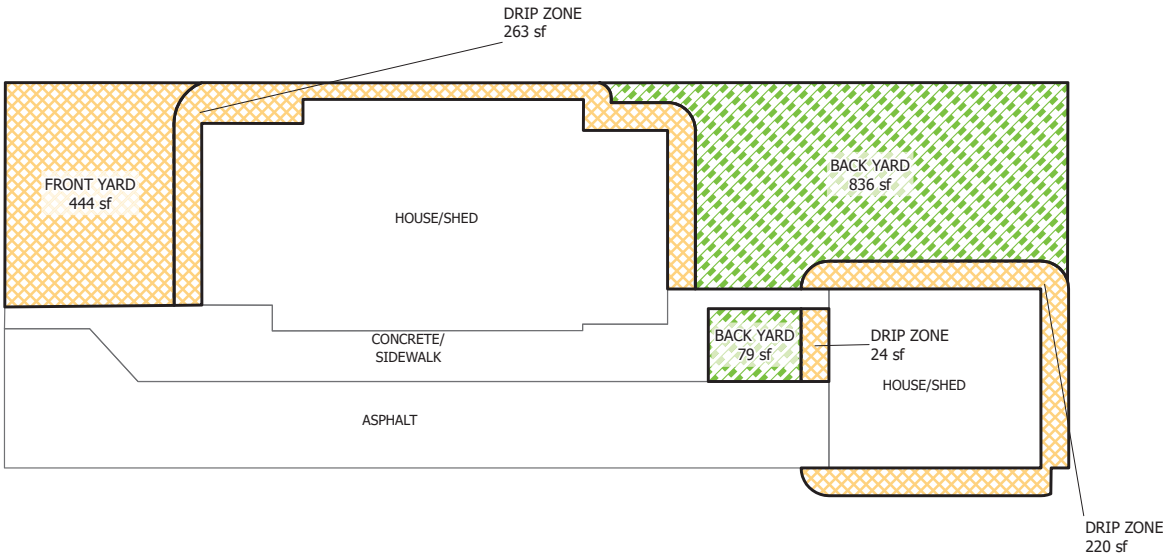
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-072B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-072B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-072B-BY	Back Yard (BY)	915	35	36	53	83	283	322	88	72	-	-	-	-	-
BE-072B-DZ	Drip Zone (DZ)	507	27	29	25	16	447	227	116	50	9.4	9.4	507	-	-
BE-072B-FY	Front Yard (FY)	444	34	25	13	11	542	90	20	39	8.2	8.2	444	-	-
	TOTALS	1,866									17.6	17.6	951		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

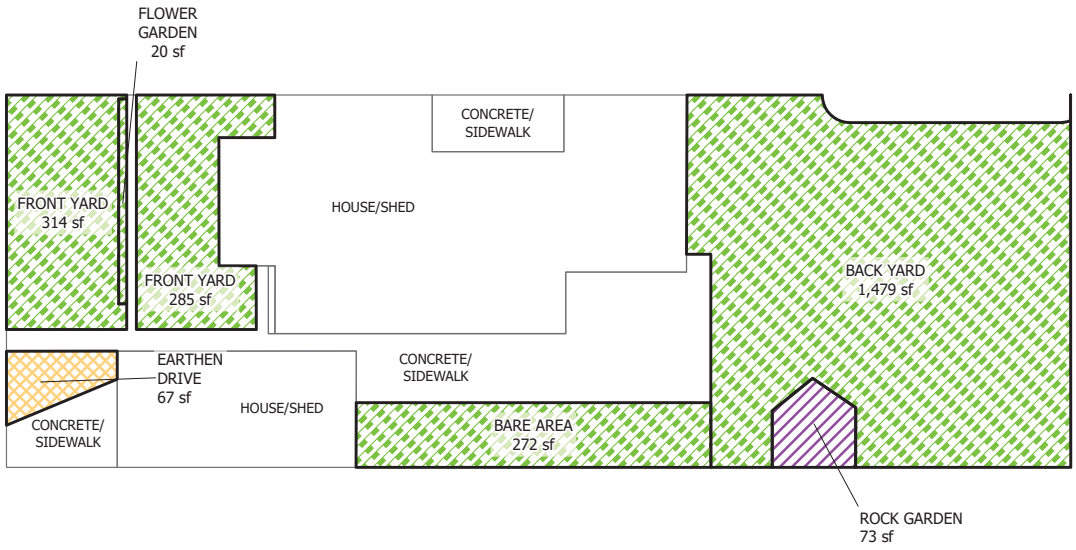
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-073

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-073			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-13"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-073-BA	Bare Area (BA)	272	36	46	38	59	267	282	23	154	-	-	-	-	-
BE-073-BY	Back Yard (BY)	1,479	42	105	48	64	326	346	203	215	-	-	-	-	-
BE-073-DZ	Drip Zone (DZ)	220	14	22	25	14	89	161	124	12	-	-	-	-	-
BE-073-ED	Earthen Drive (ED)	67	76	70	16	21	632	642	67	89	1.2	-	-	1.2	-
BE-073-FG	Flower Garden (FG)	20	14	31	21	7	123	127	28	10	-	-	-	-	-
BE-073-FY	Front Yard (FY)	599	14	16	8	5	79	43	19	6	-	-	-	-	-
BE-073-RG	Rock Garden (RG)	73	26	31	62	117	227	249	501	390	2.7	2.7	-	-	-
	TOTALS	2,730									3.9	2.7		1.2	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

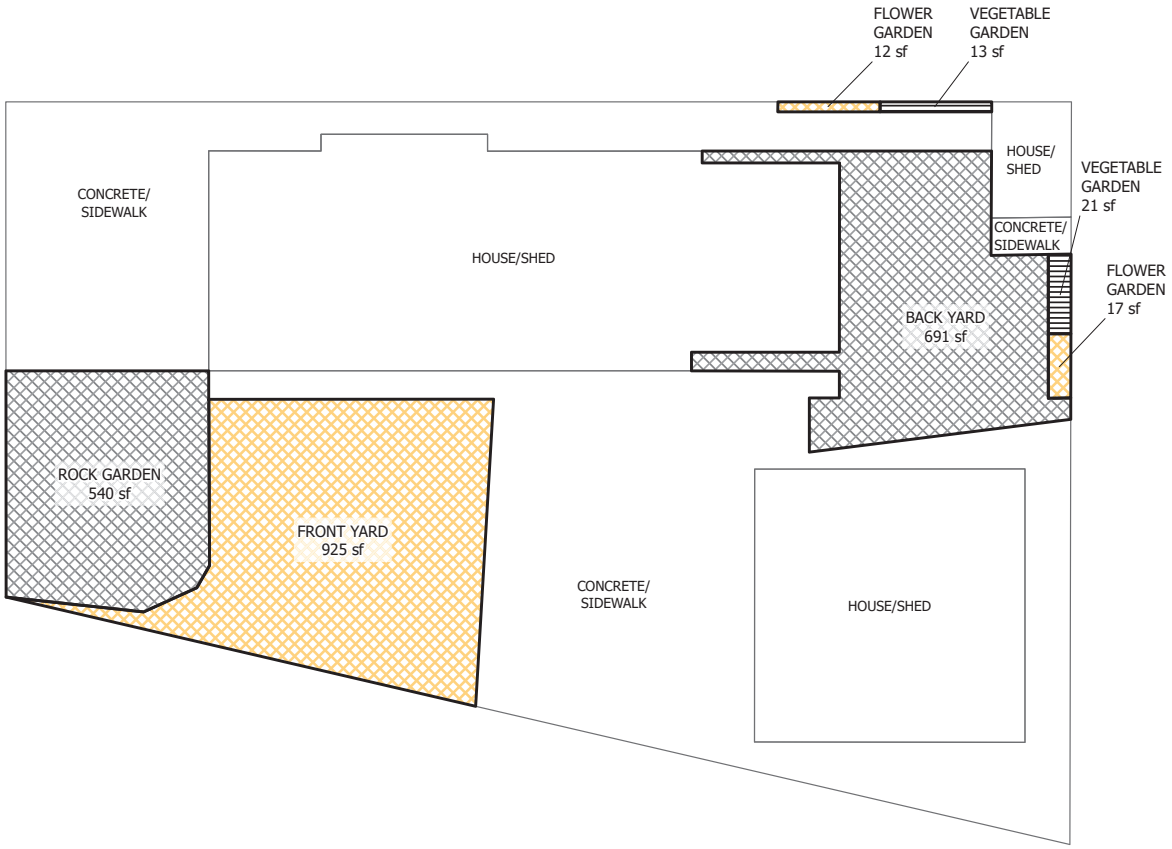
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-074

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-074			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-074-BY	Back Yard (BY)	691	10	46	53	58	43	501	455	409	38.4	38.4	691	-	-
BE-074-FG	Flower Garden (FG)	29	47	39	24	55	475	227	31	361	0.5	0.5	29	-	-
BE-074-FY	Front Yard (FY)	925	52	54	25	9	467	114	14	9	17.1	17.1	925	-	-
BE-074-RG	Rock Garden (RG)	540	26	30	39	8	394	389	32	464	30.0	30.0	-	-	-
BE-074-VG	Vegetable Garden (VG)	34	49	50	77	120	373	396	479	507	2.5	2.5	34	-	-
	TOTALS	2,219									88.5	88.5	1,679		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.**

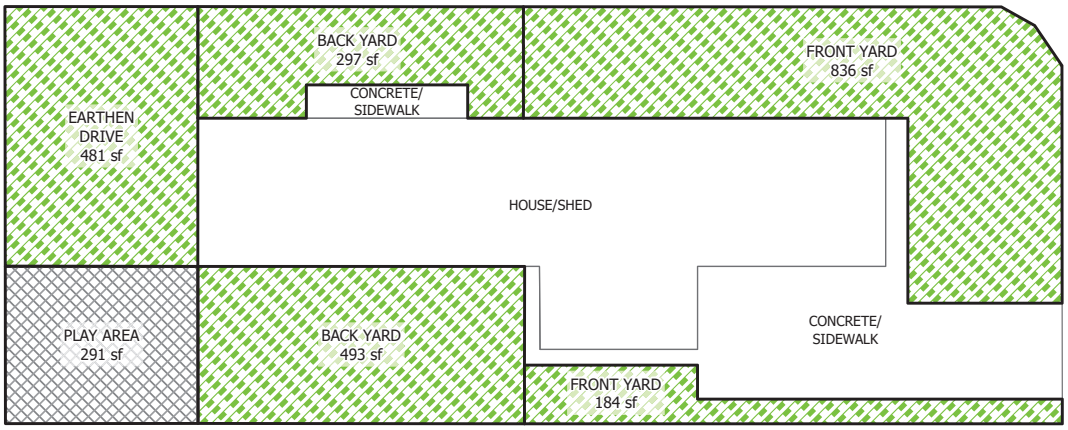
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- 6" RA
- 18" RA
- 24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-075

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-075			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-075-BY	Back Yard (BY)	790	32	17	17	16	148	82	74	13	-	-	-	-	-
BE-075-DZ	Drip Zone (DZ)	220	22	24	24	26	72	82	72	65	-	-	-	-	-
BE-075-ED	Earthen Drive (ED)	481	33	43	30	32	313	302	165	262	-	-	-	-	-
BE-075-FY	Front Yard (FY)	1,020	25	31	24	18	148	105	122	77	-	-	-	-	-
BE-075-PA	Play Area (PA)	291	17	11	20	24	46	41	351	713	16.2	16.2	291	-	-
	TOTALS	2,802									16.2	16.2	291		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above
Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

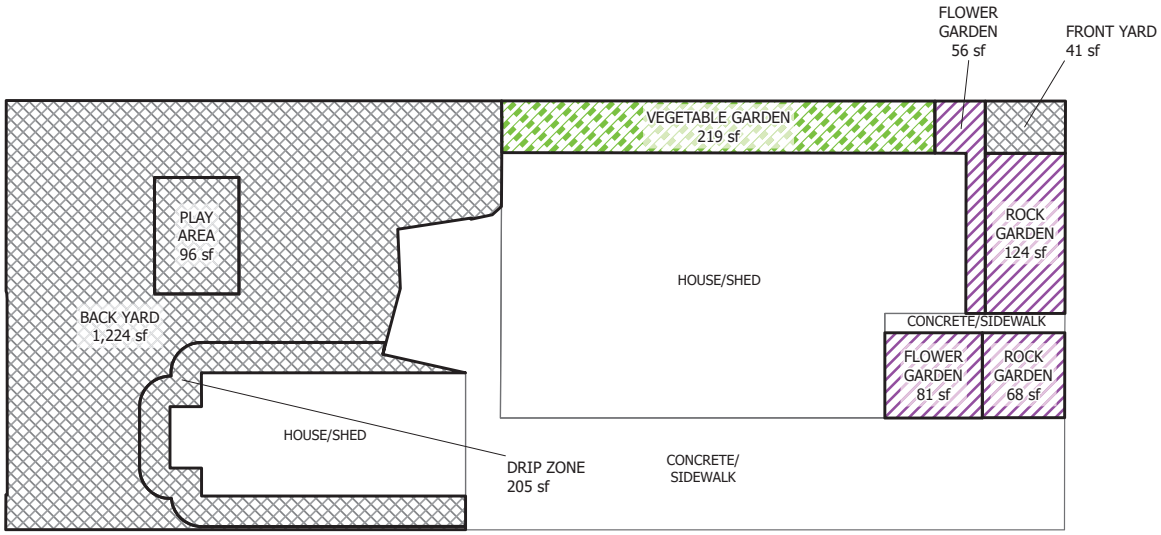
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-076

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-076			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-076-BY	Back Yard (BY)	1,224	42	43	35	66	729	722	658	614	68.0	68.0	1,224	-	-
BE-076-DZ	Drip Zone (DZ)	205	32	38	41	44	524	661	735	418	11.4	11.4	205	-	-
BE-076-FG	Flower Garden (FG)	137	38	43	71	59	455	848	533	175	5.1	5.1	137	-	-
BE-076-FY	Front Yard (FY)	41	28	35	21	324	148	243	14	49	2.3	2.3	41	-	-
BE-076-PA	Play Area (PA)	96	36	38	44	48	829	736	682	429	5.3	5.3	96	-	-
BE-076-RG	Rock Garden (RG)	192	45	48	48	28	494	532	456	69	7.1	7.1	-	-	-
BE-076-VG	Vegetable Garden (VG)	219	33	29	25	19	360	228	69	36	-	-	-	-	-
	TOTALS	2,114									99.2	99.2	1,703		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

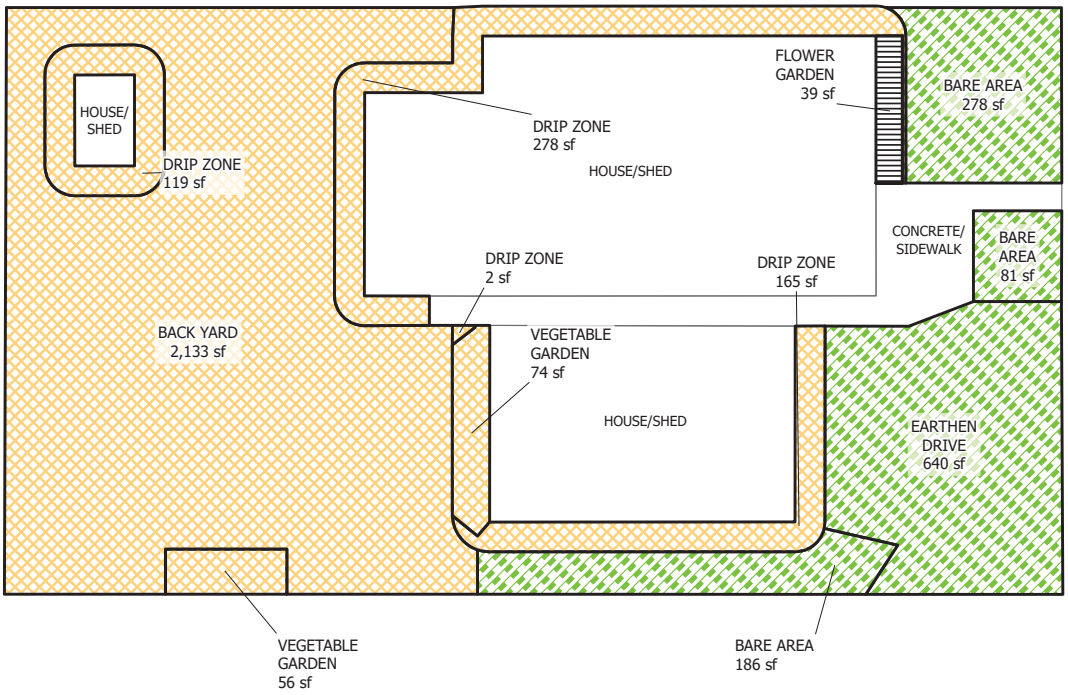
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 12" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-077

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-077			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-077-BA	Bare Area (BA)	545	60	49	9	9	362	290	14	12	-	-	-	-	-
BE-077-BY	Back Yard (BY)	2,133	41	77	77	70	392	435	371	190	39.5	39.5	2,133	-	-
BE-077-DZ	Drip Zone (DZ)	564	75	85	91	131	478	641	351	200	10.4	10.4	564	-	-
BE-077-ED	Earthen Drive (ED)	640	12	14	61	104	91	130	235	54	-	-	-	-	-
BE-077-FG	Flower Garden (FG)	39	39	33	78	160	530	333	478	586	2.9	2.9	39	-	-
BE-077-VG	Vegetable Garden (VG)	130	58	96	151	97	364	507	372	127	2.4	2.4	130	-	-
	TOTALS	4,051									55.2	55.2	2,866		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/**Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to **24 inches** below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

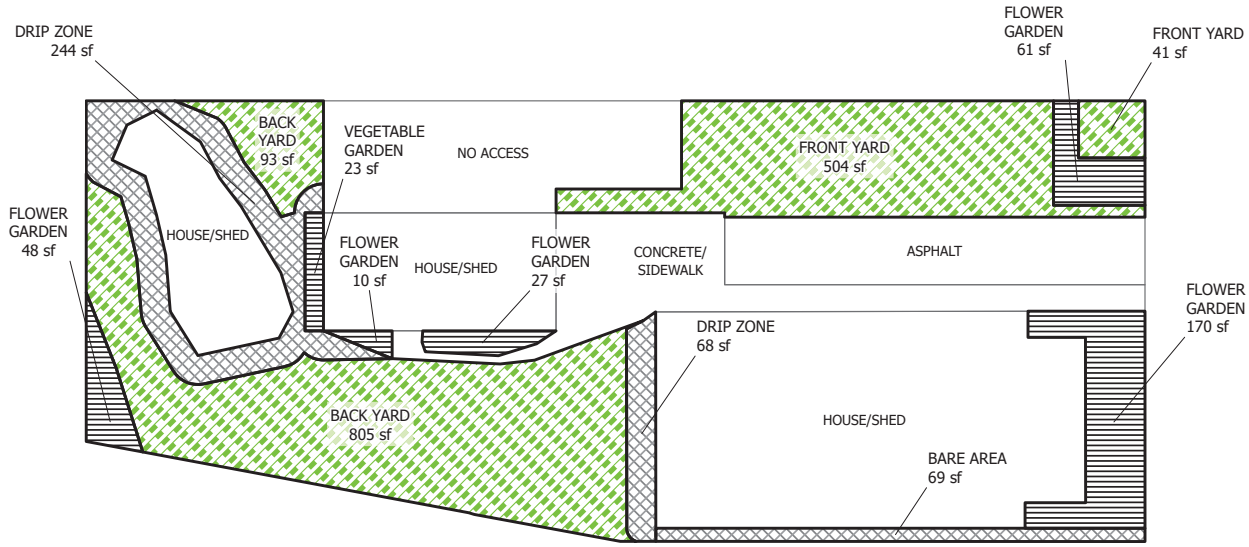
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-078

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-078			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-078-BA	Bare Area (BA)	69	68	48	49	116	776	787	447	749	3.8	3.8	69	-	-
BE-078-BY	Back Yard (BY)	898	20	49	52	60	56	183	181	155	-	-	-	-	-
BE-078-DZ	Drip Zone (DZ)	312	52	58	68	91	436	450	464	679	17.3	17.3	312	-	-
BE-078-FG	Flower Garden (FG)	316	27	43	61	91	205	468	369	485	23.4	23.4	316	-	-
BE-078-FY	Front Yard (FY)	545	42	62	54	75	238	343	221	93	-	-	-	-	-
BE-078-VG	Vegetable Garden (VG)	23	8	23	81	184	53	177	452	529	1.7	1.7	23	-	-
	TOTALS	2,163									46.2	46.2	720		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/**Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to **24 inches** below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

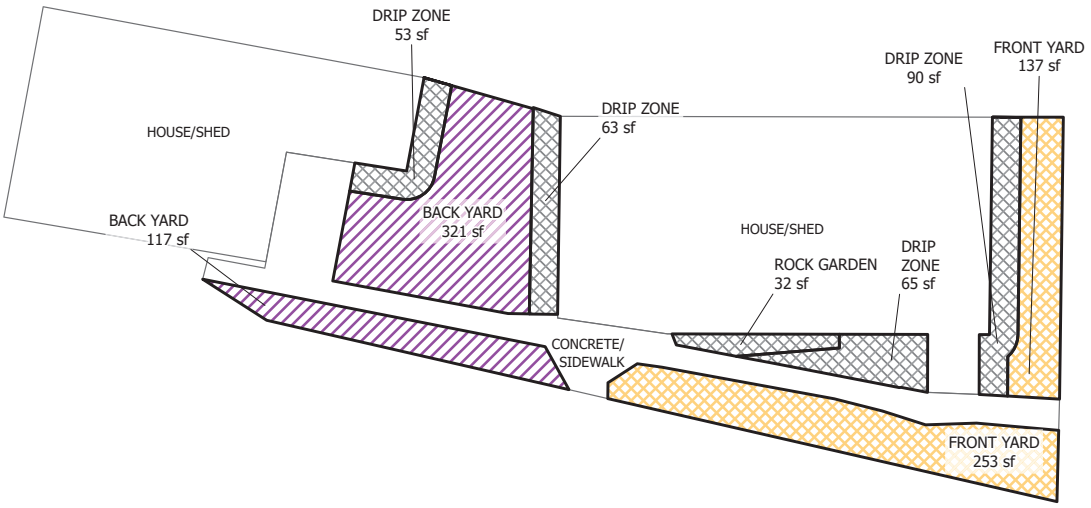
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 18" RA
- 24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-079

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-079			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-079-BY	Back Yard (BY)	438	11	33	40	39	121	398	405	264	16.2	16.2	438	-	-
BE-079-DZ	Drip Zone (DZ)	271	21	28	27	61	332	438	413	697	15.1	15.1	271	-	-
BE-079-FY	Front Yard (FY)	390	28	39	68	57	352	562	132	279	7.2	7.2	390	-	-
BE-079-RG	Rock Garden (RG)	32	17	32	47	43	247	667	1000	793	1.8	1.8	-	-	-
	TOTALS	1,131									40.3	40.3	1,099		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

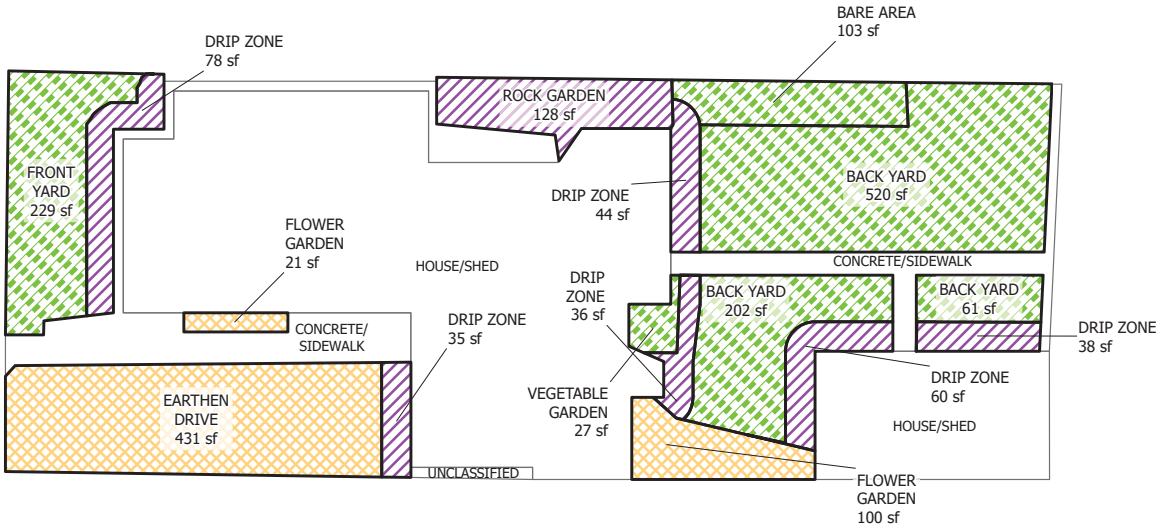
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
6" RA
12" RA
18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-081

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-081			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-081-BA	Bare Area (BA)	103	33	55	70	48	203	325	302	88	-	-	-	-	-
BE-081-BY	Back Yard (BY)	783	30	103	163	60	323	337	249	50	-	-	-	-	-
BE-081-DZ	Drip Zone (DZ)	291	48	159	430	57	443	562	521	36	10.8	10.8	291	-	-
BE-081-ED	Earthen Drive (ED)	431	48	85	56	48	455	377	102	206	8.0	-	-	8.0	-
BE-081-FG	Flower Garden (FG)	121	66	42	95	49	489	270	336	348	2.2	2.2	121	-	-
BE-081-FY	Front Yard (FY)	229	20	36	35	30	192	356	197	38	-	-	-	-	-
BE-081-RG	Rock Garden (RG)	128	36	398	755	107	388	570	921	63	4.7	4.7	-	-	-
BE-081-VG	Vegetable Garden (VG)	27	6	21	49	74	33	289	395	148	-	-	-	-	-
	TOTALS	2,113									25.7	17.7	412	8.0	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

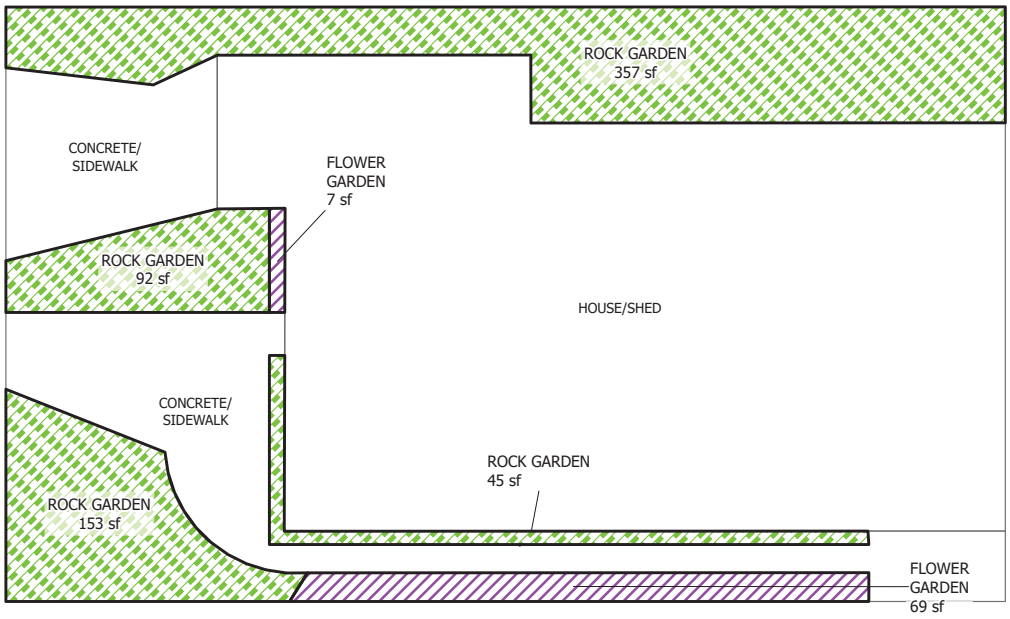
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-082A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-082A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-082A-DZ	Drip Zone (DZ)	220	27	41	65	60	429	324	275	50	4.1	4.1	220	-	-
BE-082A-FG	Flower Garden (FG)	76	40	54	80	18	465	535	493	205	2.8	2.8	76	-	-
BE-082A-RG	Rock Garden (RG)	647	26	35	28	68	244	180	94	66	-	-	-	-	-
	TOTALS	943									6.9	6.9	296		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

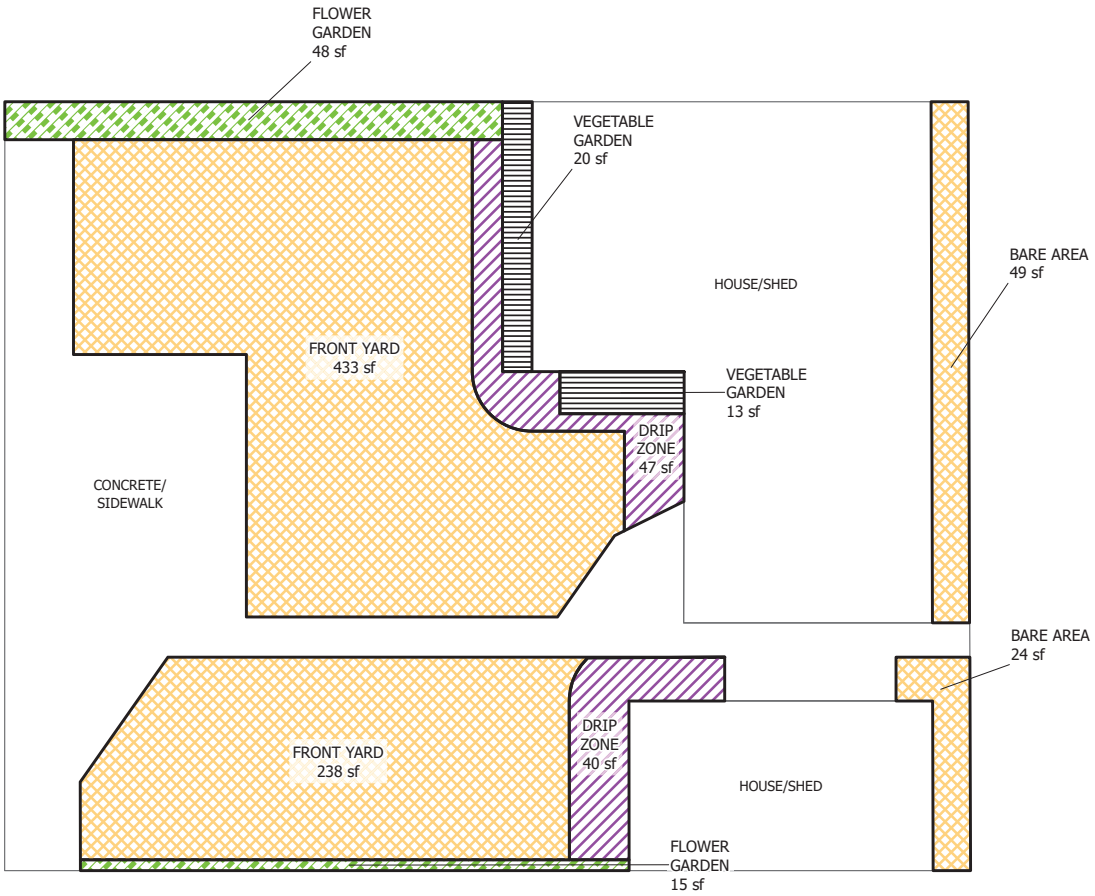
Legend

No Action
12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-082B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-082B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-082B-BA	Bare Area (BA)	73	70	66	15	10	378	288	51	24	1.4	1.4	73	-	-
BE-082B-DZ	Drip Zone (DZ)	87	41	51	38	18	513	497	453	73	3.2	3.2	87	-	-
BE-082B-FG	Flower Garden (FG)	63	32	47	59	37	233	335	352	90	-	-	-	-	-
BE-082B-FY	Front Yard (FY)	671	48	57	79	42	379	371	316	91	12.4	12.4	671	-	-
BE-082B-VG	Vegetable Garden (VG)	33	12	17	30	40	112	172	402	484	2.4	2.4	33	-	-
	TOTALS	927									19.4	19.4	864		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

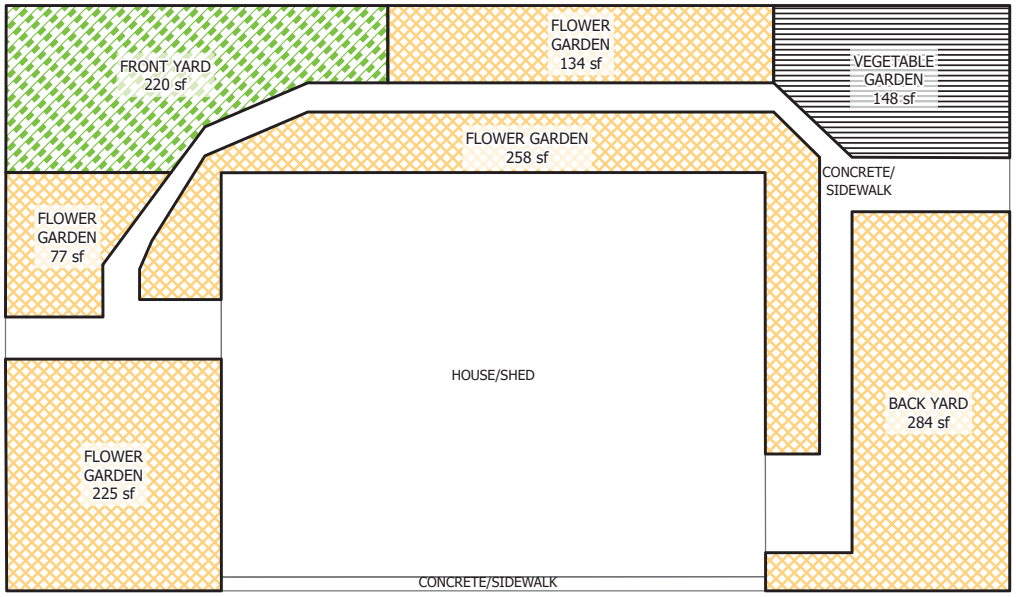
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA
- 24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-083A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-083A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-083A-BY	Back Yard (BY)	284	50	61	86	41	358	367	256	72	5.3	5.3	284	-	-
BE-083A-DZ	Drip Zone (DZ)	220	34	40	58	23	352	396	281	31	-	-	-	-	-
BE-083A-FG	Flower Garden (FG)	694	43	63	74	55	374	453	354	260	12.9	12.9	694	-	-
BE-083A-FY	Front Yard (FY)	220	23	47	111	96	230	333	201	109	-	-	-	-	-
BE-083A-VG	Vegetable Garden (VG)	148	64	51	92	85	475	361	365	437	11.0	11.0	148	-	-
	TOTALS	1,566									29.2	29.2	1,126		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/**Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

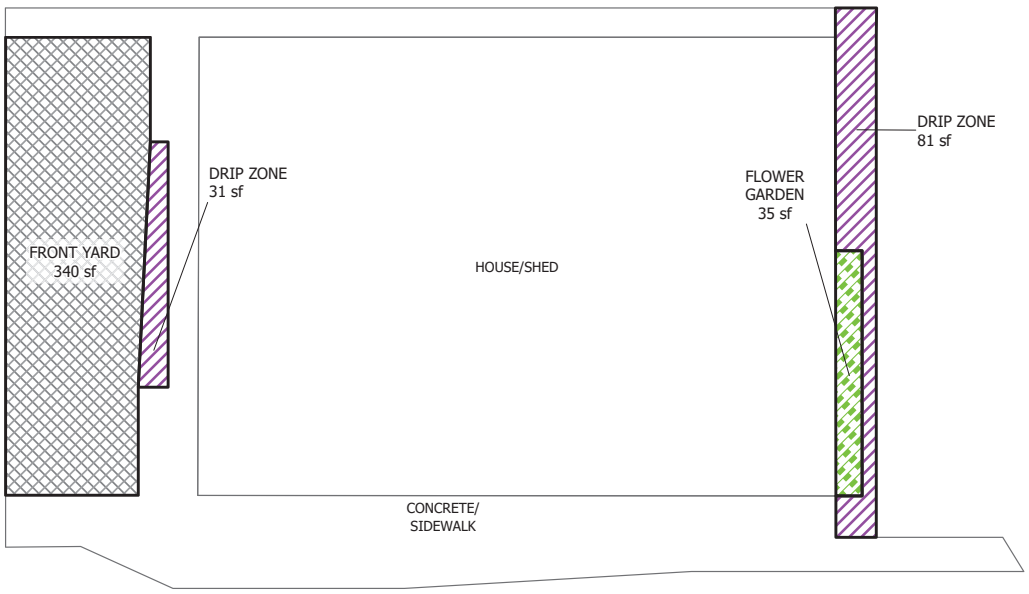
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-084A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-084A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-084A-DZ	Drip Zone (DZ)	112	6	35	44	40	31	316	418	301	4.1	4.1	112	-	-
BE-084A-FG	Flower Garden (FG)	35	4	33	49	53	23	239	335	293	-	-	-	-	-
BE-084A-FY	Front Yard (FY)	340	49	79	126	468	408	475	204	95	18.9	18.9	340	-	-
	TOTALS	487									23.0	23.0	452		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

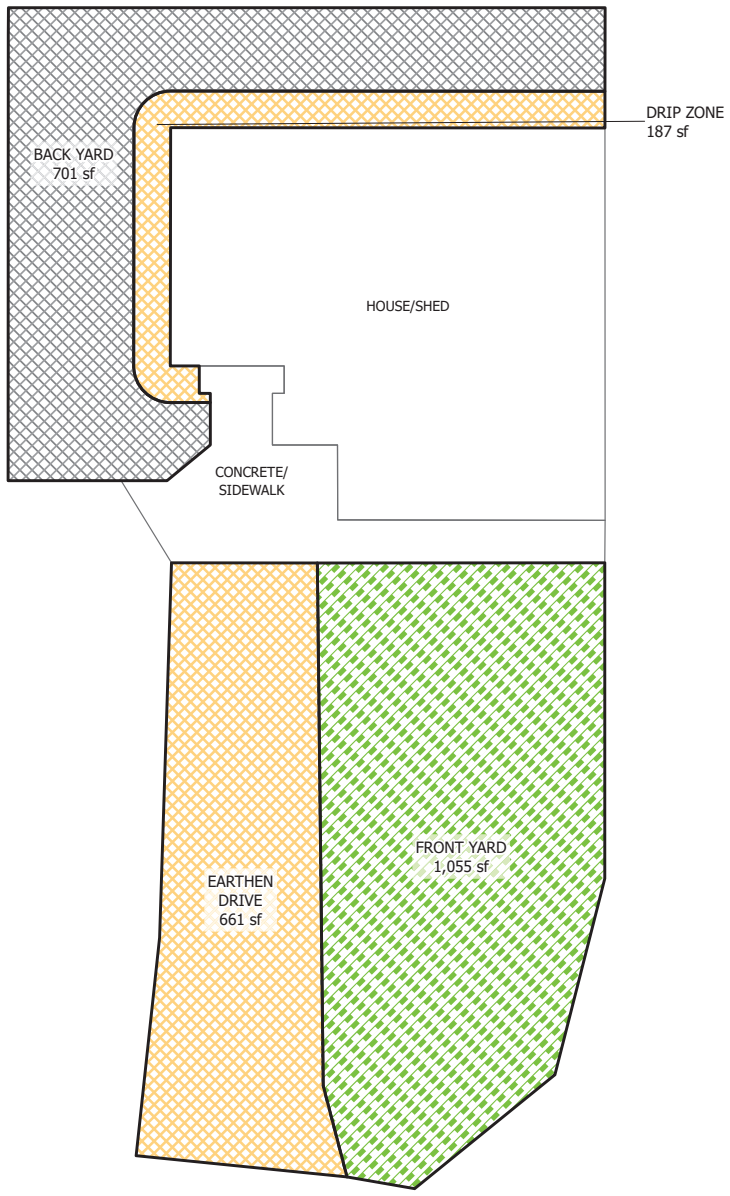
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 12" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-084B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-084B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-084B-BY	Back Yard (BY)	701	77	104	156	132	410	364	629	778	38.9	38.9	701	-	-
BE-084B-DZ	Drip Zone (DZ)	187	45	183	111	72	256	235	54	34	3.5	3.5	187	-	-
BE-084B-ED	Earthen Drive (ED)	661	50	58	67	48	549	404	304	95	12.2	-	-	12.2	-
BE-084B-FY	Front Yard (FY)	1,055	47	56	87	110	305	311	314	151	-	-	-	-	-
	TOTALS	2,604									54.6	42.4	888	12.2	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-087

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-087			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-087-BY	Back Yard (BY)	1,050	12	31	78	66	98	165	369	165	-	-	-	-	-
BE-087-DZ	Drip Zone (DZ)	220	18	26	36	26	201	362	194	108	-	-	-	-	-
BE-087-ED	Earthen Drive (ED)	614	17	36	44	70	163	287	133	71	-	-	-	-	-
BE-087-FY	Front Yard (FY)	132	28	81	119	45	200	739	408	142	4.9	4.9	132	-	-
BE-087-PA	Play Area (PA)	97	7	19	21	24	50	227	346	168	-	-	-	-	-
BE-087-RG	Rock Garden (RG)	206	8	7	16	14	54	39	110	50	-	-	-	-	-
	TOTALS	2,319									4.9	4.9	132		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

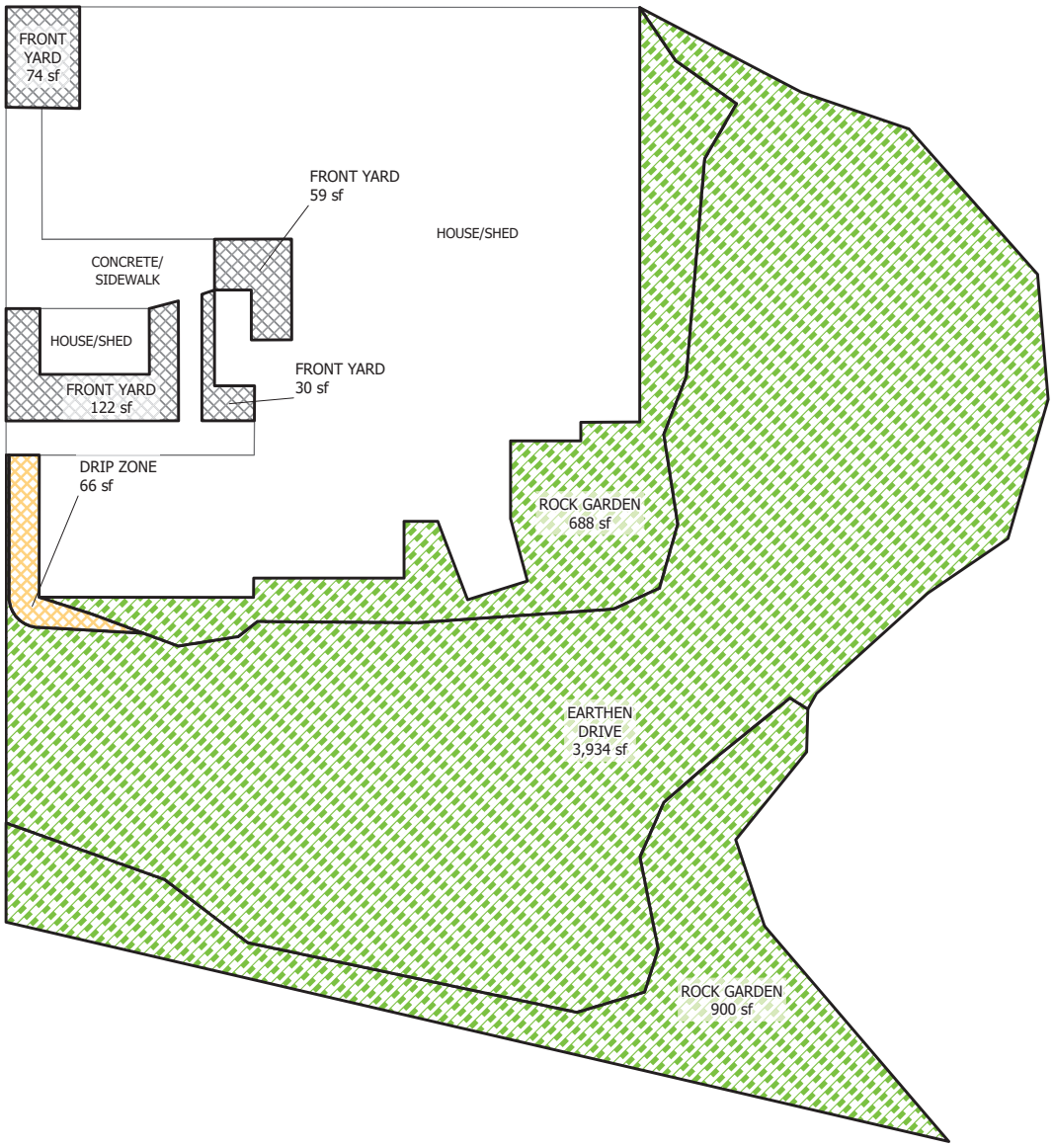
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-088

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-088			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-088-DZ	Drip Zone (DZ)	66	61	40	50	38	418	250	223	227	1.2	1.2	66	-	-
BE-088-ED	Earthen Drive (ED)	3,934	13	23	22	27	50	118	85	103	-	-	-	-	-
BE-088-FY	Front Yard (FY)	285	54	88	136	123	668	595	1240	1590	15.8	15.8	285	-	-
BE-088-RG	Rock Garden (RG)	1,588	19	21	41	12	160	148	108	49	-	-	-	-	-
	TOTALS	5,873									17.0	17.0	351		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

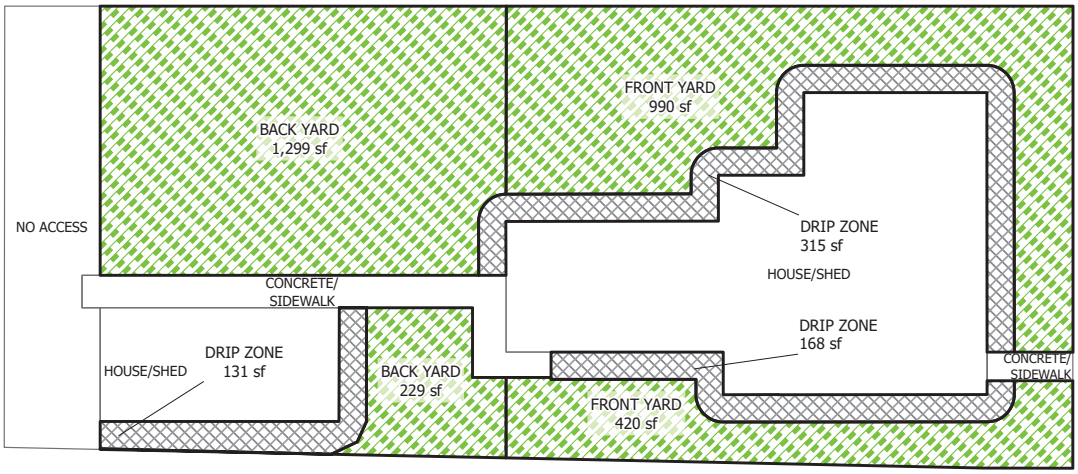
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-090

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-090			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-090-BY	Back Yard (BY)	1,528	13	18	15	40	146	141	81	288	-	-	-	-	-
BE-090-DZ	Drip Zone (DZ)	614	19	28	65	77	256	234	452	407	34.1	34.1	614	-	-
BE-090-FY	Front Yard (FY)	1,410	13	20	72	45	112	311	273	224	-	-	-	-	-
	TOTALS	3,552									34.1	34.1	614		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

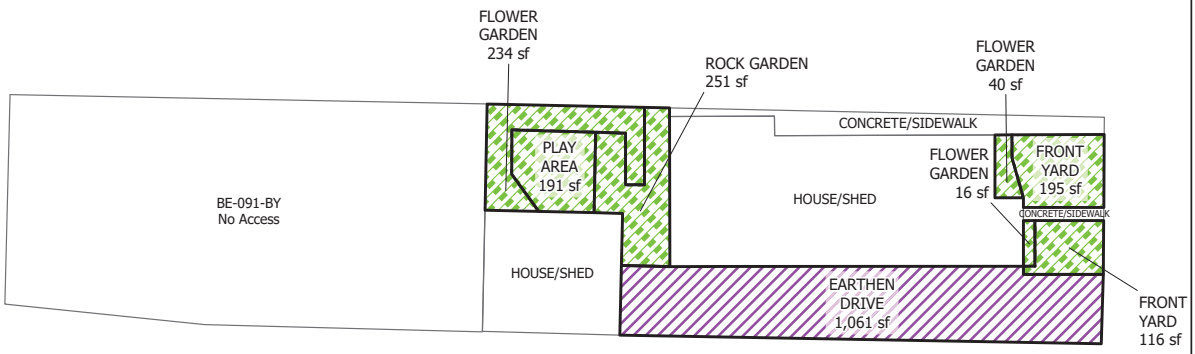
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-091

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-091			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-091-DZ	Drip Zone (DZ)	220	34	53	115	100	134	171	237	239	-	-	-	-	-
BE-091-ED	Earthen Drive (ED)	1,061	13	30	45	19	113	337	415	38	39.3	19.6	-	19.6	-
BE-091-FG	Flower Garden (FG)	290	12	6	18	66	24	24	132	207	-	-	-	-	-
BE-091-FY	Front Yard (FY)	311	6	19.1	21	42	31	165	134	90	-	-	-	-	-
BE-091-PA	Play Area (PA)	191	18	14	27	29	137	100	98	168	-	-	-	-	-
BE-091-RG	Rock Garden (RG)	251	15	13	34	17	59	106	64	106	-	-	-	-	-
	TOTALS	2,324									39.3	19.6		19.6	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

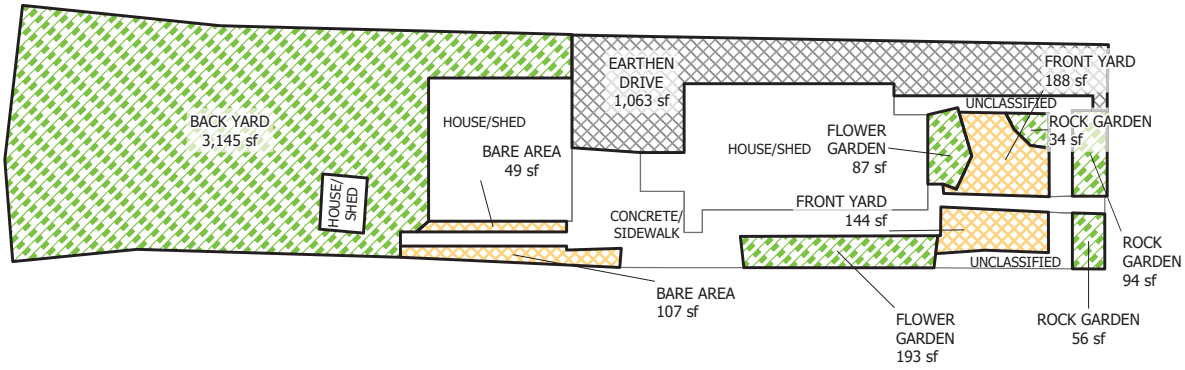
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-092

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-092			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-13"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-092-BA	Bare Area (BA)	156	31	44	51	47	474	439	174	168	2.9	2.9	156	-	-
BE-092-BY	Back Yard (BY)	3,145	27	28	41	33	252	257	104	377	-	-	-	-	-
BE-092-DZ	Drip Zone (DZ)	220	16	22	32	35	211	231	180	114	-	-	-	-	-
BE-092-ED	Earthen Drive (ED)	1,063	14	25	42	47	143	194	590	965	59.1	39.4	-	19.7	-
BE-092-FG	Flower Garden (FG)	280	32	41	64	53	374	368	247	96	-	-	-	-	-
BE-092-FY	Front Yard (FY)	332	26	27	56	71	659	190	190	110	6.1	6.1	332	-	-
BE-092-RG	Rock Garden (RG)	184	30	27	18	16	173	220	68	33	-	-	-	-	-
	TOTALS	5,380									68.1	48.4	488	19.7	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

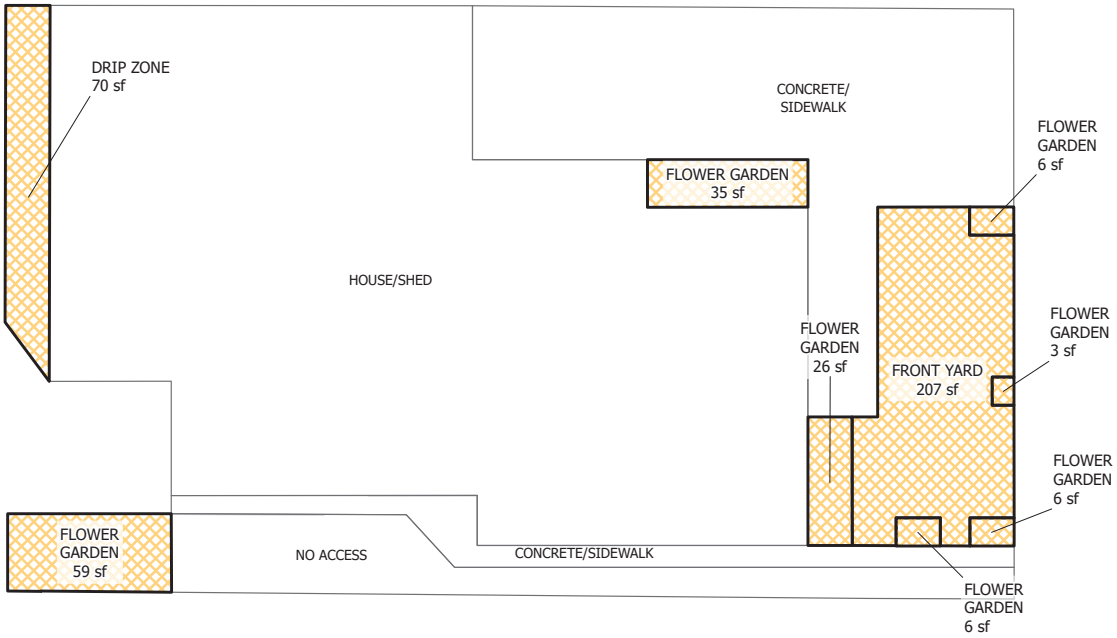
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-093A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-093A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-093A-DZ	Drip Zone (DZ)	70	32	23	24	19	593	447	259	368	1.3	1.3	70	-	-
BE-093A-FG	Flower Garden (FG)	141	28	33	40	20	777	410	206	102	2.6	2.6	141	-	-
BE-093A-FY	Front Yard (FY)	207	160	25	26	13	287	186	112	51	3.8	3.8	207	-	-
	TOTALS	418									7.7	7.7	418		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

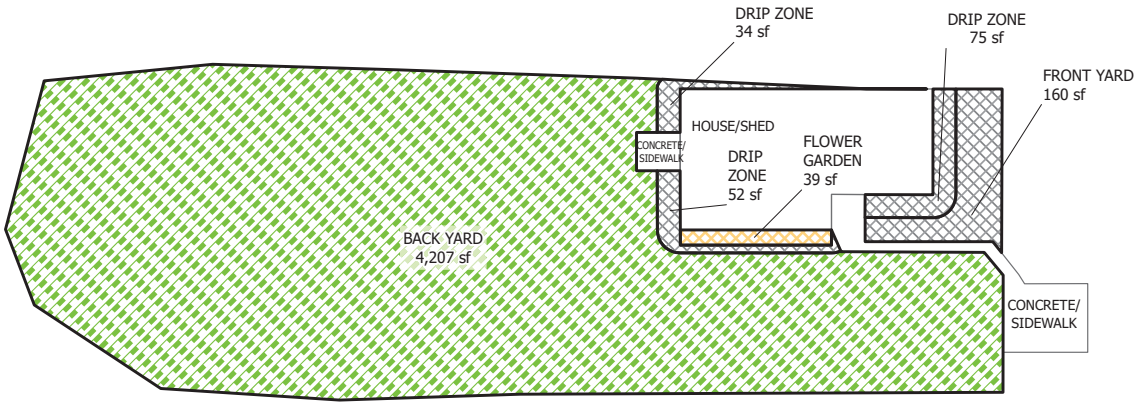
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend: 6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-093B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-093B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-093B-BY	Back Yard (BY)	4,207	31	62	81	180	339	276	230	292	-	-	-	-	-
BE-093B-DZ	Drip Zone (DZ)	161	49	79	155	27	693	537	382	727	8.9	8.9	161	-	-
BE-093B-FG	Flower Garden (FG)	39	32	76	167	162	306	246	318	265	0.7	0.7	39	-	-
BE-093B-FY	Front Yard (FY)	160	41	58	535	1560	534	680	1060	1590	8.9	8.9	160	-	-
	TOTALS	4,567									18.5	18.5	360		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

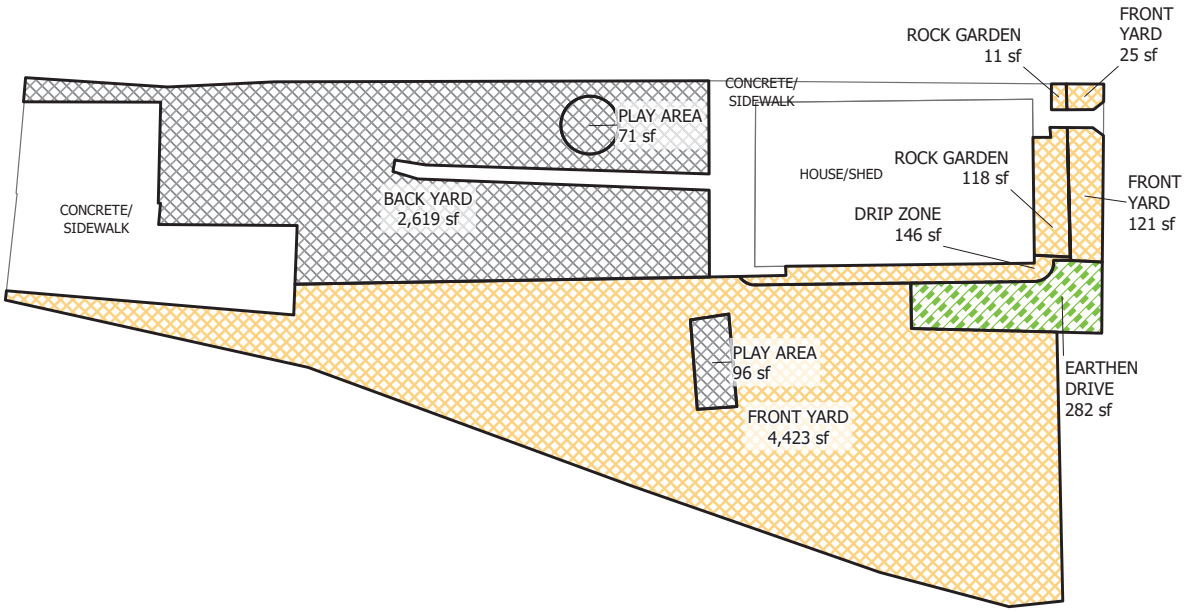
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-094

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-094			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-094-BY	Back Yard (BY)	2,619	50	78	98	127	406	336	349	606	145.5	145.5	2,619	-	-
BE-094-DZ	Drip Zone (DZ)	146	28	40	44	13	440	650	271	44	2.7	2.7	146	-	-
BE-094-ED	Earthen Drive (ED)	282	31	43	116	31	250	211	388	76	-	-	-	-	-
BE-094-FY	Front Yard (FY)	4,569	37	89	133	166	503	773	294	211	84.6	84.6	4,569	-	-
BE-094-PA	Play Area (PA)	167	58	98	167	313	684	399	364	316	9.3	9.3	167	-	-
BE-094-RG	Rock Garden (RG)	129	44	45	47	26	495	409	147	113	2.4	2.4	-	-	-
	TOTALS	7,912									244.5	244.5	7,501		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

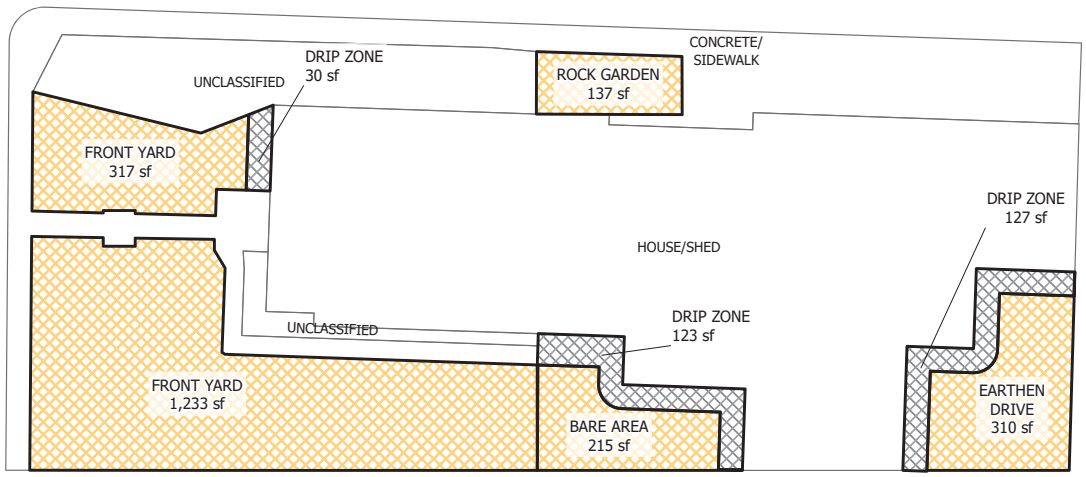
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-203

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-203			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-203-BA	Bare Area (BA)	215	28	35	44	103	585	342	147	56	4.0	4.0	215	-	-
BE-203-DZ	Drip Zone (DZ)	280	30	42	48	62	733	755	120	481	15.6	15.6	280	-	-
BE-203-ED	Earthen Drive (ED)	310	16	30	0	26	432	23	3	282	5.7	-	-	5.7	-
BE-203-FY	Front Yard (FY)	1,550	26	38	41	37	578	316	43	39	28.7	28.7	1,550	-	-
BE-203-RG	Rock Garden (RG)	137	31	44	186	147	691	631	138	65	2.5	2.5	-	-	-
	TOTALS	2,492									56.5	50.8	2,045	5.7	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

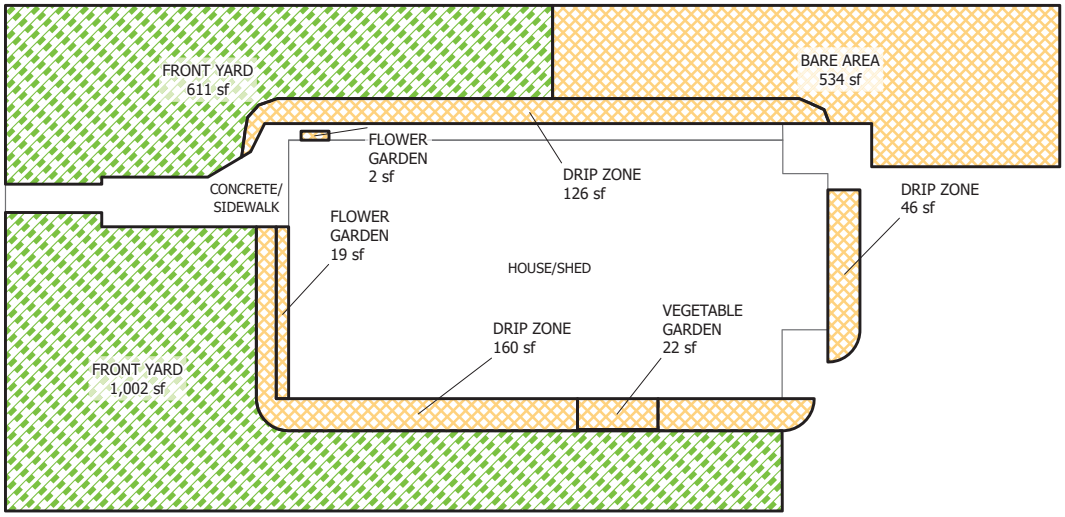
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
6" RA
18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-204A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-204A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-204A-BA	Bare Area (BA)	534	27	46	45	30	446	361	131	14	9.9	9.9	534	-	-
BE-204A-DZ	Drip Zone (DZ)	332	18	21	20	19.1	671	621	194	52	6.1	6.1	332	-	-
BE-204A-FG	Flower Garden (FG)	21	17	22	21	16	401	456	156	29	0.4	0.4	21	-	-
BE-204A-FY	Front Yard (FY)	1,613	21	23	29	23	365	329	186	24	-	-	-	-	-
BE-204A-VG	Vegetable Garden (VG)	22	21	23	24	45	636	836	269	67	0.4	0.4	22	-	-
	TOTALS	2,522									16.8	16.8	909		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

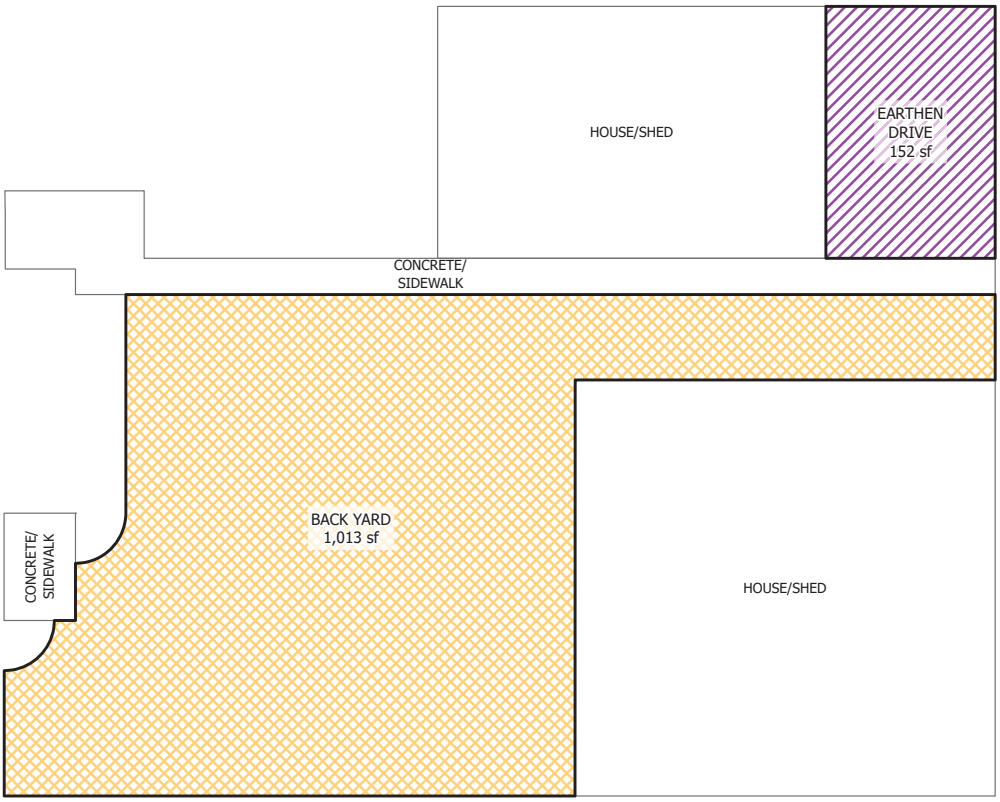
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-204B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-204B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-204B-BY	Back Yard (BY)	1,013	32	26	44	96	531	375	373	315	18.8	18.8	1,013	-	-
BE-204B-DZ	Drip Zone (DZ)	220	22	49	29	35	291	268	302	97	-	-	-	-	-
BE-204B-ED	Earthen Drive (ED)	152	18	60	62	23	523	388	403	135	5.6	2.8	-	2.8	-
	TOTALS	1,385									24.4	21.6	1,013	2.8	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

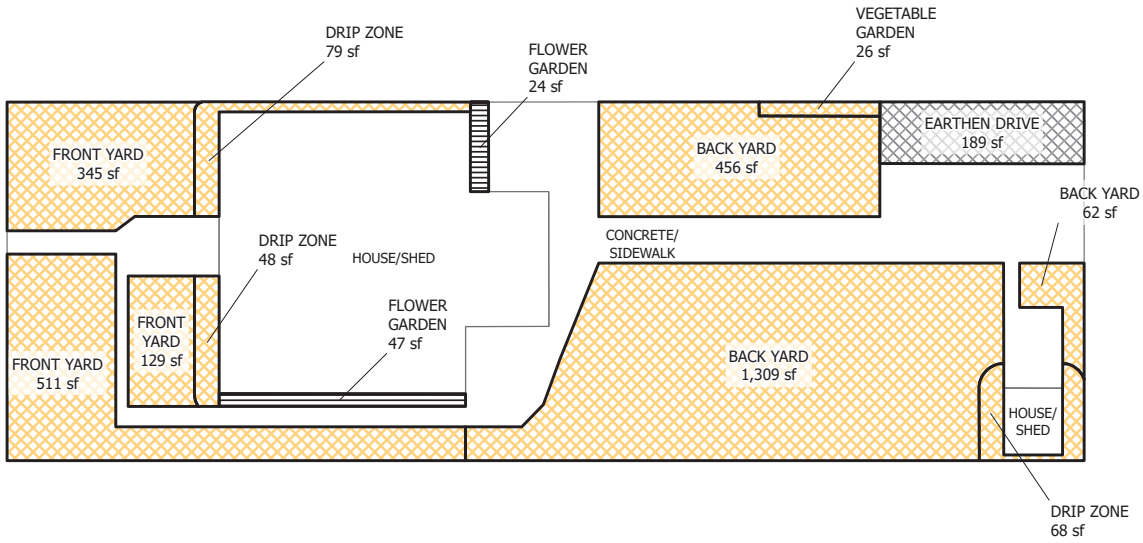
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
6" RA
12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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NOTE: ED Sampling refusal at 6 or 12 inches during sampling. Concentrations to 18 inches assumed based upon the 0 to 6 inch samples. No further sampling planned.

Resident ID
BE-205

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-205			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-205-BY	Back Yard (BY)	1,827	18	27	41	44	716	387	264	89	33.8	33.8	1,827	-	-
BE-205-DZ	Drip Zone (DZ)	195	23	33	71	41	1110	434	208	62	3.6	3.6	195	-	-
BE-205-ED	Earthen Drive (ED)	189	23	16	N/A	N/A	853	2770	N/A	N/A	10.5	7.0	-	3.5	-
BE-205-FG	Flower Garden (FG)	71	28	37	51	34	1120	583	464	476	5.3	5.3	71	-	-
BE-205-FY	Front Yard (FY)	985	23	32	38	44	469	304	62	18	18.2	18.2	985	-	-
BE-205-VG	Vegetable Garden (VG)	26	23	29	32	27	418	304	172	42	0.5	0.5	26	-	-
	TOTALS	3,293									71.9	68.4	3,104	3.5	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/**Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to **24 inches** below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

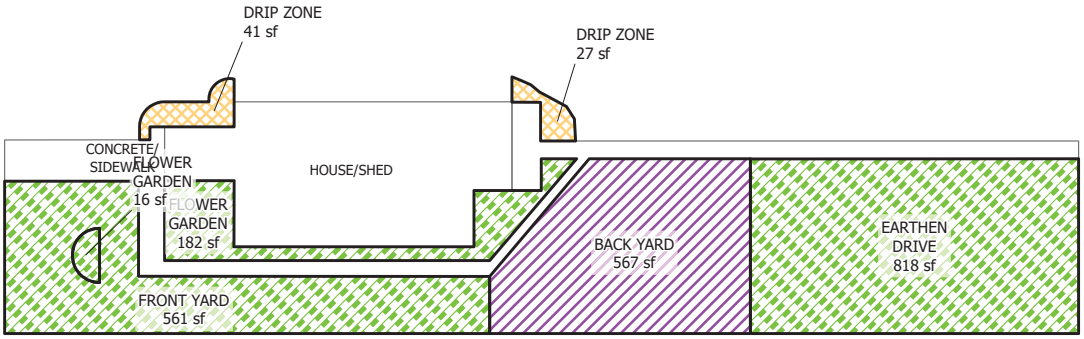
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
6" RA
18" RA
24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-206A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-206A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-206A-BY	Back Yard (BY)	567	21	41	71	45	217	337	501	37	21.0	21.0	567	-	-
BE-206A-DZ	Drip Zone (DZ)	68	22	30	29	22	356	407	181	92	1.3	1.3	68	-	-
BE-206A-ED	Earthen Drive (ED)	818	29	41	73	104	308	200	184	60	-	-	-	-	-
BE-206A-FG	Flower Garden (FG)	198	16	21	30	34	108	148	139	146	-	-	-	-	-
BE-206A-FY	Front Yard (FY)	561	44	65	34	76	233	88	43	341	-	-	-	-	-
	TOTALS	2,212									22.3	22.3	635		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/**Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

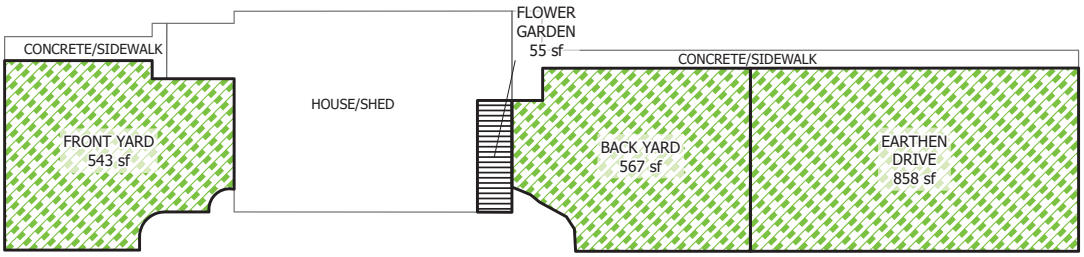
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-206B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-206B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-206B-BY	Back Yard (BY)	567	29	33	58	76	356	352	324	349	-	-	-	-	-
BE-206B-DZ	Drip Zone (DZ)	220	23	28	23	25	321	300	225	345	-	-	-	-	-
BE-206B-ED	Earthen Drive (ED)	858	52	65	79	57	222	110	104	58	-	-	-	-	-
BE-206B-FG	Flower Garden (FG)	55	25	26	27	32	332	295	342	418	4.1	4.1	55	-	-
BE-206B-FY	Front Yard (FY)	543	22	23	41	27	251	233	150	263	-	-	-	-	-
	TOTALS	2,243									4.1	4.1	55		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

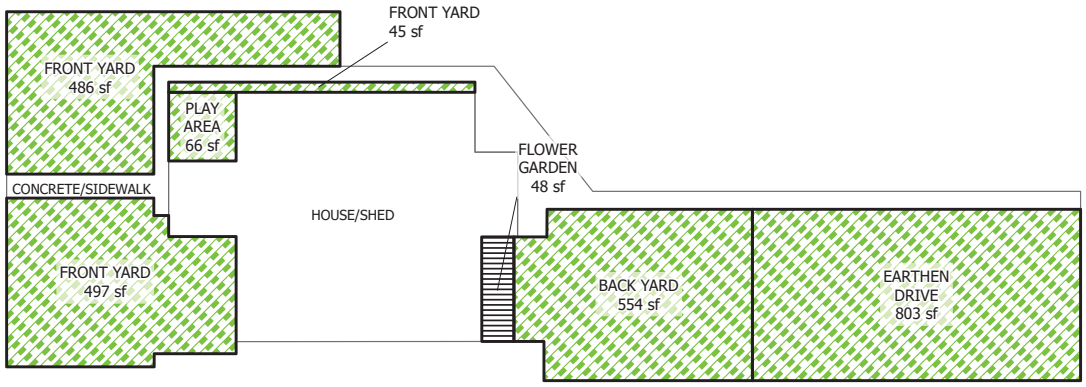
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-206C

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-206C			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-206C-BY	Back Yard (BY)	554	20	43	46	35	278	150	56	52	-	-	-	-	-
BE-206C-DZ	Drip Zone (DZ)	220	24	17	24	28	351	183	155	239	-	-	-	-	-
BE-206C-ED	Earthen Drive (ED)	803	22	40	66	61	199	301	326	104	-	-	-	-	-
BE-206C-FG	Flower Garden (FG)	48	26	14	22	43	303	175	310	405	3.6	3.6	48	-	-
BE-206C-FY	Front Yard (FY)	1,028	23	29	41	49	271	266	285	132	-	-	-	-	-
BE-206C-PA	Play Area (PA)	66	23	26	25	35	307	365	105	21	-	-	-	-	-
	TOTALS	2,719									3.6	3.6	48		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/**Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to **24 inches** below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

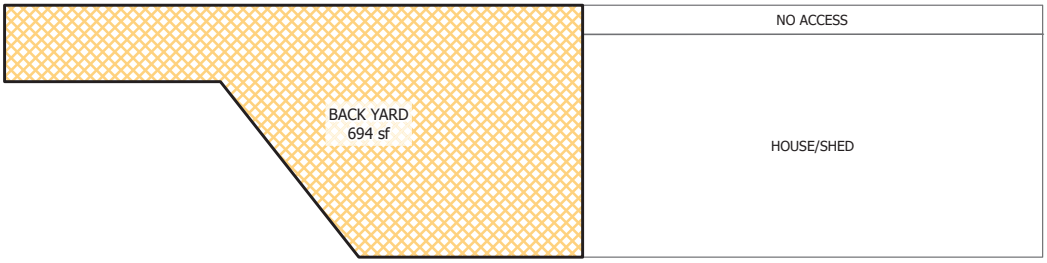
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-206D

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-206D			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-13"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-206D-BY	Back Yard (BY)	694	21	39	56	50	384	1490	336	118	12.9	12.9	694	-	-
BE-206D-DZ	Drip Zone (DZ)	220	19	33	38	87	261	289	124	288	-	-	-	-	-
	TOTALS	914									12.9	12.9	694		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/**Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

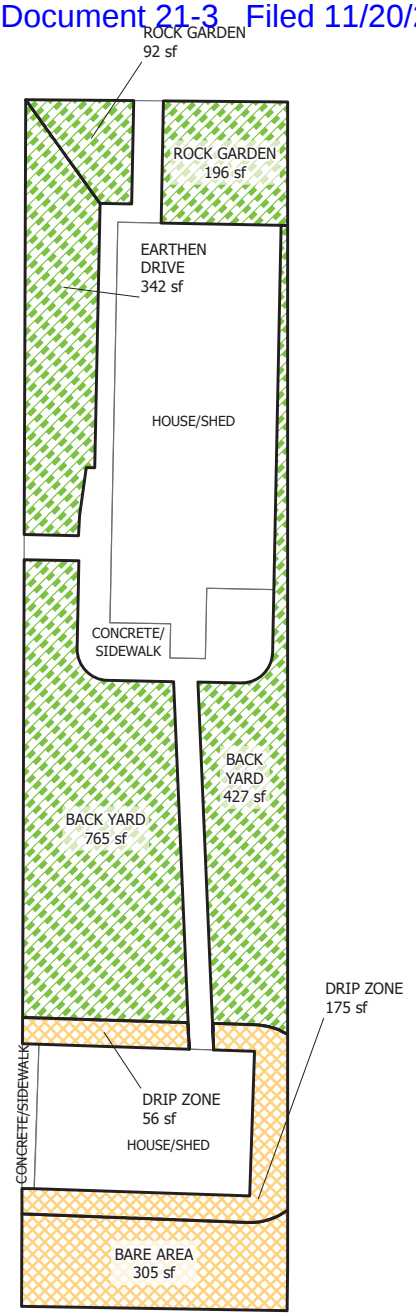
Legend

6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-207

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-207			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-207-BA	Bare Area (BA)	305	23	35	55	24	340	675	270	118	5.6	5.6	305	-	-
BE-207-BY	Back Yard (BY)	1,192	27	34	44	38	290	236	226	115	-	-	-	-	-
BE-207-DZ	Drip Zone (DZ)	231	18	31	54	33	839	427	72	17	4.3	4.3	231	-	-
BE-207-ED	Earthen Drive (ED)	342	15	93	23	4	167	206	13	4	-	-	-	-	-
BE-207-RG	Rock Garden (RG)	288	12	32	42	28	288	362	77	6	-	-	-	-	-
	TOTALS	2,358									9.9	9.9	536		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

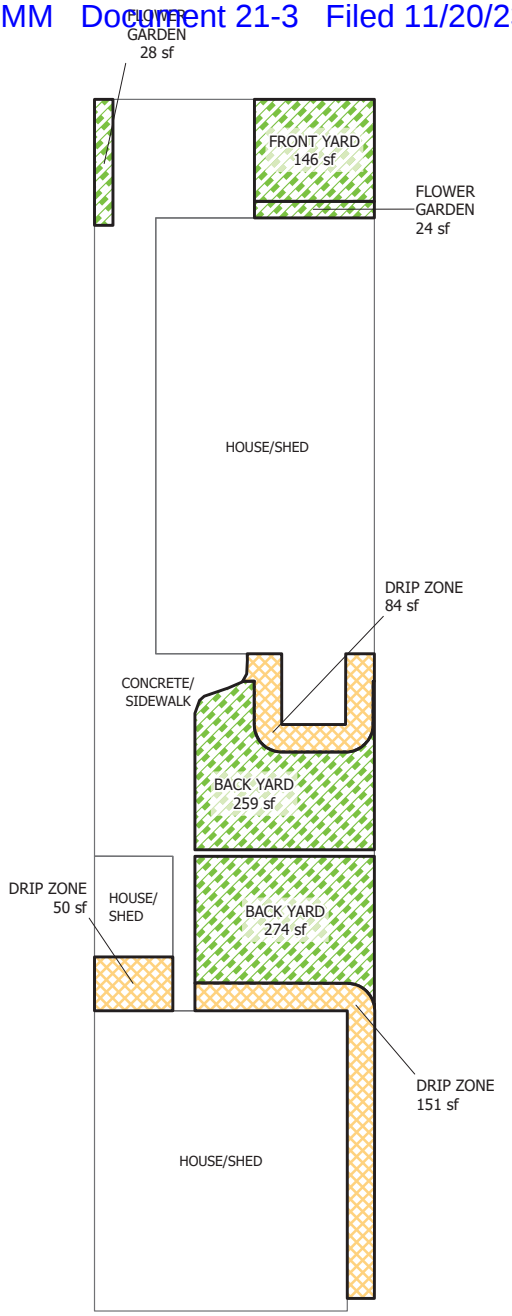
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-210

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-210			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-13"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-210-BY	Back Yard (BY)	533	20	24	29	33	323	300	330	336	-	-	-	-	-
BE-210-DZ	Drip Zone (DZ)	285	22	26	27	30	429	406	214	248	5.3	5.3	285	-	-
BE-210-FG	Flower Garden (FG)	52	21	28	22	32	360	210	18	14	-	-	-	-	-
BE-210-FY	Front Yard (FY)	146	23	29	33	27	230	187	30	39	-	-	-	-	-
	TOTALS	1,016									5.3	5.3	285		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

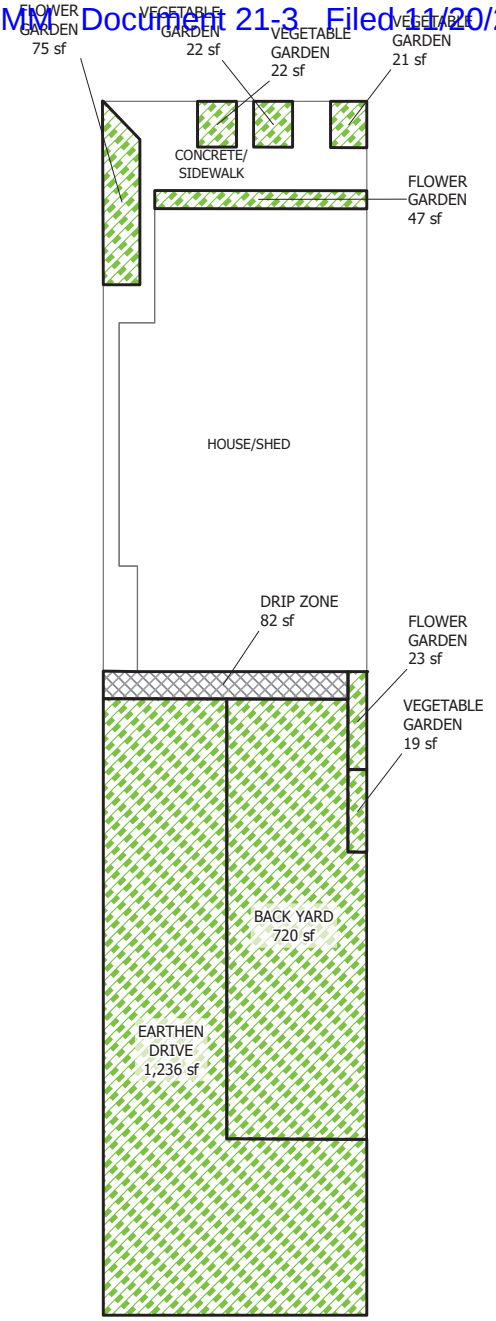
Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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PROPERTY ADDRESS: 1520 COLORADO AVE
RESIDENT ID: BE-213



Resident ID
BE-213

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-213			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-213-BY	Back Yard (BY)	720	15	19	26	32	80	282	300	167	-	-	-	-	-
BE-213-DZ	Drip Zone (DZ)	82	12	8	23	29	71	36	595	441	4.6	4.6	82	-	-
BE-213-ED	Earthen Drive (ED)	1,236	31	36	38	34	114	149	187	166	-	-	-	-	-
BE-213-FG	Flower Garden (FG)	145	19	14	47	46	149	84	149	140	-	-	-	-	-
BE-213-VG	Vegetable Garden (VG)	84	18	20	15	55	252	342	91	92	-	-	-	-	-
	TOTALS	2,267									4.6	4.6	82		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

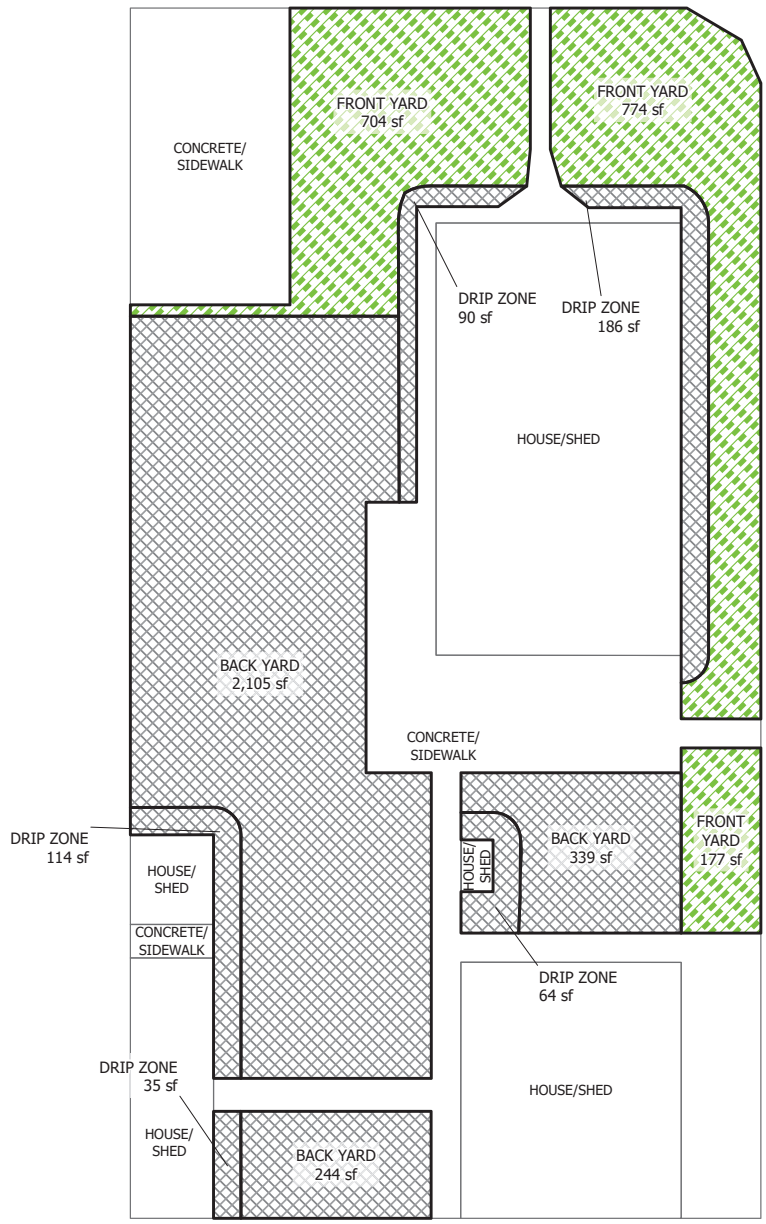
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-216

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-216			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-216-BY	Back Yard (BY)	2,688	17	24	34	24	168	143	114	466	149.3	149.3	2,688	-	-
BE-216-DZ	Drip Zone (DZ)	489	23	39	61	78	16	527	907	1470	27.2	27.2	489	-	-
BE-216-FY	Front Yard (FY)	1,655	17	26	49	67	150	220	191	88	-	-	-	-	-
	TOTALS	4,832									176.5	176.5	3,177		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

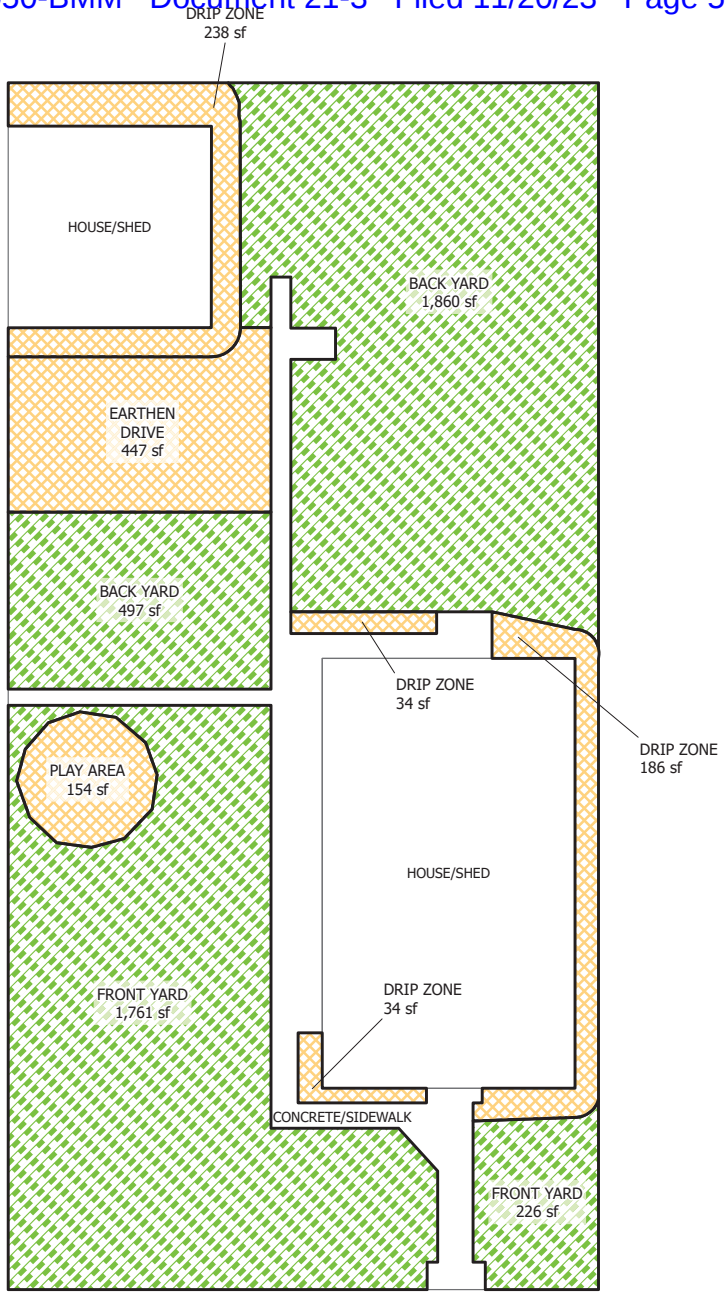
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-217

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-217			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-217-BY	Back Yard (BY)	2,357	31	38	42	63	388	332	306	251	-	-	-	-	-
BE-217-DZ	Drip Zone (DZ)	492	42	56	54	36	992	807	163	94	9.1	9.1	492	-	-
BE-217-ED	Earthen Drive (ED)	447	18	39	89	79	402	290	211	49	8.3	-	-	8.3	-
BE-217-FY	Front Yard (FY)	1,988	34	51	51	67	335	211	70	106	-	-	-	-	-
BE-217-PA	Play Area (PA)	154	47	86	52	68	234	161	13	39	2.9	2.9	154	-	-
	TOTALS	5,438									20.3	12.0	646	8.3	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

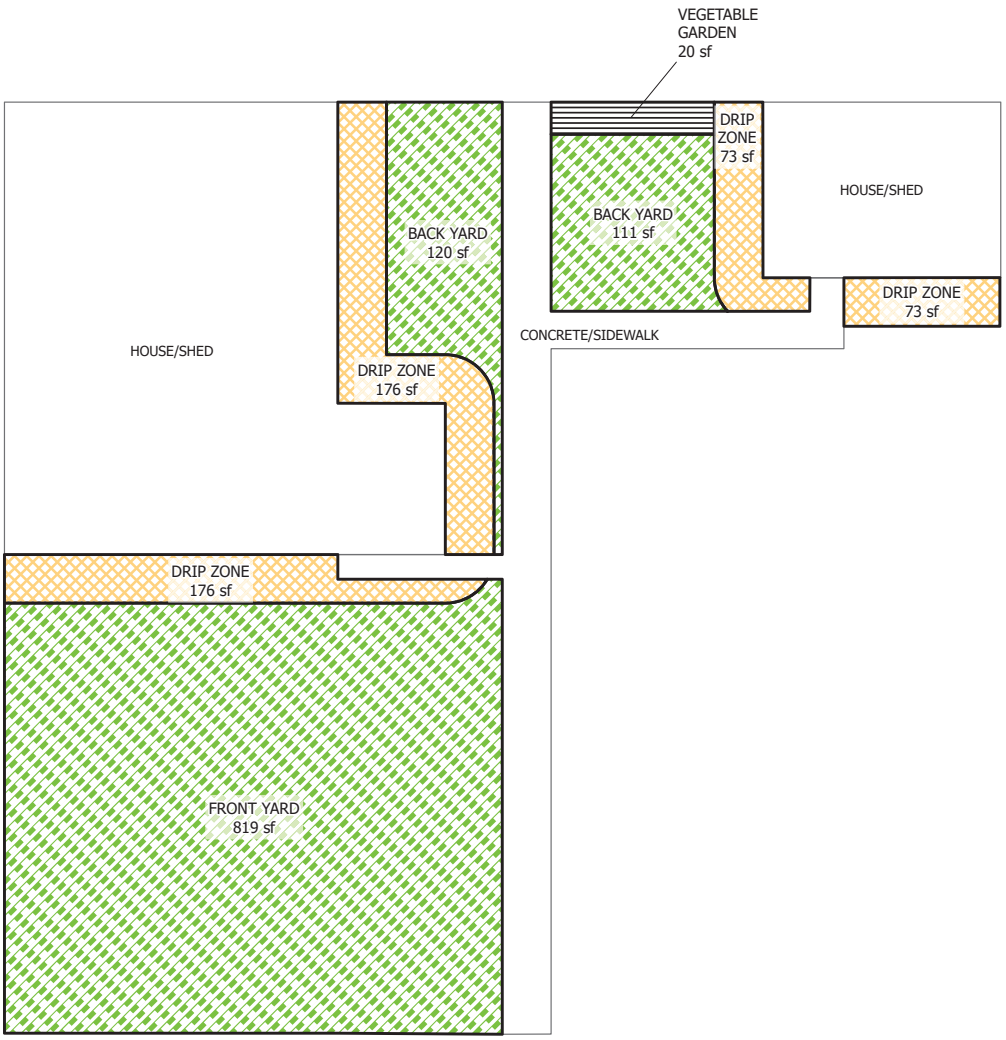
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-218B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-218B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-218B-BY	Back Yard (BY)	230	34	32	63	32	319	247	53	13	-	-	-	-	-
BE-218B-DZ	Drip Zone (DZ)	249	49	61	67	61	317	251	198	116	4.6	4.6	249	-	-
BE-218B-FY	Front Yard (FY)	819	33	64	31	50	177	264	242	200	-	-	-	-	-
BE-218B-VG	Vegetable Garden (VG)	20	34	34	71	111	269	285	588	858	1.5	1.5	20	-	-
	TOTALS	1,318									6.1	6.1	269		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

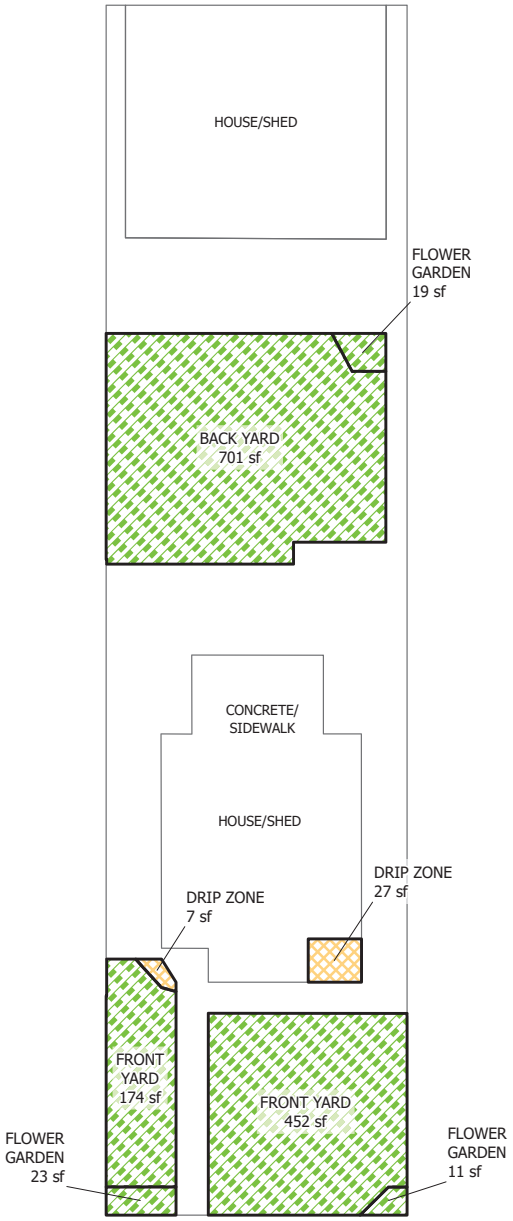
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-219

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-219			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-219-BY	Back Yard (BY)	701	33	34	36	45	267	228	257	228	-	-	-	-	-
BE-219-DZ	Drip Zone (DZ)	34	25	32	29	33	525	1100	243	27	0.6	0.6	34	-	-
BE-219-FG	Flower Garden (FG)	53	30	35	50	45	326	343	317	117	-	-	-	-	-
BE-219-FY	Front Yard (FY)	626	31	34	41	44	228	366	343	83	-	-	-	-	-
	TOTALS	1,414									0.6	0.6	34		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

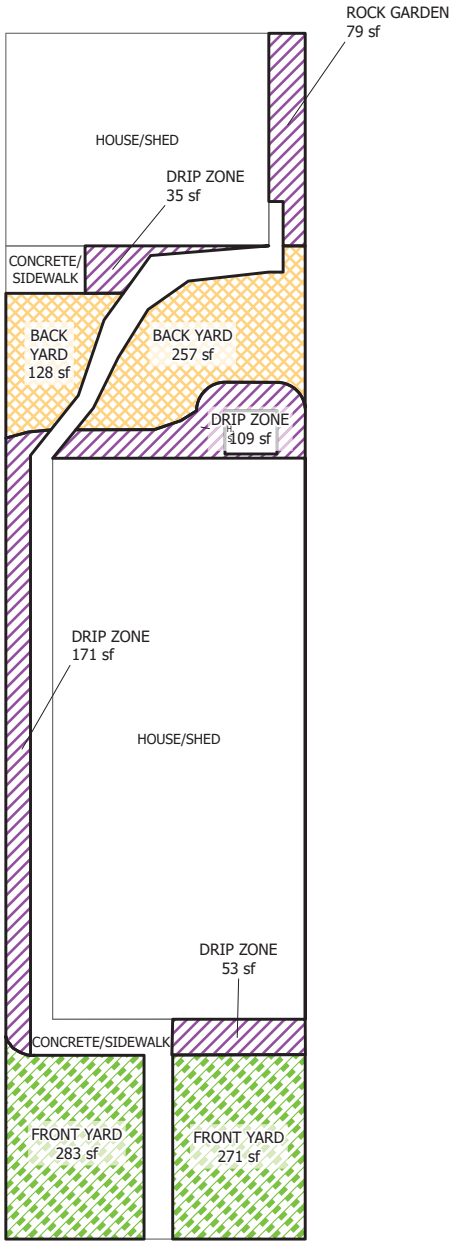
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-220

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-220			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-220-BY	Back Yard (BY)	385	113	31	90	65	389	299	233	181	7.1	7.1	385	-	-
BE-220-DZ	Drip Zone (DZ)	368	29	38	54	204	397	556	430	141	13.6	13.6	368	-	-
BE-220-FY	Front Yard (FY)	554	33	42	44	41	229	246	142	108	-	-	-	-	-
BE-220-RG	Rock Garden (RG)	79	35	83	126	108	409	527	630	381	2.9	2.9	-	-	-
	TOTALS	1,386									23.6	23.6	753		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

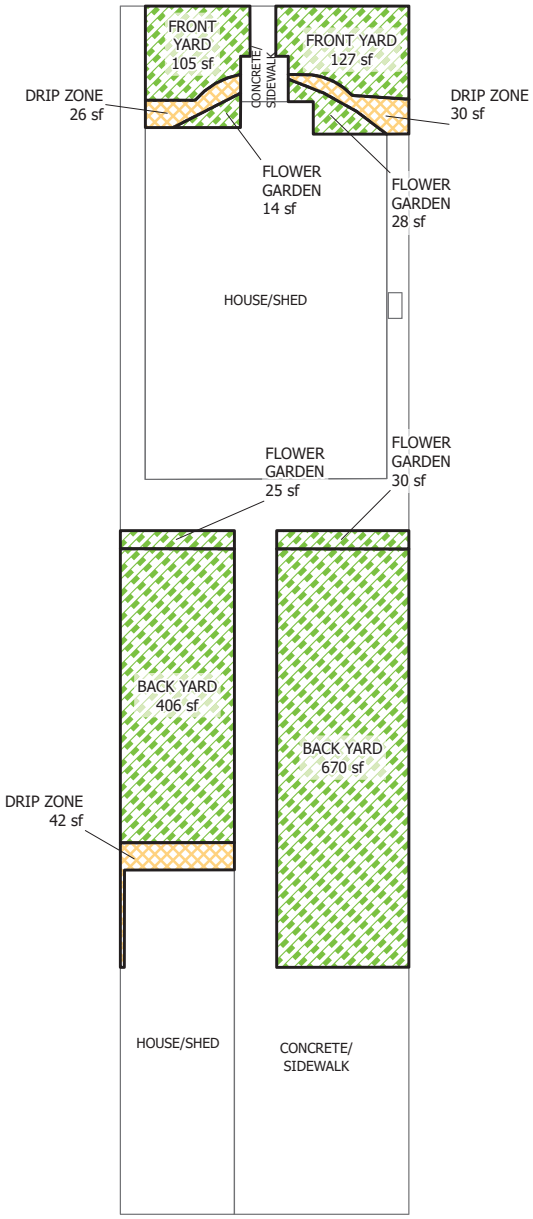
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-223

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-223			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-223-BY	Back Yard (BY)	1,076	48	23	21	19	210	176	84	73	-	-	-	-	-
BE-223-DZ	Drip Zone (DZ)	98	18	23	22	22	424	480	80	212	1.8	1.8	98	-	-
BE-223-FG	Flower Garden (FG)	97	21	22	20	22	328	174	70	79	-	-	-	-	-
BE-223-FY	Front Yard (FY)	232	11	19	29	26	199	174	130	52	-	-	-	-	-
	TOTALS	1,503									1.8	1.8	98		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

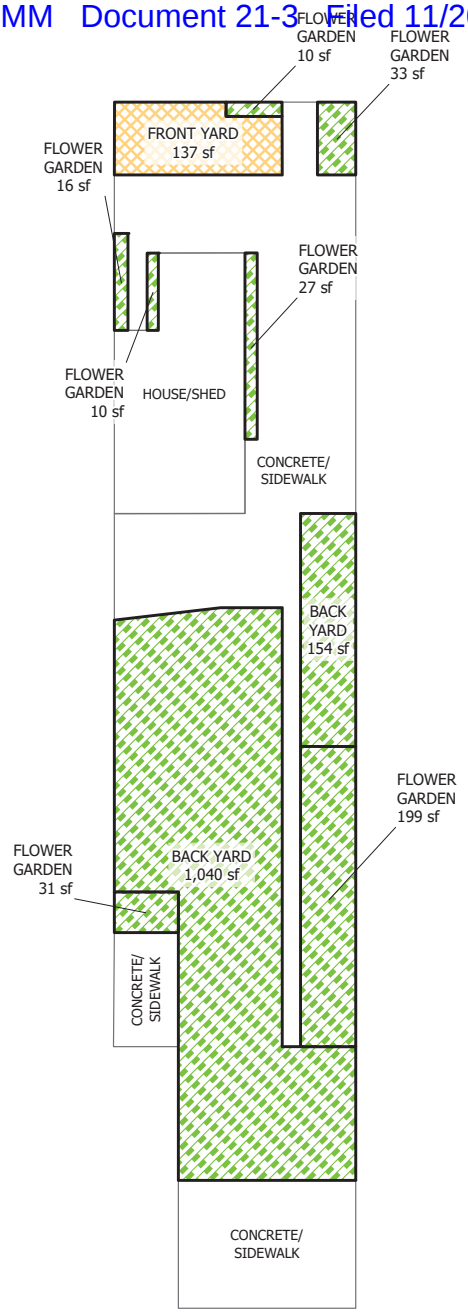
Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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PROPERTY ADDRESS: 1708 COLORADO AVE
RESIDENT ID: BE-225A



Resident ID
BE-225A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-225A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-225A-BY	Back Yard (BY)	1,194	23	26	31	33	210	224	235	189	-	-	-	-	-
BE-225A-DZ	Drip Zone (DZ)	220	9	16	18	29	29	44	36	131	-	-	-	-	-
BE-225A-FG	Flower Garden (FG)	326	18	23	25	33	185	182	135	265	-	-	-	-	-
BE-225A-FY	Front Yard (FY)	137	27	32	62	73	597	226	106	87	2.5	2.5	137	-	-
	TOTALS	1,877									2.5	2.5	137		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

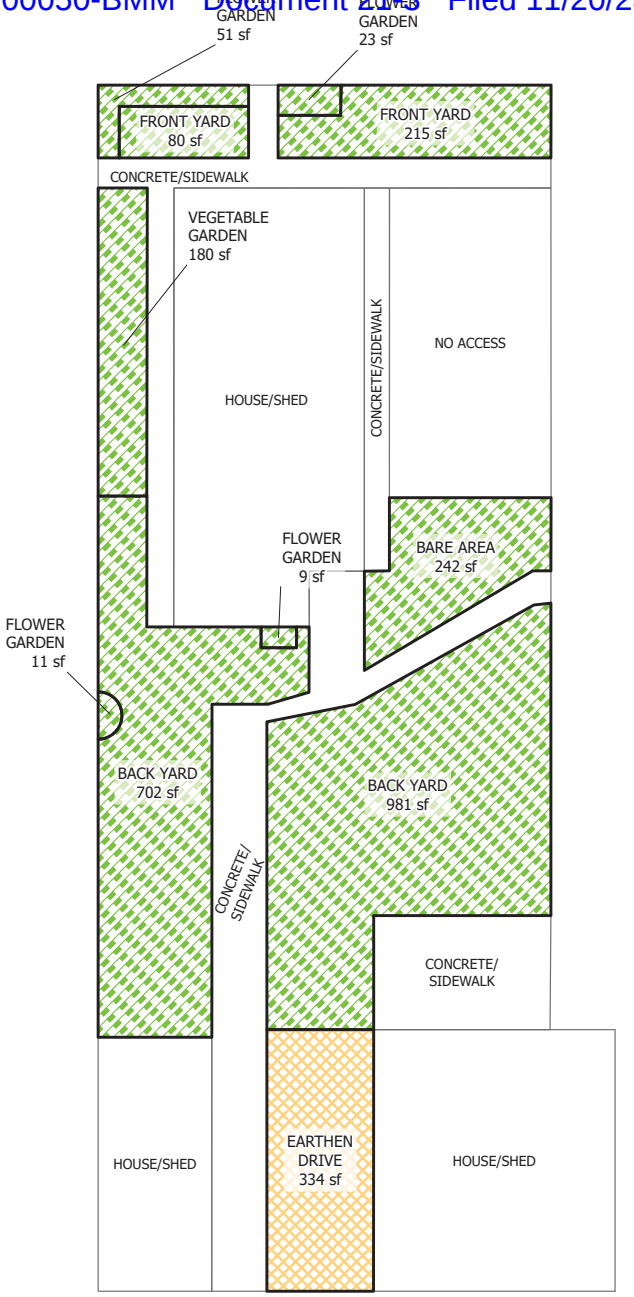
Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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PROPERTY ADDRESS: 1708 COLORADO AVE
RESIDENT ID: BE-225B



Resident ID
BE-225B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-225B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-225B-BA	Bare Area (BA)	242	24	21	67	22	217	227	135	63	-	-	-	-	-
BE-225B-BY	Back Yard (BY)	1,683	25	28	35	36	245	238	237	139	-	-	-	-	-
BE-225B-ED	Earthen Drive (ED)	334	35	41	47	62	464	361	210	61	6.2	-	-	6.2	-
BE-225B-FG	Flower Garden (FG)	94	18	18	15	6	199	210	36	16	-	-	-	-	-
BE-225B-FY	Front Yard (FY)	295	23	34	29	14	336	282	112	25	-	-	-	-	-
BE-225B-VG	Vegetable Garden (VG)	180	28	17	24	15	30	167	19	7	-	-	-	-	-
	TOTALS	2,828									6.2			6.2	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

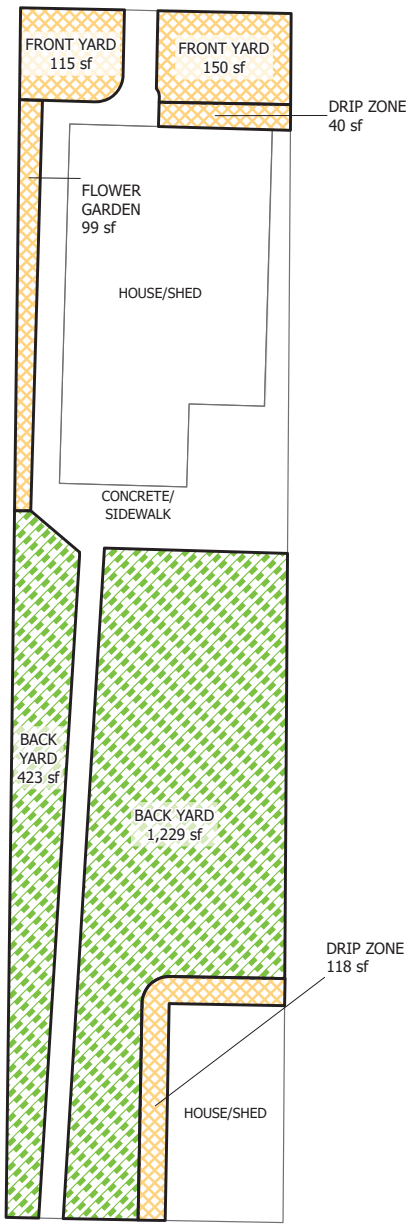
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-230

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-230			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-230-BY	Back Yard (BY)	1,652	24	37	53	61	284	322	165	89	-	-	-	-	-
BE-230-DZ	Drip Zone (DZ)	158	45	102	58	54	2150	537	26	38	2.9	2.9	158	-	-
BE-230-FG	Flower Garden (FG)	99	28	36	52	36	635	366	149	48	1.8	1.8	99	-	-
BE-230-FY	Front Yard (FY)	265	21	34	30	27	1040	468	144	119	4.9	4.9	265	-	-
	TOTALS	2,174									9.6	9.6	522		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-231

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-231			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-231-BY	Back Yard (BY)	1,187	20	33	40	23	122	89	51	36	-	-	-	-	-
BE-231-FG	Flower Garden (FG)	191	20	23	27	21	51	174	100	68	-	-	-	-	-
BE-231-FY	Front Yard (FY)	475	24	51	59	61	313	429	133	44	8.8	8.8	475	-	-
BE-231-VG	Vegetable Garden (VG)	438	21	20	36	75	143	142	279	351	-	-	-	-	-
	TOTALS	2,291									8.8	8.8	475		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

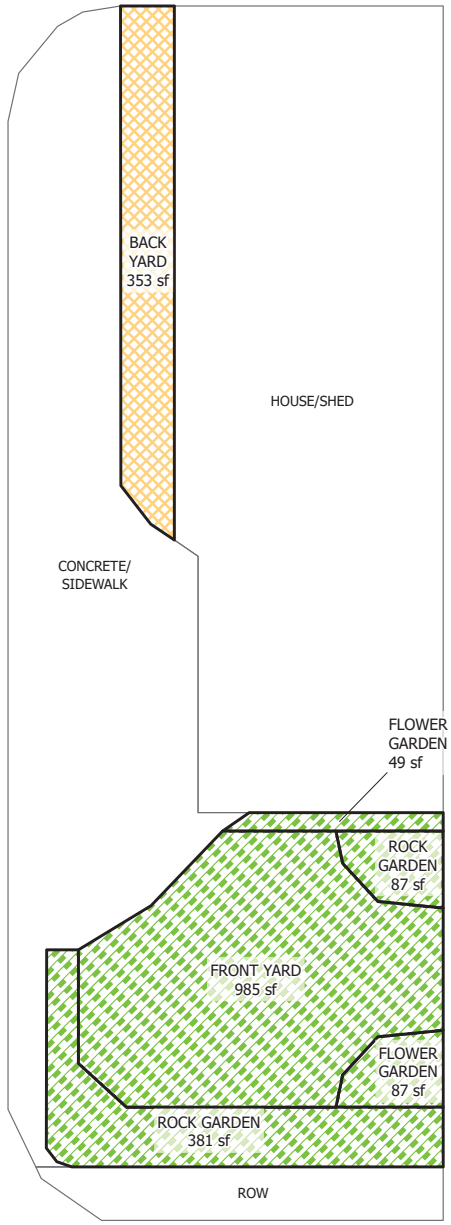
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-233

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-233			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-233-BY	Back Yard (BY)	353	20	27	26	28	433	361	287	146	6.5	6.5	353	-	-
BE-233-DZ	Drip Zone (DZ)	220	14	15	24	19	265	218	249	159	-	-	-	-	-
BE-233-FG	Flower Garden (FG)	136	16	18	15	22	387	352	86	84	-	-	-	-	-
BE-233-FY	Front Yard (FY)	985	18	24	20	29	296	234	115	80	-	-	-	-	-
BE-233-RG	Rock Garden (RG)	468	21	27	28	32	311	324	160	94	-	-	-	-	-
	TOTALS	2,162									6.5	6.5	353		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

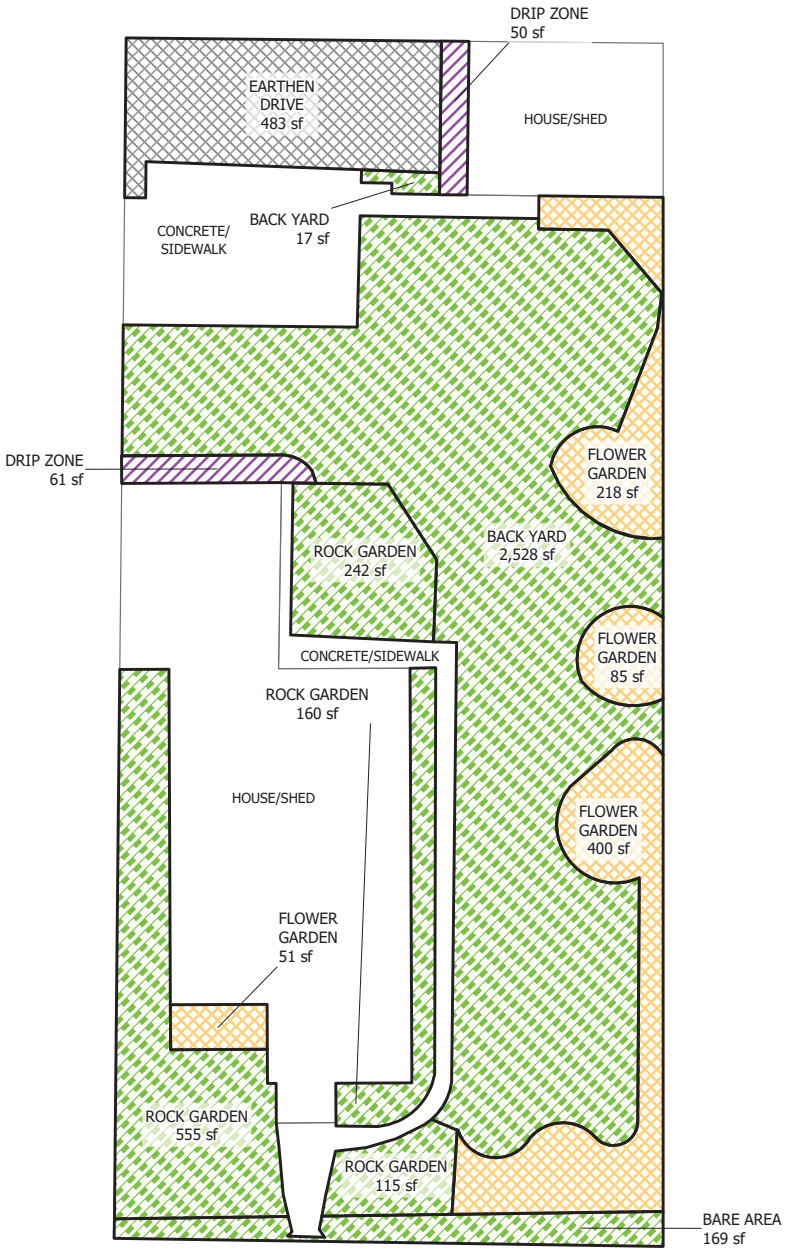
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-234

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-234			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-234-BA	Bare Area (BA)	169	15	24	26	21	242	280	145	54	-	-	-	-	-
BE-234-BY	Back Yard (BY)	2,545	19	24	71	27	220	201	144	20	-	-	-	-	-
BE-234-DZ	Drip Zone (DZ)	111	26	30	41	42	1250	463	571	238	4.1	4.1	111	-	-
BE-234-ED	Earthen Drive (ED)	483	50	201	154	175	528	689	490	528	26.8	17.9	-	8.9	-
BE-234-FG	Flower Garden (FG)	754	16	22	28	37	681	364	333	370	14.0	14.0	754	-	-
BE-234-RG	Rock Garden (RG)	1,072	25	39	43	52	354	277	143	65	-	-	-	-	-
	TOTALS	5,134									44.9	36.0	865	8.9	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

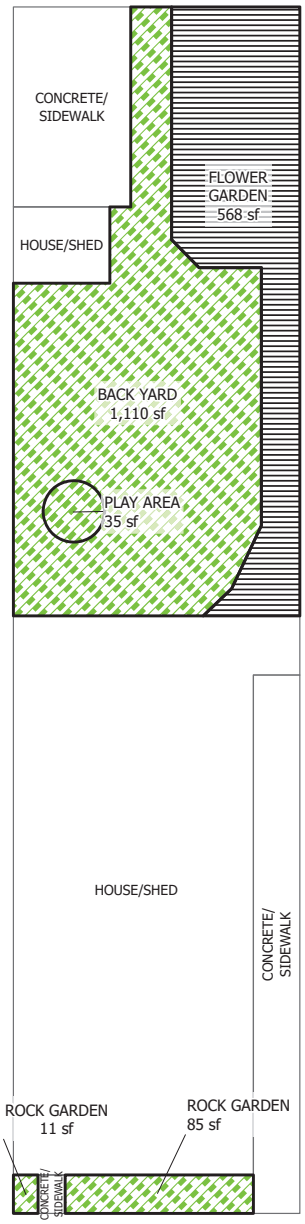
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-235

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-235			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-13"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-235-BY	Back Yard (BY)	1,110	36	19.1	58	46	296	142	210	108	-	-	-	-	-
BE-235-DZ	Drip Zone (DZ)	220	21	31	53	60	217	319	251	195	-	-	-	-	-
BE-235-FG	Flower Garden (FG)	568	18	18	26	36	183	138	390	560	42.1	42.1	568	-	-
BE-235-PA	Play Area (PA)	35	20	29	35	26	161	185	180	43	-	-	-	-	-
BE-235-RG	Rock Garden (RG)	96	26	30	18	12	327	383	50	32	-	-	-	-	-
	TOTALS	2,029									42.1	42.1	568		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

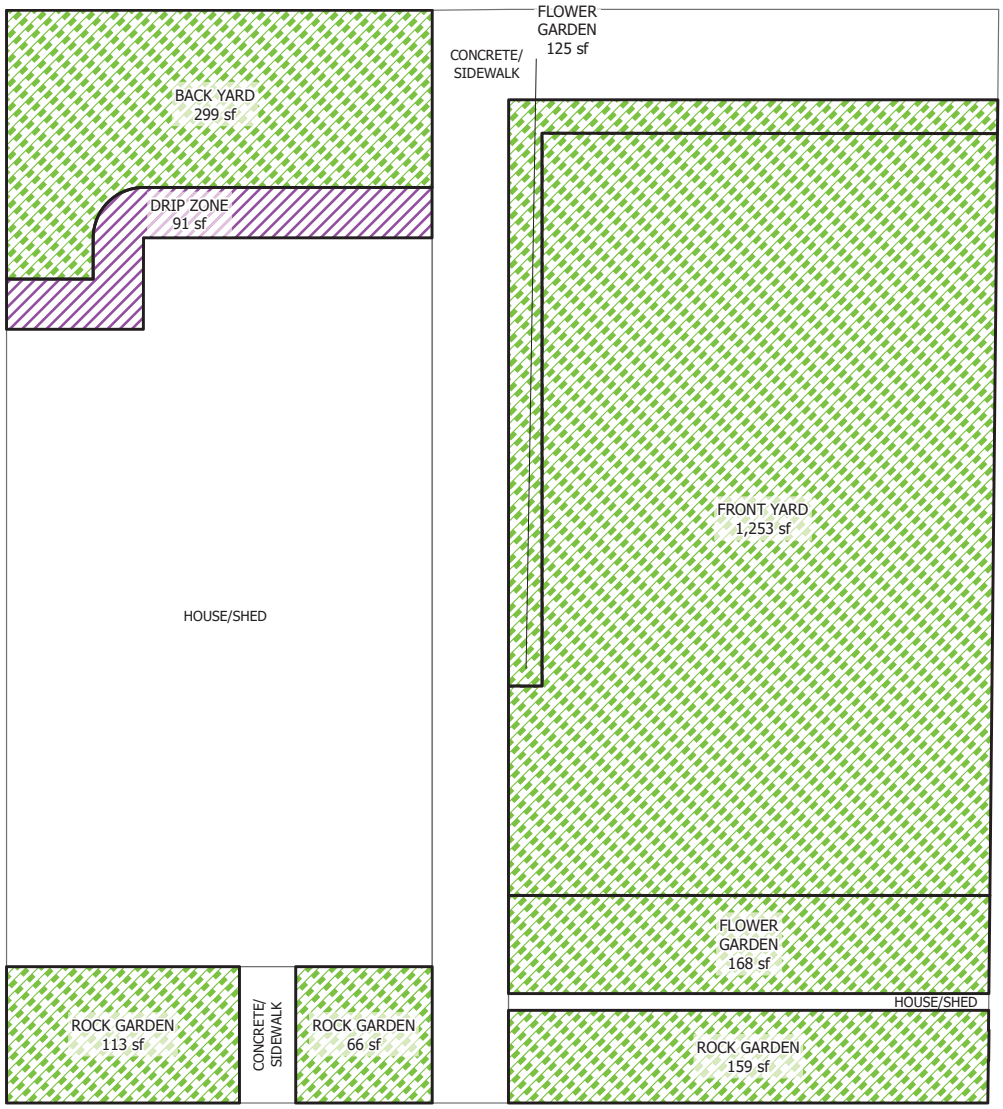
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-236A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-236A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-236A-BY	Back Yard (BY)	299	61	59	79	119	179	209	163	75	-	-	-	-	-
BE-236A-DZ	Drip Zone (DZ)	91	26	27	29	18	316	425	478	221	3.4	3.4	91	-	-
BE-236A-FG	Flower Garden (FG)	293	32	35	43	36	243	191	163	86	-	-	-	-	-
BE-236A-FY	Front Yard (FY)	1,253	34	36	42	38	298	243	167	68	-	-	-	-	-
BE-236A-RG	Rock Garden (RG)	338	23	21	35	17	318	338	314	163	-	-	-	-	-
	TOTALS	2,274									3.4	3.4	91		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

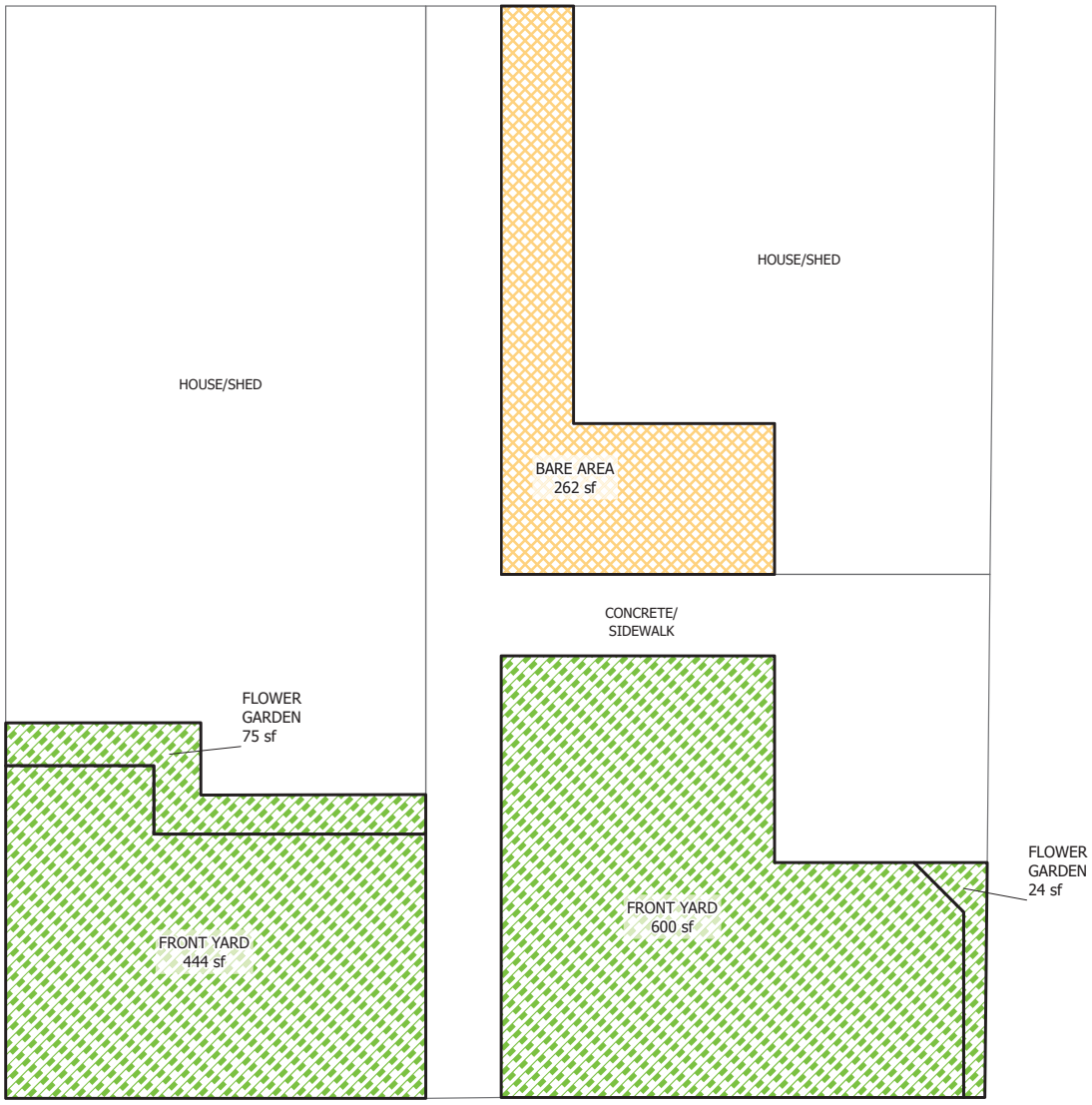
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-236B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-236B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-236B-BA	Bare Area (BA)	262	37	136	46	80	327	473	69	89	4.9	4.9	262	-	-
BE-236B-DZ	Drip Zone (DZ)	220	29	32	38	37	181	100	106	77	-	-	-	-	-
BE-236B-FG	Flower Garden (FG)	99	21	23	54	76	134	135	166	123	-	-	-	-	-
BE-236B-FY	Front Yard (FY)	1,044	35	49	66	80	190	219	204	92	-	-	-	-	-
	TOTALS	1,625									4.9	4.9	262		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

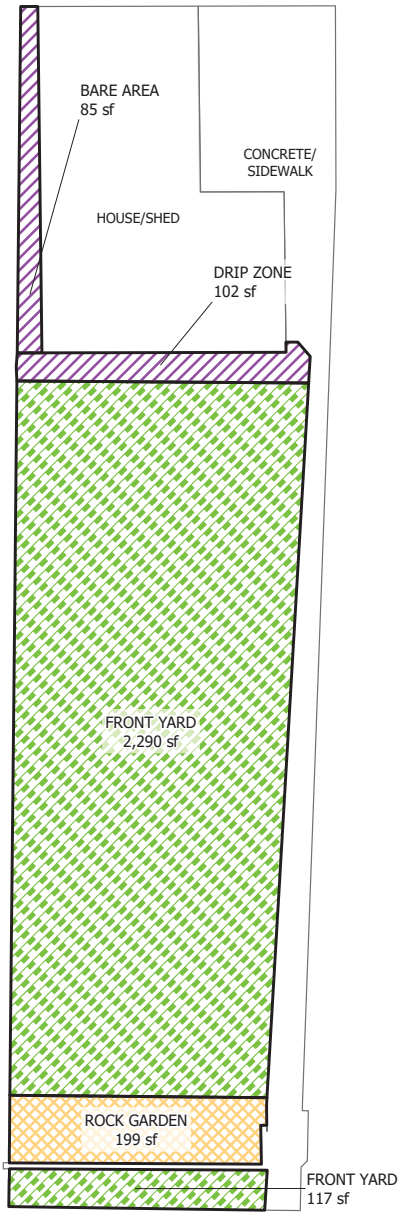
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-237A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-237A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-237A-BA	Bare Area (BA)	85	22	45	84	117	455	753	600	154	3.1	3.1	85	-	-
BE-237A-DZ	Drip Zone (DZ)	102	26	27	93	98	568	643	983	203	3.8	3.8	102	-	-
BE-237A-FY	Front Yard (FY)	2,407	30	52	72	60	324	266	181	120	-	-	-	-	-
BE-237A-RG	Rock Garden (RG)	199	38	70	96	88	257	290	210	101	3.7	3.7	-	-	-
	TOTALS	2,793									10.8	10.6	187		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

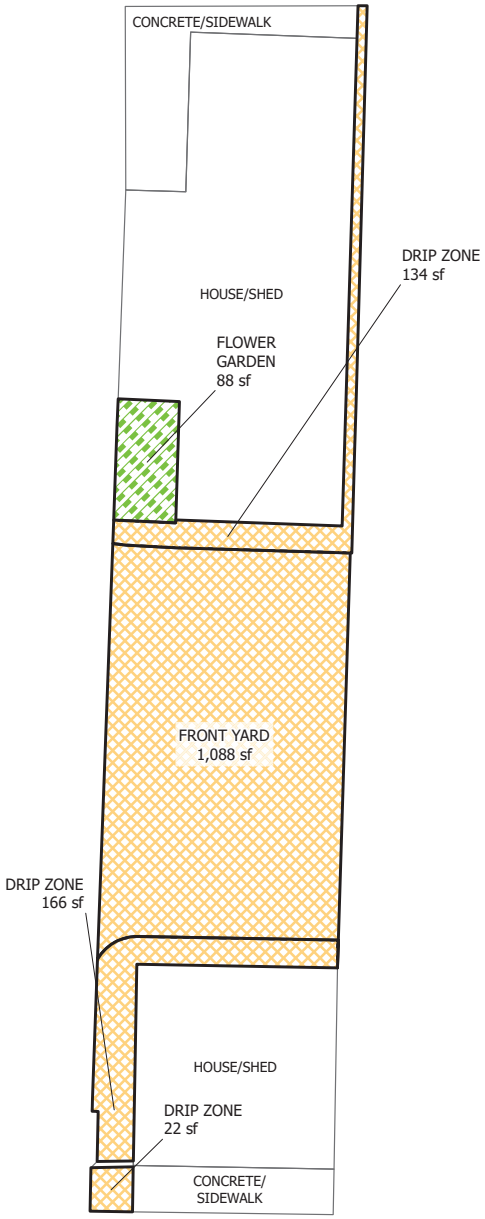
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-237B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-237B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-237B-DZ	Drip Zone (DZ)	322	32	41	55	80	305	501	156	168	6.0	6.0	322	-	-
BE-237B-FG	Flower Garden (FG)	88	29	42	48	38	269	287	157	178	-	-	-	-	-
BE-237B-FY	Front Yard (FY)	1,088	36	52	72	52	304	204	150	63	20.1	20.1	1,088	-	-
	TOTALS	1,498									26.1	26.1	1,410		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

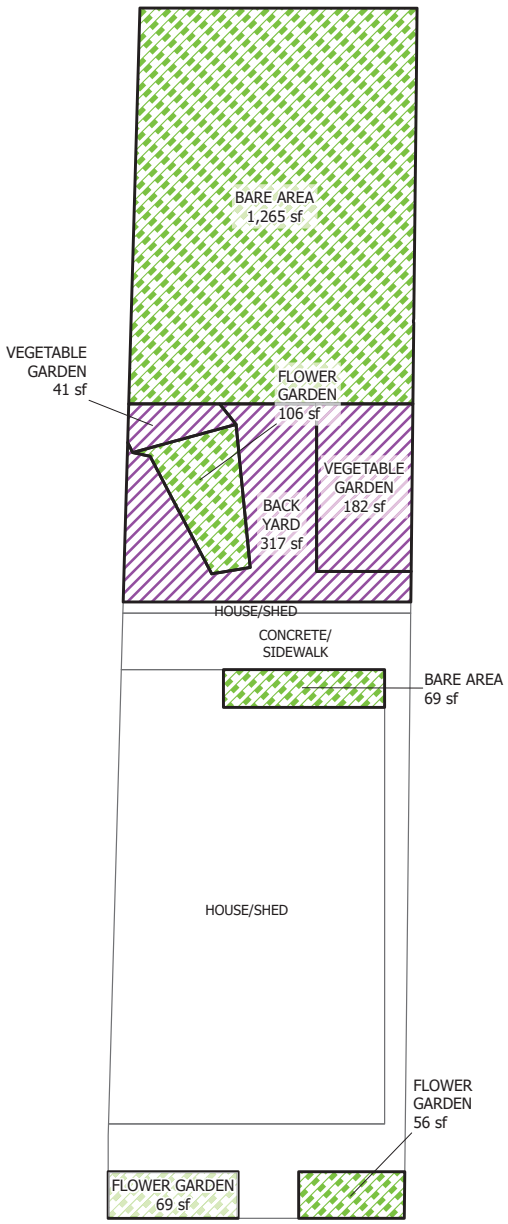
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-238

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-238			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-238-BA	Bare Area (BA)	1,334	14	18	18	16	141	195	78	160	-	-	-	-	-
BE-238-BY	Back Yard (BY)	317	47	43	114	14	294	271	618	210	11.7	11.7	317	-	-
BE-238-DZ	Drip Zone (DZ)	220	140	16	16	10	111	242	216	78	-	-	-	-	-
BE-238-FG	Flower Garden (FG)	231	13	14	24	21	219	38	280	157	-	-	-	-	-
BE-238-VG	Vegetable Garden (VG)	223	35	42	58	62	312	336	445	301	8.3	8.3	223	-	-
	TOTALS	2,325									20.0	20.0	540		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/**Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

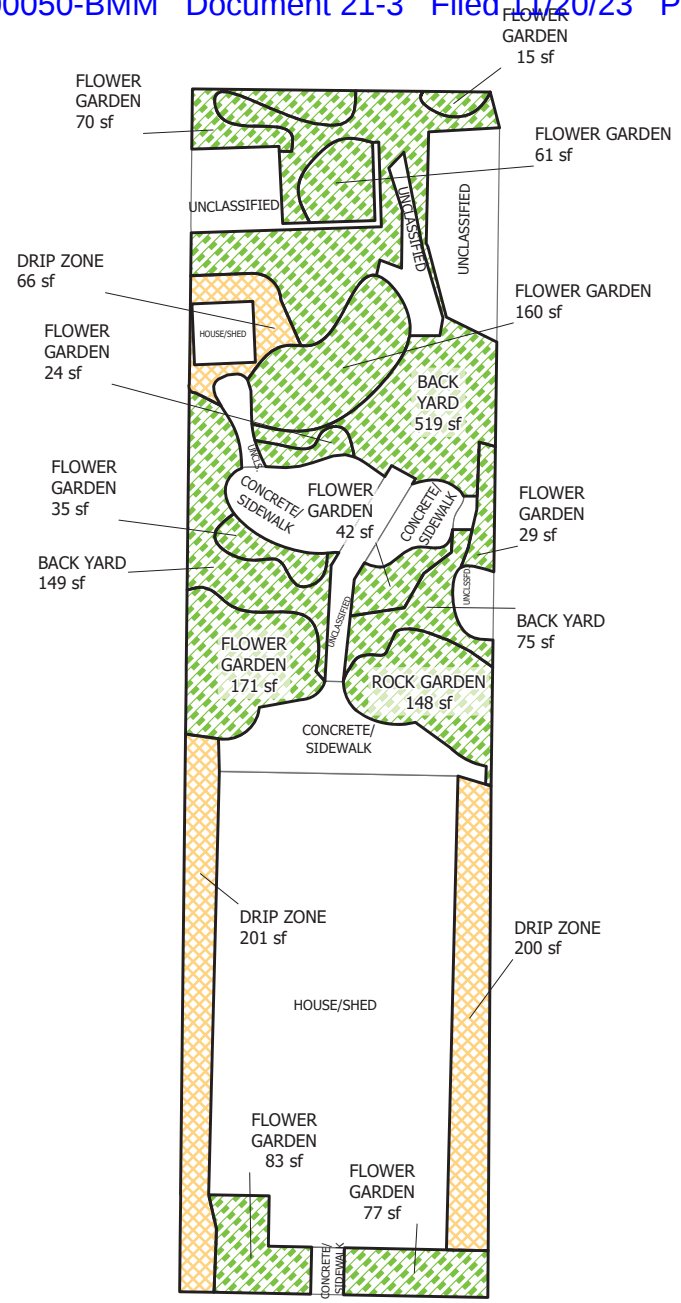
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-239

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-239			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-13"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-239-BY	Back Yard (BY)	743	34	40	48	67	120	117	269	309	-	-	-	-	-
BE-239-DZ	Drip Zone (DZ)	467	27	51	56	34	776	344	240	27	8.6	8.6	467	-	-
BE-239-FG	Flower Garden (FG)	767	5	8	9	16	20	39	42	104	-	-	-	-	-
BE-239-RG	Rock Garden (RG)	148	9	15	46	27	31	26	226	86	-	-	-	-	-
	TOTALS	2,125									8.6	8.6	467		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

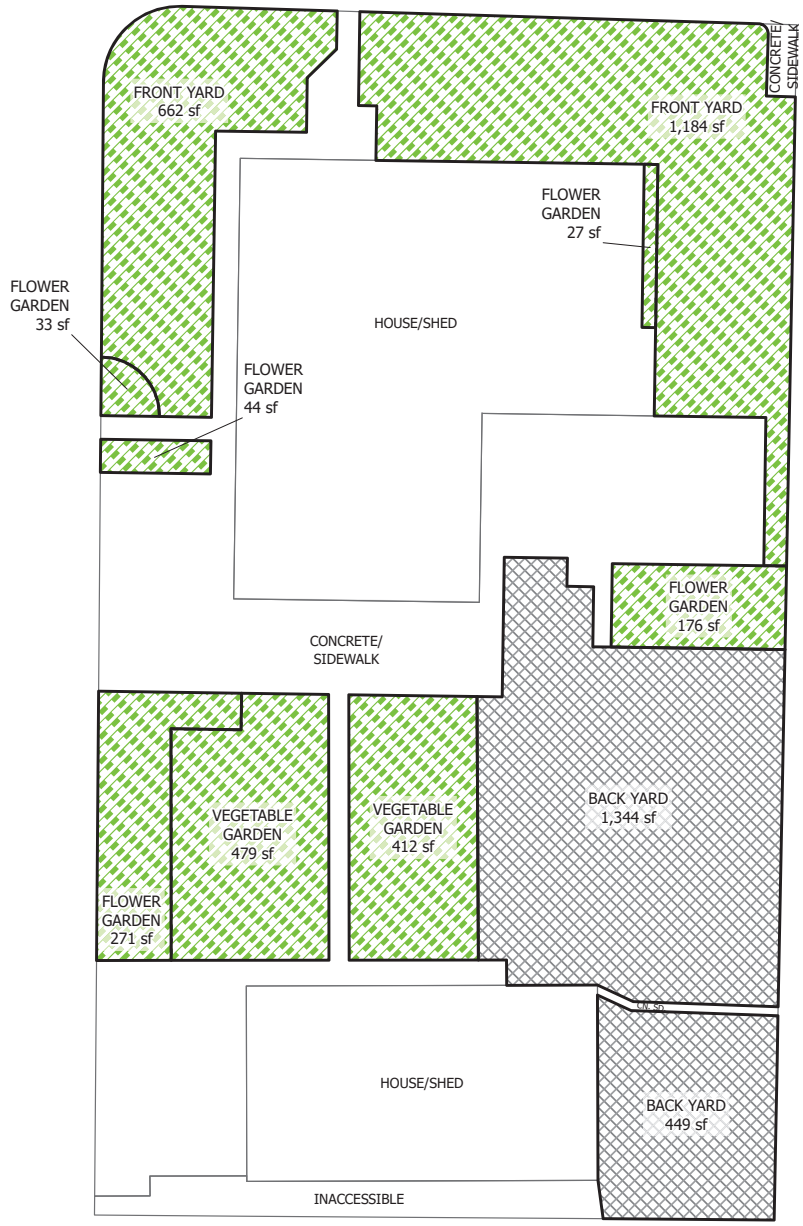
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-240

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-240			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-240-BY	Back Yard (BY)	1,793	28	37	36	44	267	359	927	1080	99.6	99.6	1,793	-	-
BE-240-DZ	Drip Zone (DZ)	220	24	41	64	34	170	212	126	35	-	-	-	-	-
BE-240-FG	Flower Garden (FG)	551	26	44	42	40	146	201	125	46	-	-	-	-	-
BE-240-FY	Front Yard (FY)	1,846	14	22	27	21	76	113	123	75	-	-	-	-	-
BE-240-VG	Vegetable Garden (VG)	891	34	34	33	155	189	149	82	39	-	-	-	-	-
	TOTALS	5,301									99.6	99.6	1,793		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

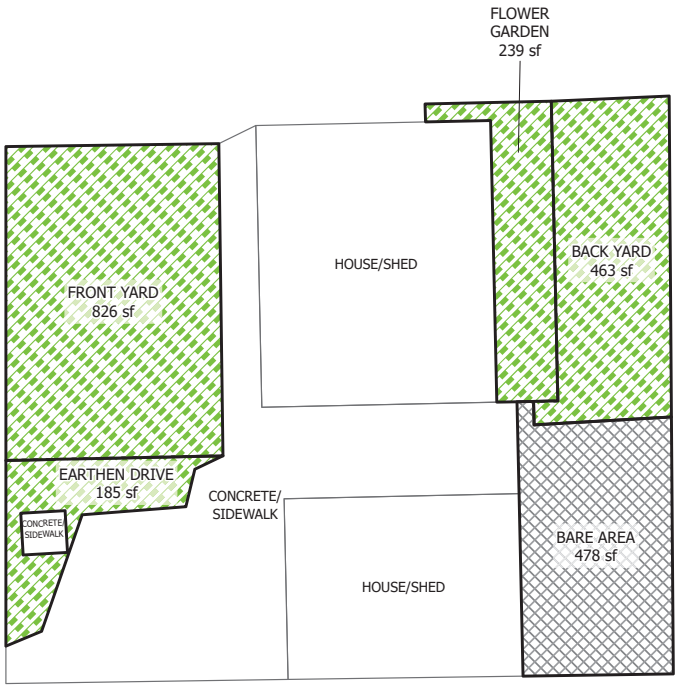
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-243B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-243B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-243B-BA	Bare Area (BA)	478	17	21	52	57	133	191	598	507	26.6	26.6	478	-	-
BE-243B-BY	Back Yard (BY)	463	24	37	20	18	59	79	52	55	-	-	-	-	-
BE-243B-DZ	Drip Zone (DZ)	220	15	20	18	28	140	148	48	75	-	-	-	-	-
BE-243B-ED	Earthen Drive (ED)	185	37	20	20	13	284	105	104	174	-	-	-	-	-
BE-243B-FG	Flower Garden (FG)	239	24	30	24	40	161	183	106	107	-	-	-	-	-
BE-243B-FY	Front Yard (FY)	826	16	15	23	14	144	117	123	43	-	-	-	-	-
	TOTALS	2,411									26.6	26.6	478		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

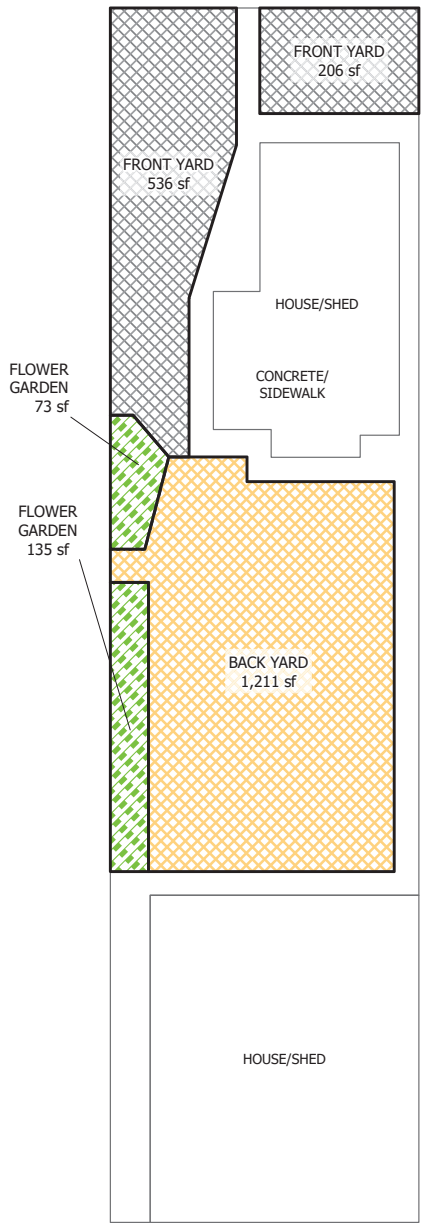
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-245

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-245			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-245-BY	Back Yard (BY)	1,211	32	61	71	68	165	234	178	137	22.4	22.4	1,211	-	-
BE-245-FG	Flower Garden (FG)	208	46	48	73	72	234	236	256	194	-	-	-	-	-
BE-245-FY	Front Yard (FY)	742	38	62	81	131	420	437	509	503	41.2	41.2	742	-	-
	TOTALS	2,161									63.6	63.6	1,953		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

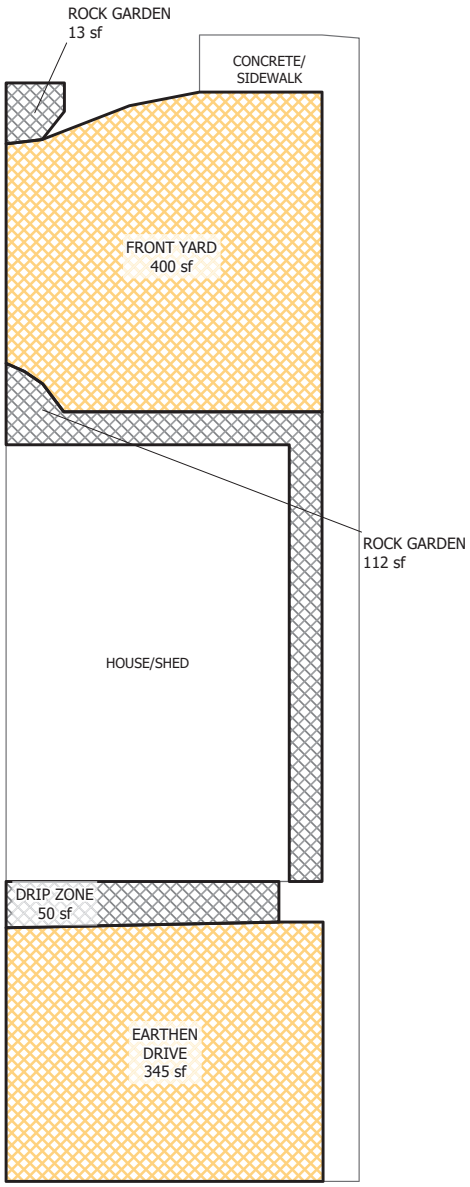
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA
18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-247A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-247A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-247A-DZ	Drip Zone (DZ)	50	34	92	56	32	315	84	156	410	2.8	2.8	50	-	-
BE-247A-ED	Earthen Drive (ED)	345	70	66	90	94	199	58	75	70	6.4	-	-	6.4	-
BE-247A-FY	Front Yard (FY)	400	21	29	31	13	431	645	222	39	7.4	7.4	400	-	-
BE-247A-RG	Rock Garden (RG)	125	24	28	36	30	361	767	234	443	6.9	6.9	-	-	-
	TOTALS	920									23.5	17.1	450	6.4	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

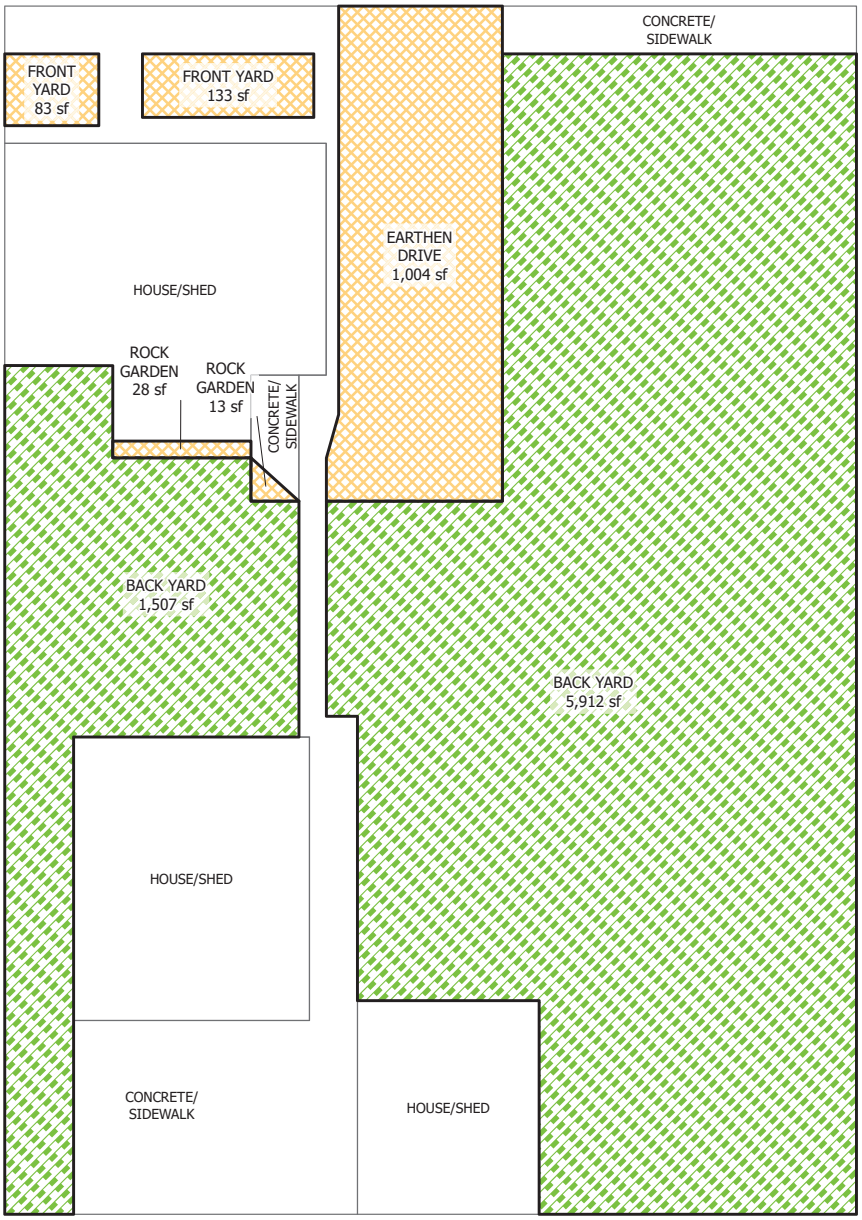
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
6" RA
18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-248

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-248			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-248-BY	Back Yard (BY)	7,419	20	47	78	86	123	202	194	60	-	-	-	-	-
BE-248-DZ	Drip Zone (DZ)	220	33	42	103	40	362	336	190	153	-	-	-	-	-
BE-248-ED	Earthen Drive (ED)	1,004	45	139	97	69	259	274	318	246	18.6	-	-	18.6	-
BE-248-FY	Front Yard (FY)	216	29	38	13	12	509	242	27	25	4.0	4.0	216	-	-
BE-248-RG	Rock Garden (RG)	41	34	87	90	65	253	420	135	33	0.8	0.8	-	-	-
	TOTALS	8,900									23.4	4.8	216	18.6	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above
Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

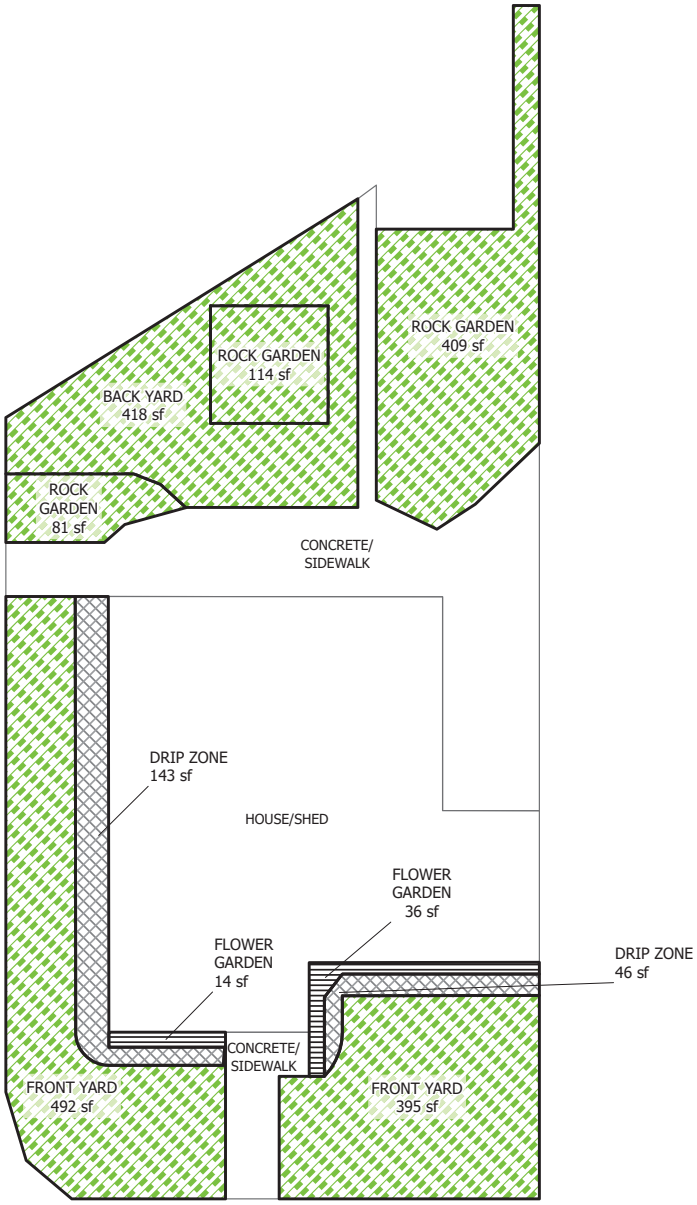
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-250A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-250A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-250A-BY	Back Yard (BY)	418	19	19	24	27	226	237	64	213	-	-	-	-	-
BE-250A-DZ	Drip Zone (DZ)	189	16	20	23	23	521	482	416	768	10.5	10.5	189	-	-
BE-250A-FG	Flower Garden (FG)	50	32	15	18	24	204	243	305	497	3.7	3.7	50	-	-
BE-250A-FY	Front Yard (FY)	887	17	19	25	29	199	200	166	138	-	-	-	-	-
BE-250A-RG	Rock Garden (RG)	604	28	34	32	16	251	267	239	306	-	-	-	-	-
	TOTALS	2,148									14.2	14.2	239		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 18" RA
- 24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-250B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-250B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-250B-BY	Back Yard (BY)	634	23	31	32	35	188	212	195	194	-	-	-	-	-
BE-250B-DZ	Drip Zone (DZ)	220	22	27	30	47	196	201	195	144	-	-	-	-	-
BE-250B-FG	Flower Garden (FG)	19	16	21	33	46	195	255	247	184	-	-	-	-	-
BE-250B-FY	Front Yard (FY)	162	22	28	28	66	232	175	141	93	-	-	-	-	-
BE-250B-PA	Play Area (PA)	80	35	36	37	32	425	447	418	185	3.0	3.0	80	-	-
	TOTALS	1,115									3.0	3.0	80		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

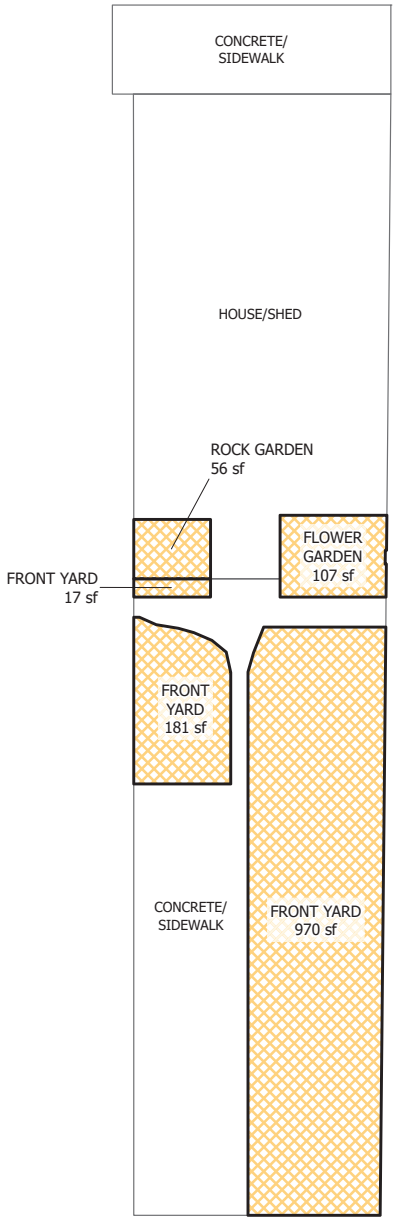
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-250C

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-250C			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-250C-DZ	Drip Zone (DZ)	220	26	27	32	33	352	369	360	228	-	-	-	-	-
BE-250C-FG	Flower Garden (FG)	107	21	26	33	32	408	335	306	134	2.0	2.0	107	-	-
BE-250C-FY	Front Yard (FY)	1,168	28	27	28	33	417	334	204	120	21.6	21.6	1,168	-	-
BE-250C-RG	Rock Garden (RG)	56	24	29	34	36	388	443	325	158	1.0	1.0	-	-	-
	TOTALS	1,551									24.6	24.6	1,275		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/Flower garden component** sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to **24 inches** below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

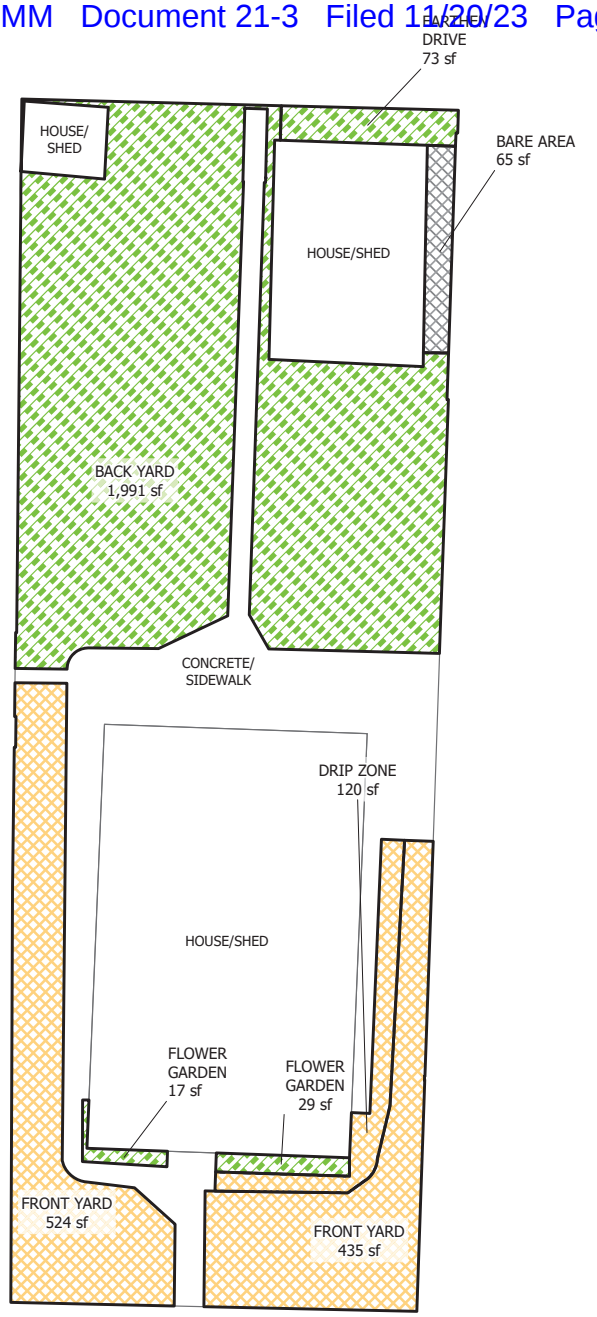
Legend

6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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NOTE: ED Sampling refusal at 6 or 12 inches during sampling. Concentrations to 18 inches assumed based upon the 0 to 6 inch samples. No further sampling planned.

Resident ID
BE-251

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-251			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-251-BA	Bare Area (BA)	65	15	22	39	33	107	260	328	469	3.6	3.6	65	-	-
BE-251-BY	Back Yard (BY)	1,991	19	33	35	50	232	273	291	313	-	-	-	-	-
BE-251-DZ	Drip Zone (DZ)	120	35	39	49	52	525	215	52	53	2.2	2.2	120	-	-
BE-251-ED	Earthen Drive (ED)	73	15	15	N/A	N/A	112	112	N/A	N/A	-	-	-	-	-
BE-251-FG	Flower Garden (FG)	46	33	29	51	79	318	225	89	35	-	-	-	-	-
BE-251-FY	Front Yard (FY)	959	34	29	31	41	591	251	83	54	17.8	17.8	959	-	-
	TOTALS	3,254									23.6	23.6	1,144		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

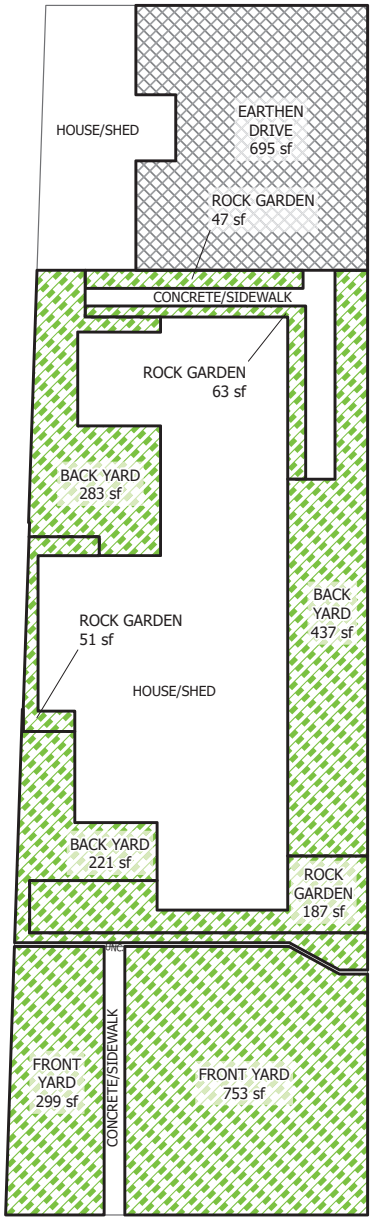
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-252

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-252			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-252-BY	Back Yard (BY)	941	20	33	31	58	145	384	221	350	-	-	-	-	-
BE-252-DZ	Drip Zone (DZ)	220	15	13	24	31	56	89	121	155	-	-	-	-	-
BE-252-ED	Earthen Drive (ED)	695	7	10	18	29	37	28	112	685	38.6	25.7	-	12.9	-
BE-252-FY	Front Yard (FY)	1,052	13	21	19	29	70	163	113	88	-	-	-	-	-
BE-252-RG	Rock Garden (RG)	348	17	25	26	38	79	158	178	291	-	-	-	-	-
	TOTALS	3,256									38.6	25.7		12.9	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

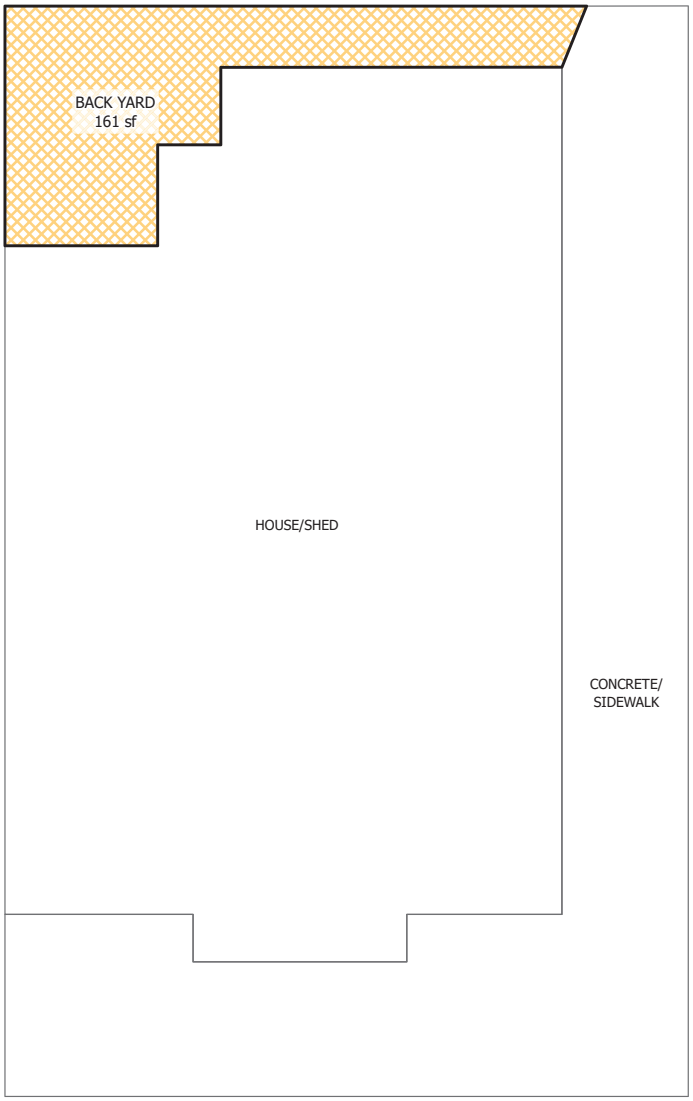
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-253A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-253A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-253A-BY	Back Yard (BY)	161	113	144	96	47	528	518	285	20	3.0	3.0	161	-	-
BE-253A-DZ	Drip Zone (DZ)	220	30	47	39	30	229	379	180	23	-	-	-	-	-
	TOTALS	381									3.0	3.0	161		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

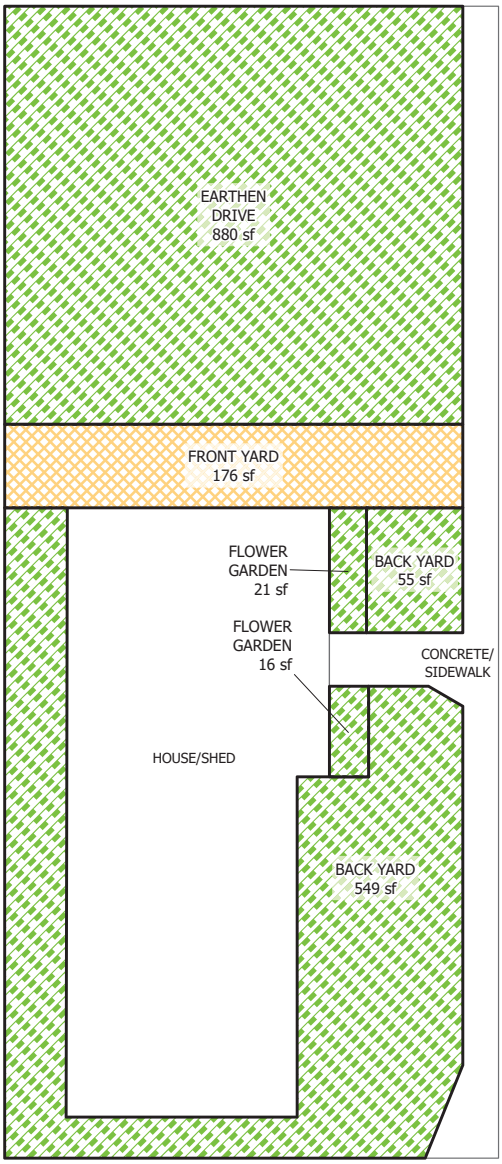
Legend

6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-253B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-253B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-253B-BY	Back Yard (BY)	604	13	36	69	72	70	315	134	151	-	-	-	-	-
BE-253B-DZ	Drip Zone (DZ)	220	39	44	48	44	321	364	252	190	-	-	-	-	-
BE-253B-ED	Earthen Drive (ED)	880	12	29	61	67	58	371	332	150	-	-	-	-	-
BE-253B-FG	Flower Garden (FG)	37	22	30	37	53	200	315	273	208	-	-	-	-	-
BE-253B-FY	Front Yard (FY)	176	20	30	34	228	203	405	300	214	3.3	3.3	176	-	-
	TOTALS	1,917									3.3	3.3	176		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.**

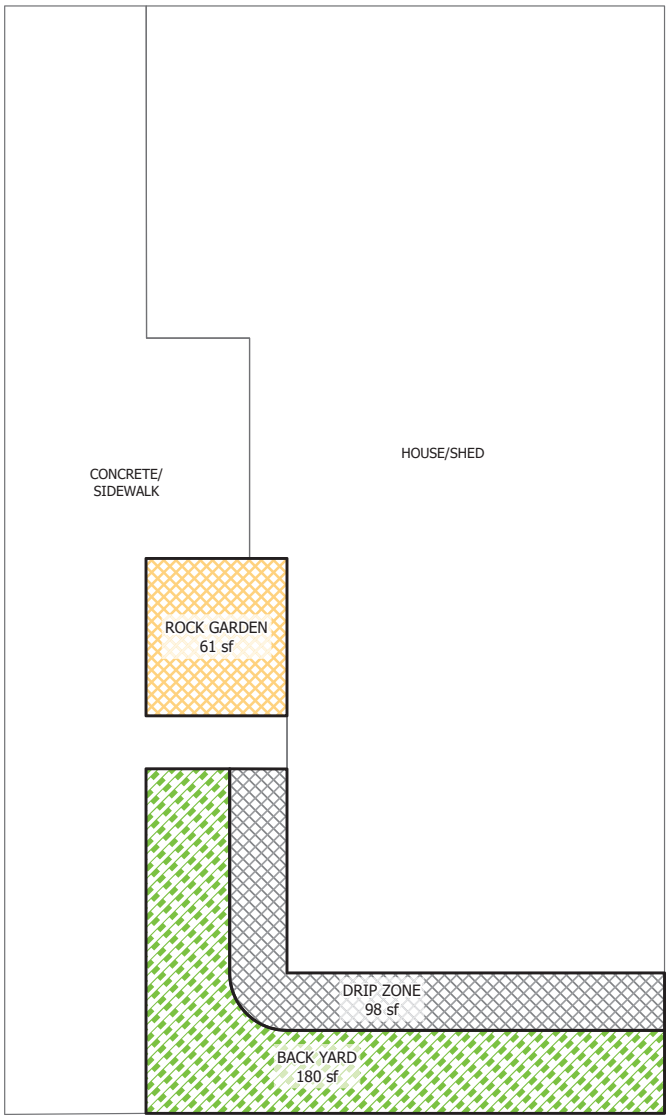
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-254B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-254B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-254B-BY	Back Yard (BY)	180	49	35	52	61	296	356	282	89	-	-	-	-	-
BE-254B-DZ	Drip Zone (DZ)	98	16	31	77	49	129	286	260	503	5.4	5.4	98	-	-
BE-254B-RG	Rock Garden (RG)	61	115	66	79	137	211	312	200	333	1.1	1.1	-	-	-
	TOTALS	339									6.5	6.5	98		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

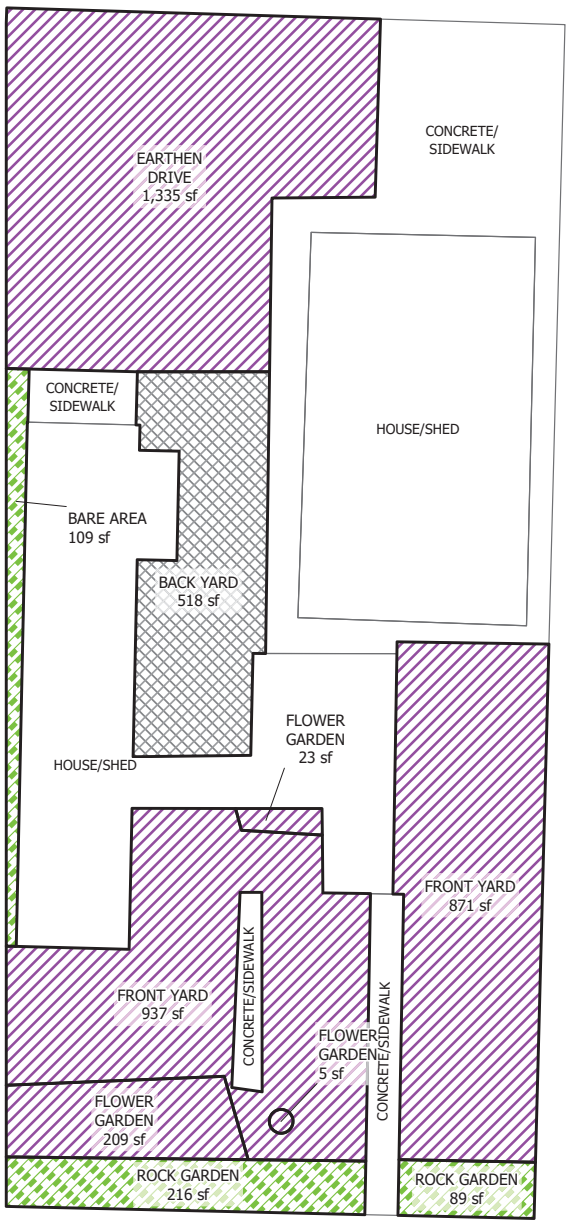
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-255

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-255			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-255-BA	Bare Area (BA)	109	25	19	78	69	263	387	266	66	-	-	-	-	-
BE-255-BY	Back Yard (BY)	518	20	18	44	88	282	33	542	885	28.8	28.8	518	-	-
BE-255-ED	Earthen Drive (ED)	1,335	13	43	84	83	114	376	434	198	49.4	24.7	-	24.7	-
BE-255-FG	Flower Garden (FG)	237	37	35	58	70	351	401	442	313	8.8	8.8	237	-	-
BE-255-FY	Front Yard (FY)	1,808	25	39	153	87	215	296	575	177	67.0	67.0	1,808	-	-
BE-255-RG	Rock Garden (RG)	305	49	46	29	47	338	361	178	310	-	-	-	-	-
	TOTALS	4,312									154.0	129.3	2,563	24.7	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

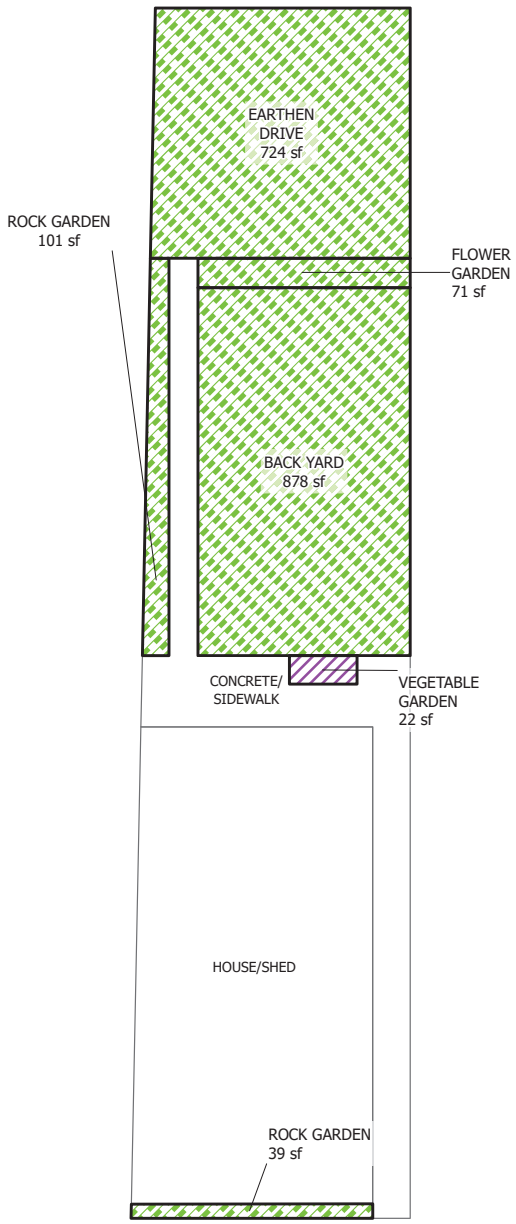
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 12" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-256

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-256			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-256-BY	Back Yard (BY)	878	8	9	37	51	28	36	238	365	-	-	-	-	-
BE-256-ED	Earthen Drive (ED)	724	5	5	5	6	11	6	18	34	-	-	-	-	-
BE-256-FG	Flower Garden (FG)	71	8	8	47	65	37	26	249	284	-	-	-	-	-
BE-256-RG	Rock Garden (RG)	140	61	30	59	32	261	361	110	71	-	-	-	-	-
BE-256-VG	Vegetable Garden (VG)	22	8	26	59	63	55	212	424	318	0.8	0.8	22	-	-
	TOTALS	1,835									0.8	0.8	22		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

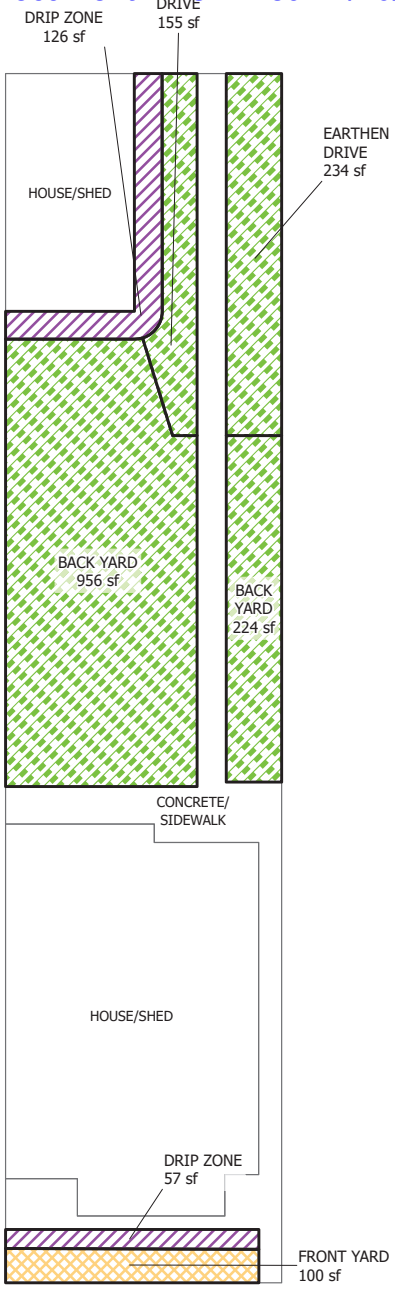
Legend
No Action
12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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PROPERTY ADDRESS: 1921 SMELTER AVE NE
RESIDENT ID: BE-257



Resident ID
BE-257

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-257			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-257-BY	Back Yard (BY)	1,180	21	34	40	46	307	286	399	281	-	-	-	-	-
BE-257-DZ	Drip Zone (DZ)	183	30	30	43	40	537	536	629	367	6.8	6.8	183	-	-
BE-257-ED	Earthen Drive (ED)	389	19	42	79	69	219	337	331	238	-	-	-	-	-
BE-257-FY	Front Yard (FY)	100	19	36	149	85	253	492	313	61	1.9	1.9	100	-	-
	TOTALS	1,852									8.7	8.7	283		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

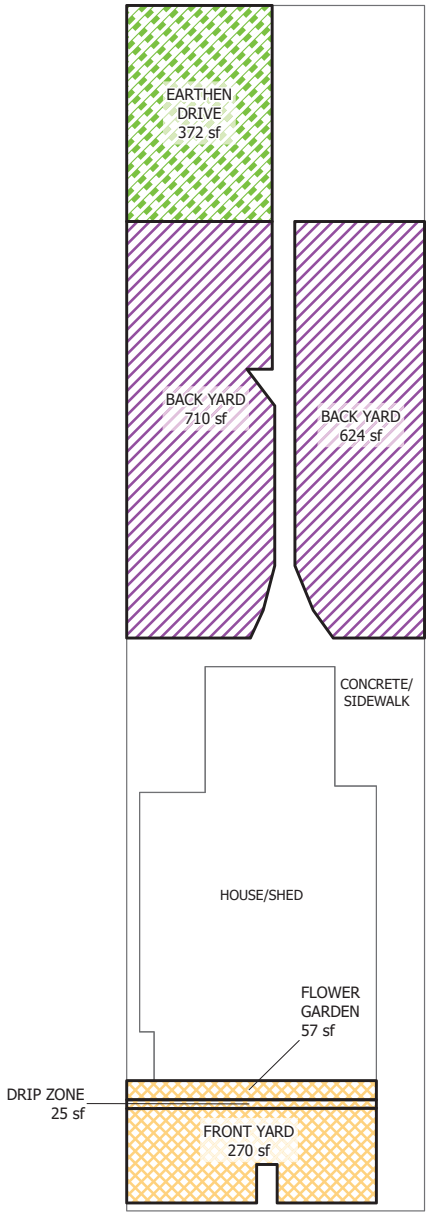
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-258

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-258			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-258-BY	Back Yard (BY)	1,334	38	47	87	113	373	397	555	363	49.4	49.4	1,334	-	-
BE-258-DZ	Drip Zone (DZ)	25	21	33	55	49	377	544	352	19	0.5	0.5	25	-	-
BE-258-ED	Earthen Drive (ED)	372	6	6	5	12	10	7	6	89	-	-	-	-	-
BE-258-FG	Flower Garden (FG)	57	31	32	38	17	441	554	339	17	1.1	1.1	57	-	-
BE-258-FY	Front Yard (FY)	270	46	26	66	87	533	528	377	48	5.0	5.0	270	-	-
	TOTALS	2,058									56.0	56.0	1,686		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above
Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

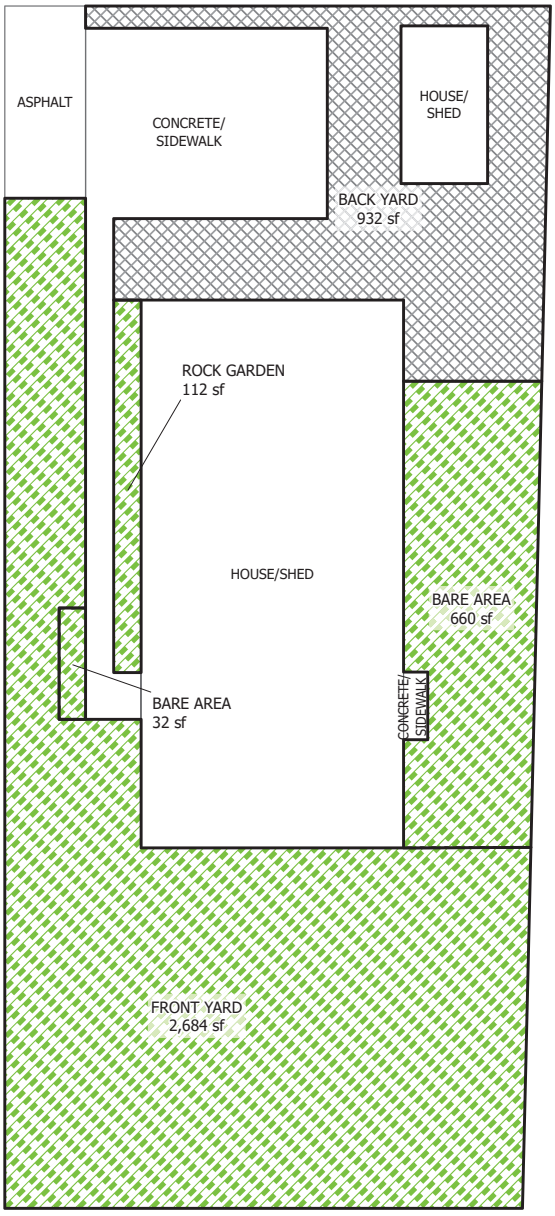
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA
12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-260

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-260			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-260-BA	Bare Area (BA)	692	22	13	9	9	51	28	14	13	-	-	-	-	-
BE-260-BY	Back Yard (BY)	932	35	27	22	45	102	88	247	417	51.8	51.8	932	-	-
BE-260-DZ	Drip Zone (DZ)	220	20	22	17	24	56	58	41	48	-	-	-	-	-
BE-260-FY	Front Yard (FY)	2,684	25	23	29	15	70	112	84	28	-	-	-	-	-
BE-260-RG	Rock Garden (RG)	112	22	27	38	21	56	62	91	391	-	-	-	-	-
	TOTALS	4,640									51.8	51.8	932		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/**Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

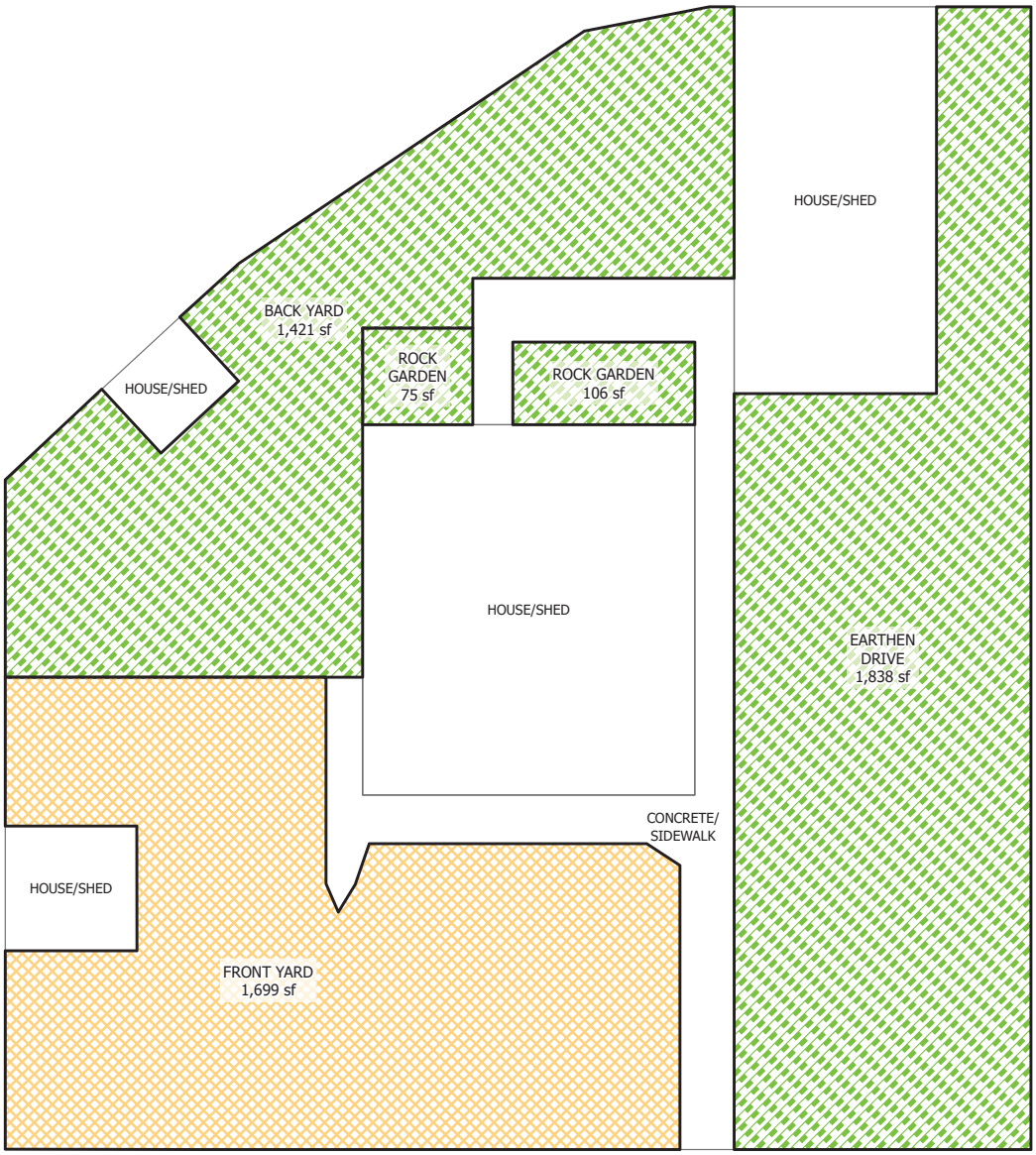
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-264

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-264			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-264-BY	Back Yard (BY)	1,421	23	23	45	52	220	76	42	52	-	-	-	-	-
BE-264-DZ	Drip Zone (DZ)	220	16	14	19.1	19	279	109	50	52	-	-	-	-	-
BE-264-ED	Earthen Drive (ED)	1,838	11	14	19	37	126	87	42	90	-	-	-	-	-
BE-264-FY	Front Yard (FY)	1,699	24	25	21	19	466	155	122	53	31.5	31.5	1,699	-	-
BE-264-RG	Rock Garden (RG)	181	22	37	68	62	265	93	91	35	-	-	-	-	-
	TOTALS	5,359									31.5	31.5	1,699		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

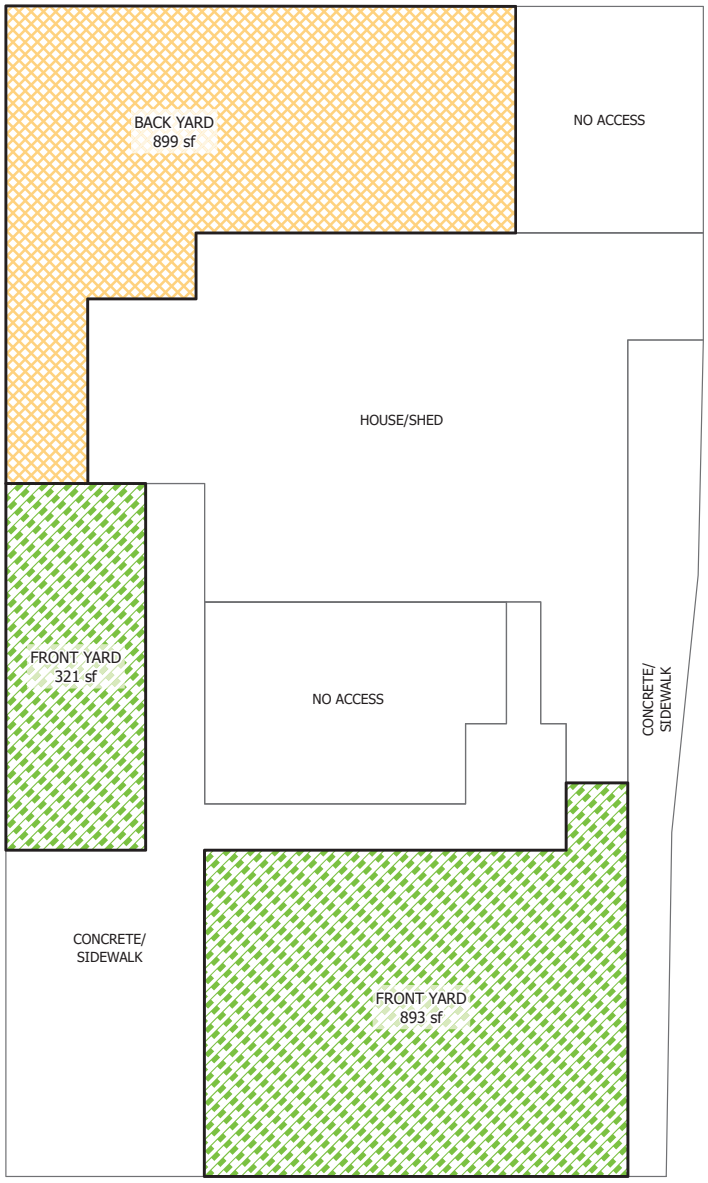
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-267

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-267			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-267-BY	Back Yard (BY)	899	74	92	36	66	140	140	82	206	16.6	16.6	899	-	-
BE-267-DZ	Drip Zone (DZ)	220	50	98	95	61	367	213	204	235	-	-	-	-	-
BE-267-FY	Front Yard (FY)	1,214	31	43	44	30	170	308	116	152	-	-	-	-	-
	TOTALS	2,333									16.6	16.6	899		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above

Note: **Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.**

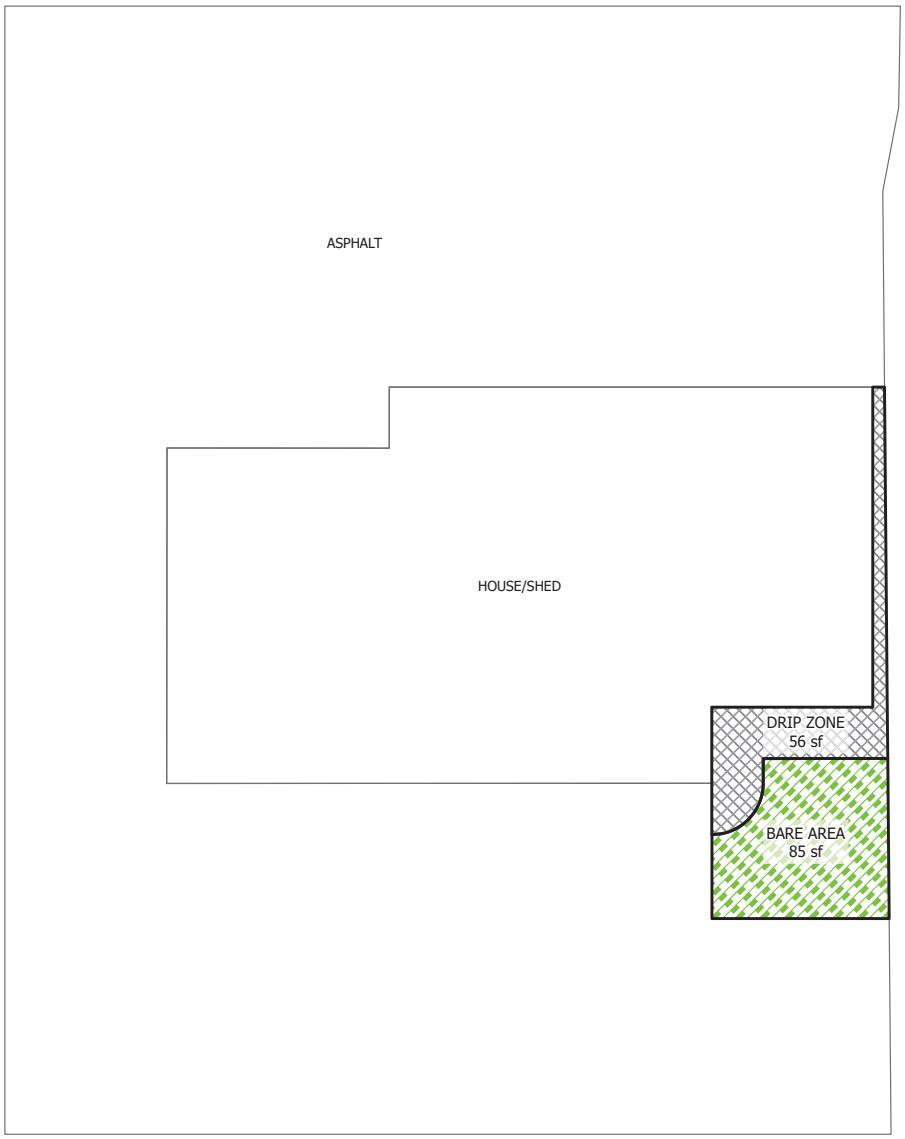
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-268

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-268			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-13"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-268-BA	Bare Area (BA)	85	17	49	36	31	196	207	322	236	-	-	-	-	-
BE-268-DZ	Drip Zone (DZ)	56	22	26	57	66	140	144	313	1100	3.1	3.1	56	-	-
	TOTALS	141									3.1	3.1	56		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

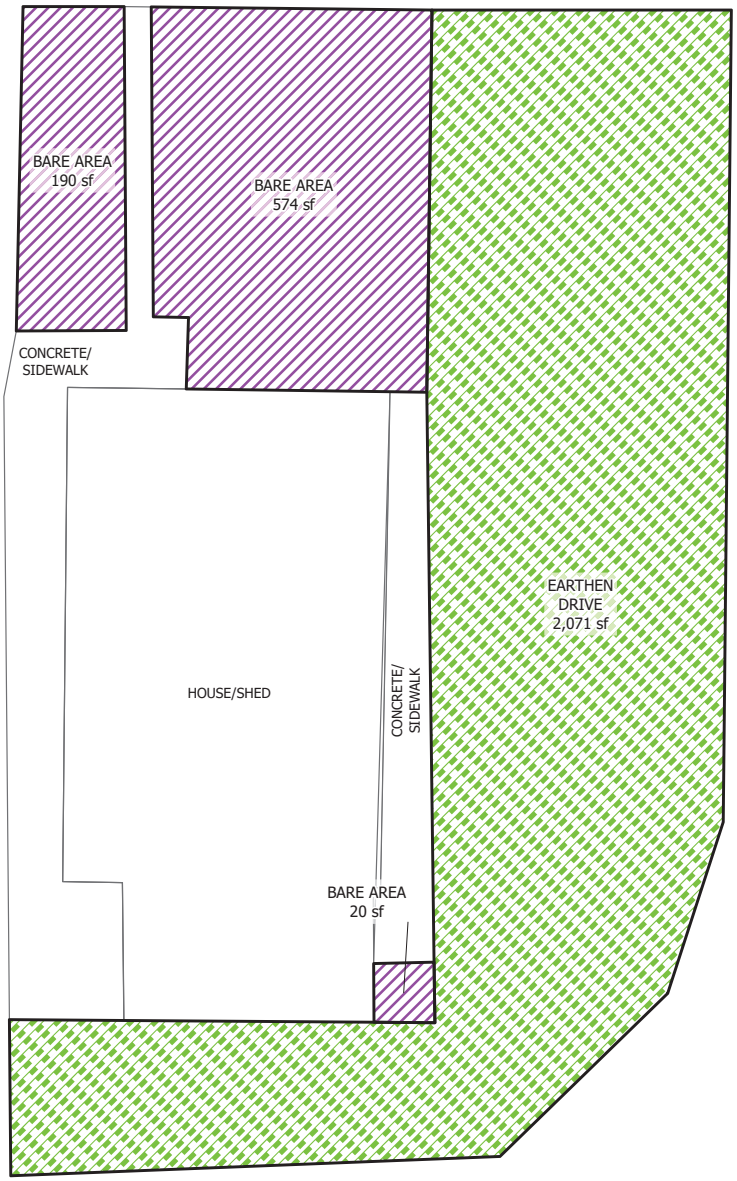
Legend

No Action
18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-269A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-269A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-269A-BA	Bare Area (BA)	784	14	18	41	77	109	247	780	200	29.0	29.0	784	-	-
BE-269A-DZ	Drip Zone (DZ)	220	24	25	31	45	184	229	245	165	-	-	-	-	-
BE-269A-ED	Earthen Drive (ED)	2,071	8	16	13	10	58	66	63	195	-	-	-	-	-
	TOTALS	3,075									29.0	29.0	784		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

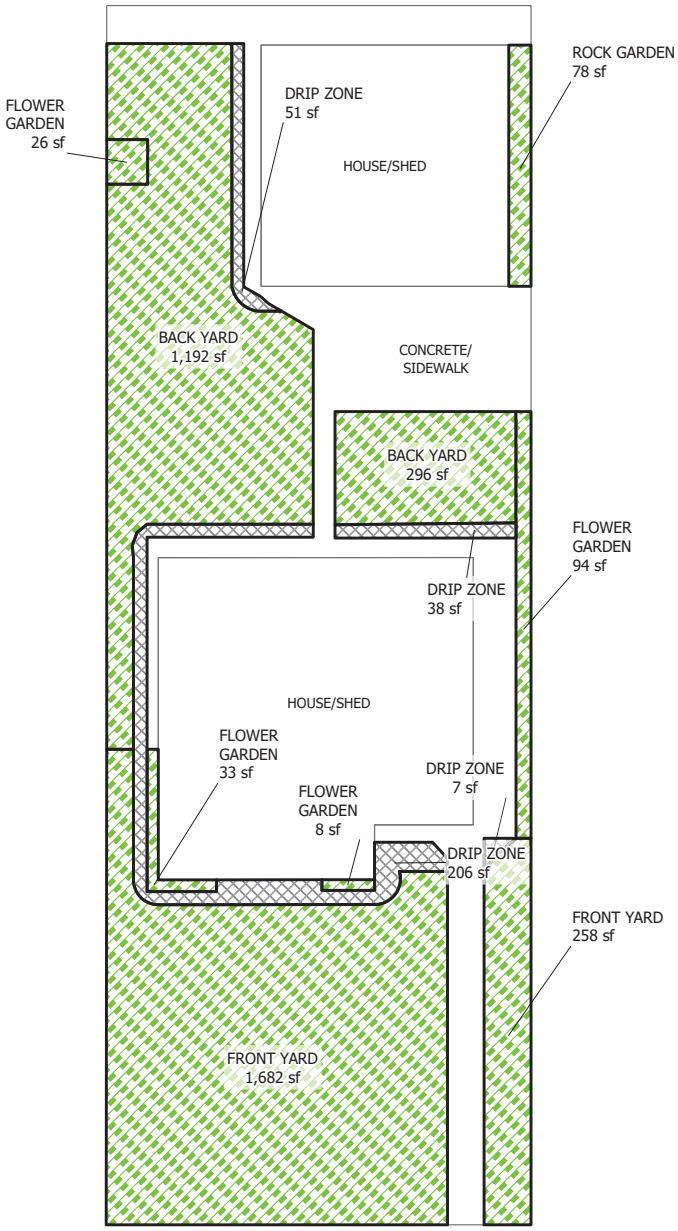
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-276

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-276			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-276-BY	Back Yard (BY)	1,488	19.1	31	20	9	284	177	24	12	-	-	-	-	-
BE-276-DZ	Drip Zone (DZ)	302	13	10	11	8	134	85	39	439	16.8	16.8	302	-	-
BE-276-FG	Flower Garden (FG)	161	12	23	11	9	158	249	57	31	-	-	-	-	-
BE-276-FY	Front Yard (FY)	1,940	16	17	17	18	163	44	19	21	-	-	-	-	-
BE-276-RG	Rock Garden (RG)	78	15	16	16	8	127	212	15	11	-	-	-	-	-
	TOTALS	3,969									16.8	16.8	302		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

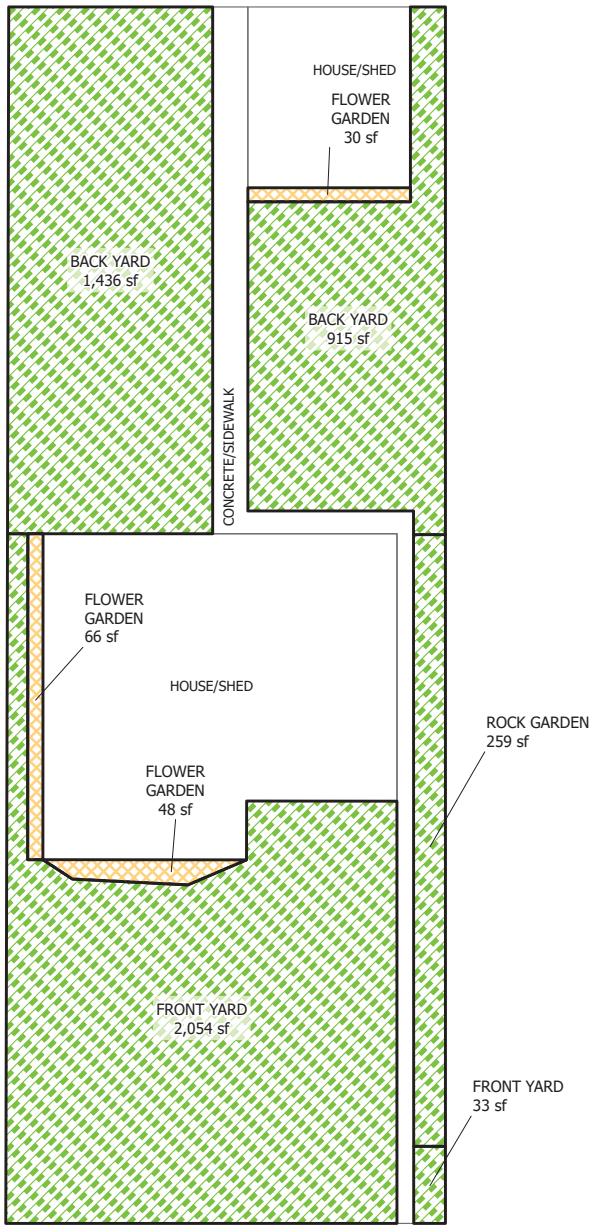
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-280

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-280			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-280-BY	Back Yard (BY)	2,351	14	17	19.1	7	79	25	20	9	-	-	-	-	-
BE-280-DZ	Drip Zone (DZ)	220	15	12	11	11	140	51	94	26	-	-	-	-	-
BE-280-FG	Flower Garden (FG)	144	15	12	15	16	1030	160	166	166	2.7	2.7	144	-	-
BE-280-FY	Front Yard (FY)	2,087	11	13	2	29	83	23	3	61	-	-	-	-	-
BE-280-RG	Rock Garden (RG)	259	12	13	13	10	50	29	19	19	-	-	-	-	-
	TOTALS	5,061									2.7	2.7	144		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

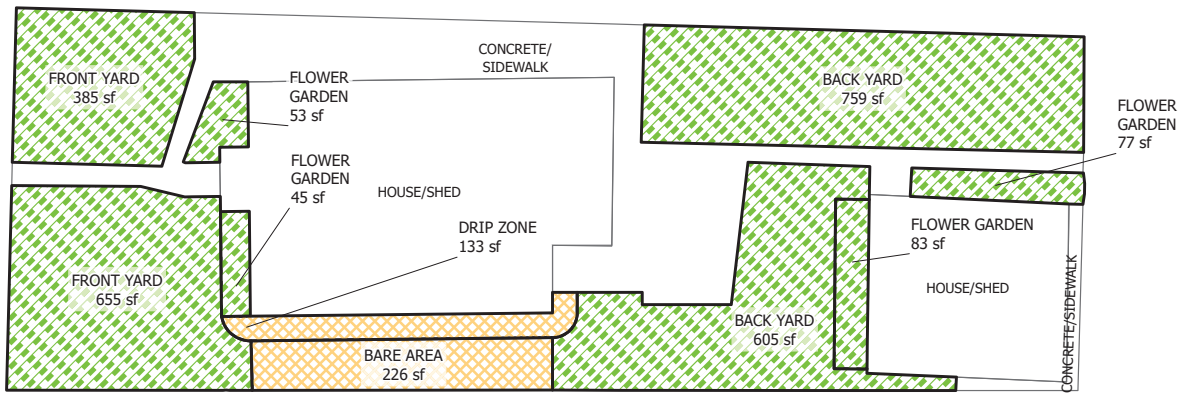
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-300

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-300			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-300-BA	Bare Area (BA)	226	31	49	49	69	533	251	55	59	4.2	4.2	226	-	-
BE-300-BY	Back Yard (BY)	1,364	24	43	16	29	76	78	279	147	-	-	-	-	-
BE-300-DZ	Drip Zone (DZ)	133	33	39	41	53	442	371	146	129	2.5	2.5	133	-	-
BE-300-FG	Flower Garden (FG)	258	26	31	42	40	209	272	177	136	-	-	-	-	-
BE-300-FY	Front Yard (FY)	1,040	7	52	35	47	34	179	69	24	-	-	-	-	-
	TOTALS	3,021									6.7	6.7	359		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

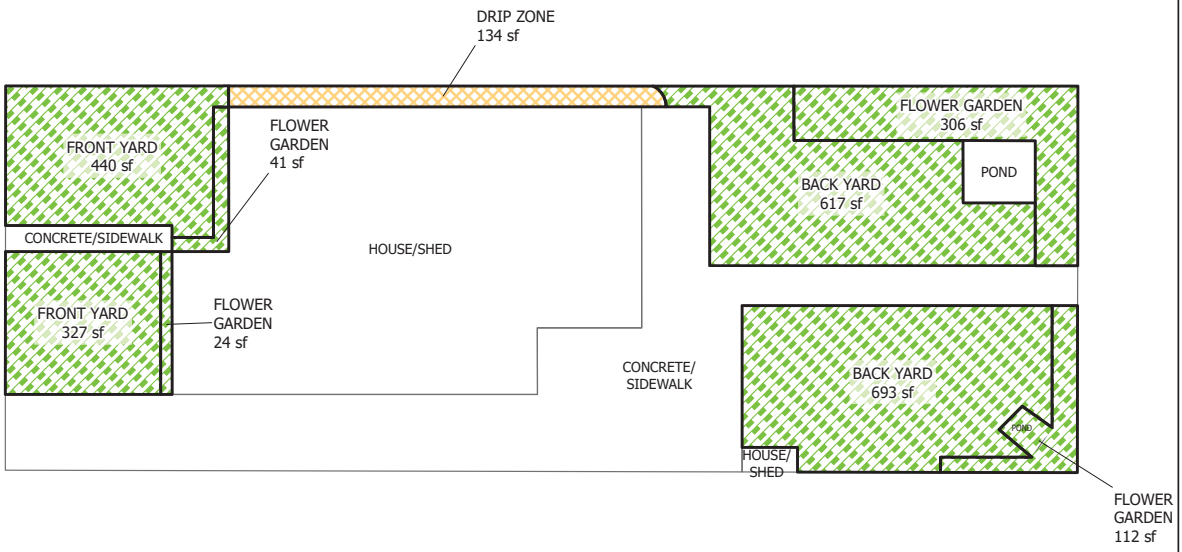
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-301

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-301			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-301-BY	Back Yard (BY)	1,310	17	22	25	20	258	178	112	57	-	-	-	-	-
BE-301-DZ	Drip Zone (DZ)	134	29	40	30	53	473	177	160	104	2.5	2.5	134	-	-
BE-301-FG	Flower Garden (FG)	483	21	23	30	33	169	362	239	226	-	-	-	-	-
BE-301-FY	Front Yard (FY)	767	43	32	44	59	283	166	63	35	-	-	-	-	-
	TOTALS	2,694									2.5	2.5	134		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

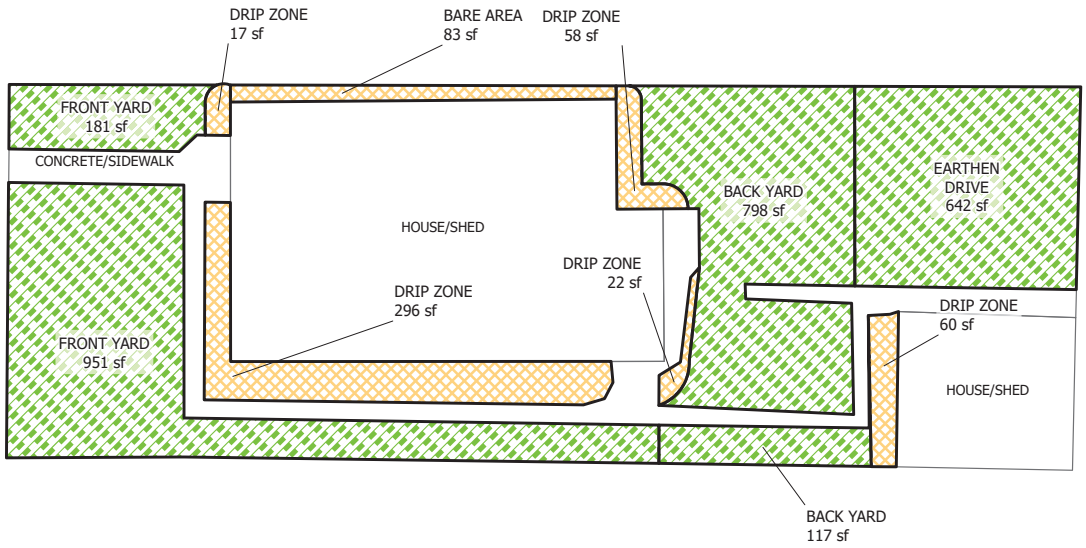
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-302

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-302			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-302-BA	Bare Area (BA)	83	27	54	62	37	611	152	53	24	1.5	1.5	83	-	-
BE-302-BY	Back Yard (BY)	915	20	37	47	65	279	352	60	25	-	-	-	-	-
BE-302-DZ	Drip Zone (DZ)	453	21	34	63	38	436	202	115	22	8.4	8.4	453	-	-
BE-302-ED	Earthen Drive (ED)	642	42	23	34	15	147	182	99	95	-	-	-	-	-
BE-302-FY	Front Yard (FY)	1,132	31	30	51	70	372	376	70	32	-	-	-	-	-
	TOTALS	3,225									9.9	9.9	536		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

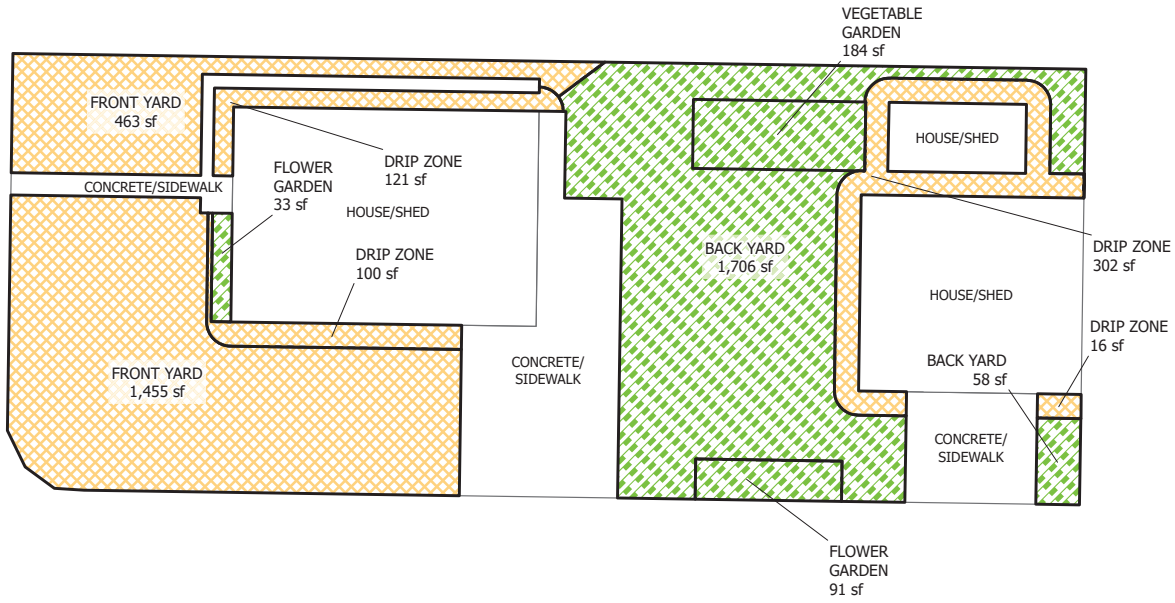
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-303

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-303			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-303-BY	Back Yard (BY)	1,764	9	18	29	28	109	190	184	60	-	-	-	-	-
BE-303-DZ	Drip Zone (DZ)	539	13	23	28	21	438	423	270	29	10.0	10.0	539	-	-
BE-303-FG	Flower Garden (FG)	124	19	24	28	37	356	398	250	45	-	-	-	-	-
BE-303-FY	Front Yard (FY)	1,918	19	25	28	31	528	257	102	48	35.5	35.5	1,918	-	-
BE-303-VG	Vegetable Garden (VG)	184	16	16	20	22	139	165	241	324	-	-	-	-	-
	TOTALS	4,529									45.5	45.5	2,457		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.**

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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PROPERTY ADDRESS: 1512 MONTANA AVE
RESIDENT ID: BE-305



Resident ID
BE-305

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-305			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-305-BY	Back Yard (BY)	2,917	29	41	34	26	192	150	46	7	-	-	-	-	-
BE-305-DZ	Drip Zone (DZ)	220	17	23	62	80	42	73	131	41	-	-	-	-	-
BE-305-ED	Earthen Drive (ED)	110	17	58	12	7	284	322	40	34	-	-	-	-	-
BE-305-FG	Flower Garden (FG)	72	50	41	68	18	316	513	433	50	2.7	2.7	72	-	-
BE-305-FY	Front Yard (FY)	1,369	20	18	36	33	77	52	103	26	-	-	-	-	-
BE-305-PA	Play Area (PA)	97	29	43	57	50	200	204	165	64	-	-	-	-	-
	TOTALS	4,785									2.7	2.7	72		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

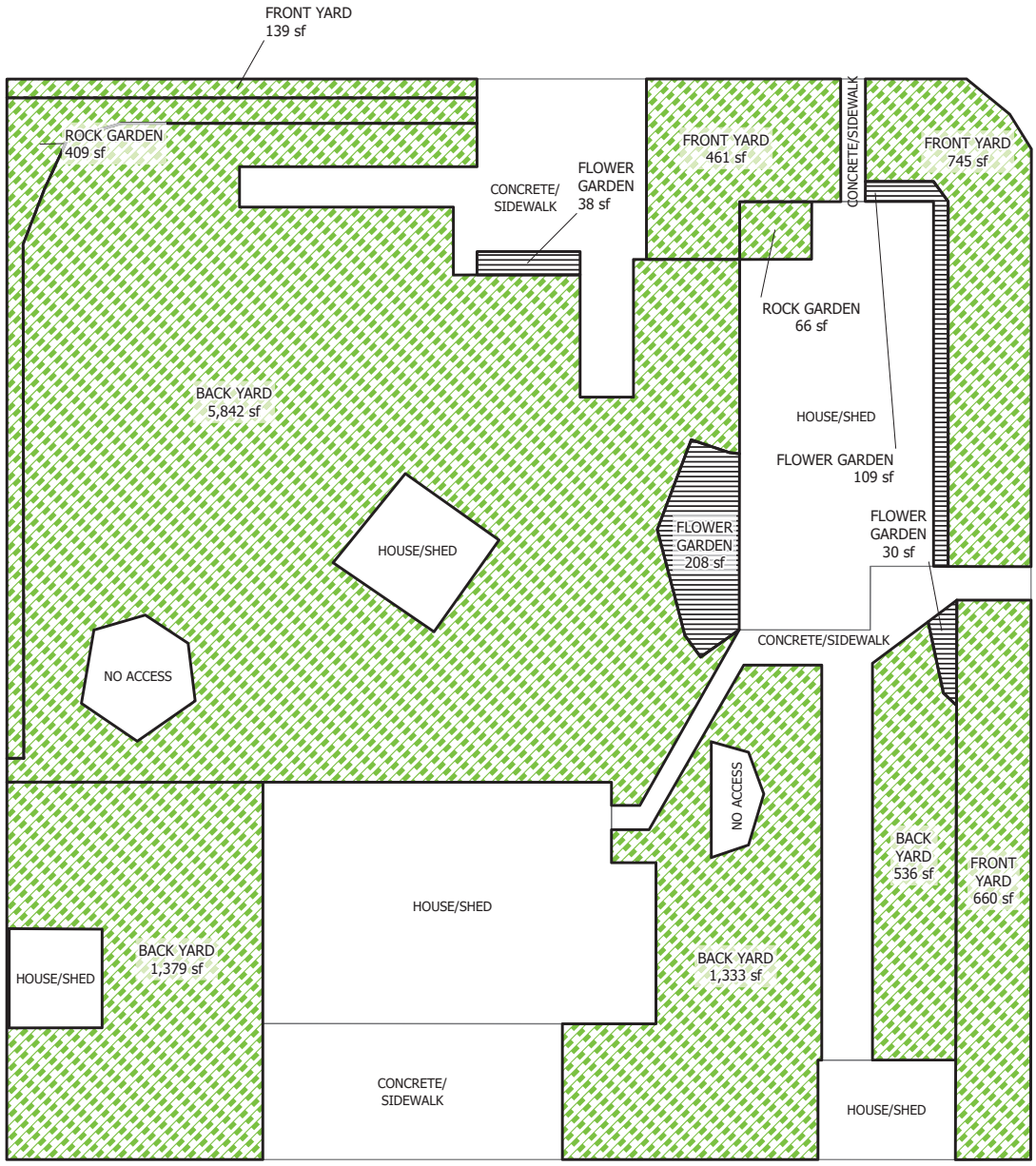
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-308

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-308			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-308-BY	Back Yard (BY)	9,090	22	35	45	38	222	200	194	221	-	-	-	-	-
BE-308-DZ	Drip Zone (DZ)	220	26	31	48	23	326	229	92	113	-	-	-	-	-
BE-308-FG	Flower Garden (FG)	385	24	36	34	50	504	719	161	426	28.5	28.5	385	-	-
BE-308-FY	Front Yard (FY)	2,005	18	22	28	43	191	169	125	31	-	-	-	-	-
BE-308-RG	Rock Garden (RG)	475	30	54	42	19	108	71	28	14	-	-	-	-	-
	TOTALS	12,175									28.5	28.5	385		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

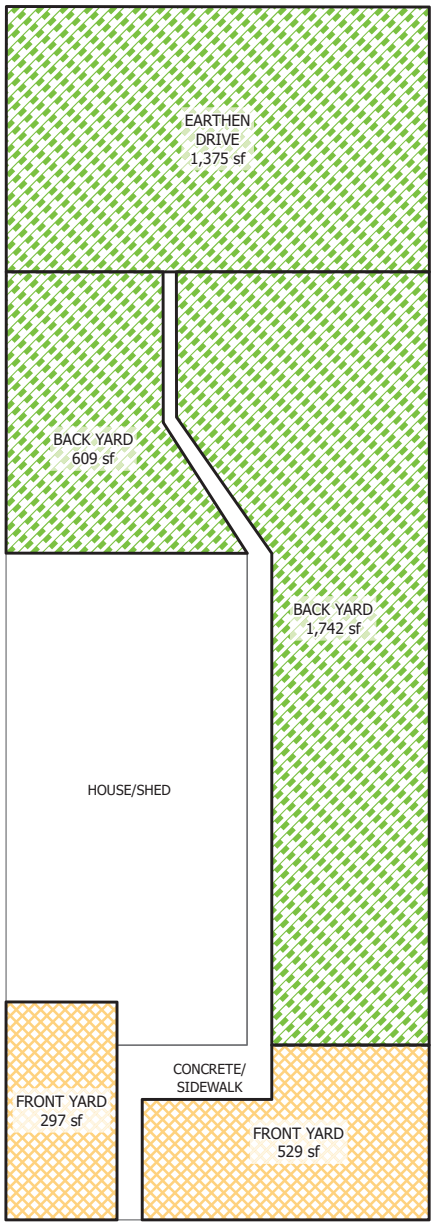
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-313

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-313			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-313-BY	Back Yard (BY)	2,351	23	38	34	21	239	163	95	17	-	-	-	-	-
BE-313-DZ	Drip Zone (DZ)	220	26	30	28	22	319	251	91	85	-	-	-	-	-
BE-313-ED	Earthen Drive (ED)	1,375	25	39	59	62	255	318	231	77	-	-	-	-	-
BE-313-FY	Front Yard (FY)	826	19	22	45	28	527	364	329	19	15.3	15.3	826	-	-
	TOTALS	4,772									15.3	15.3	826		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

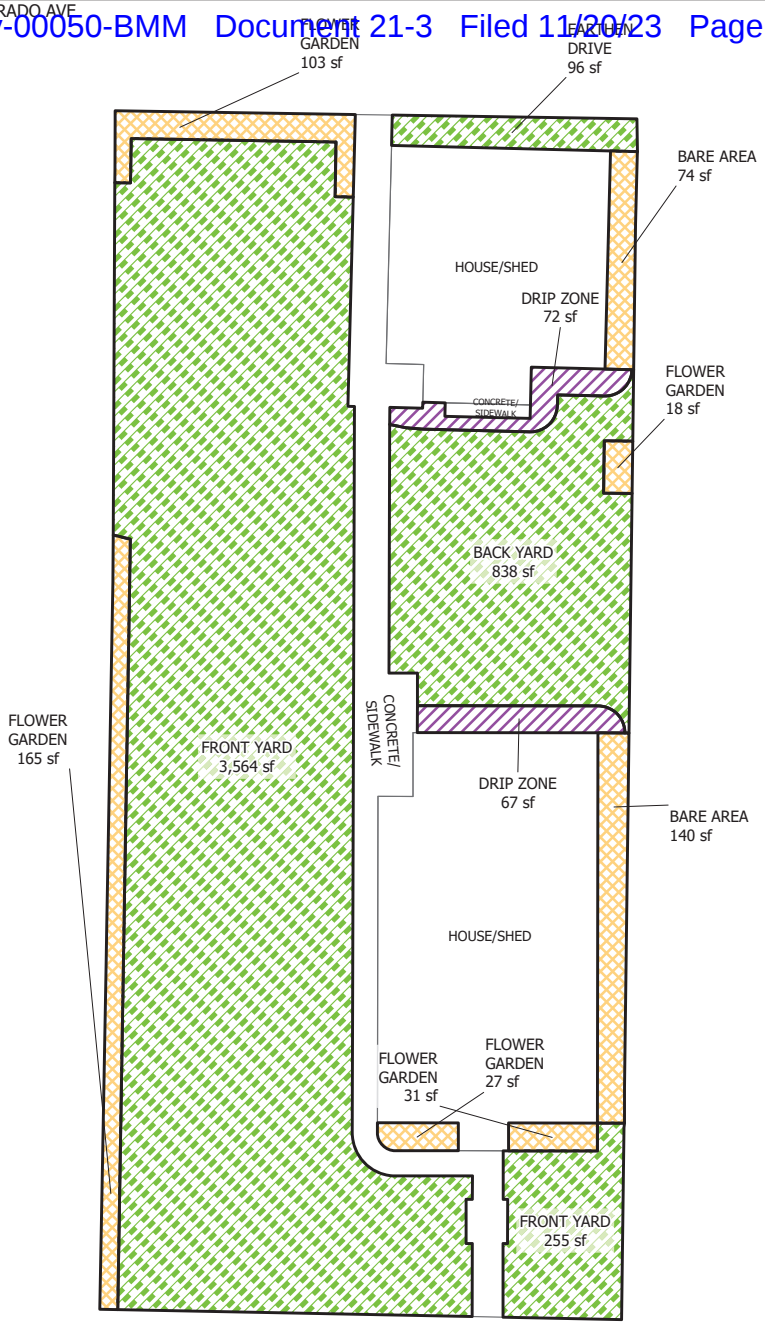
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-316

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-316			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-316-BA	Bare Area (BA)	214	46	48	42	84	375	510	232	314	4.0	4.0	214	-	-
BE-316-BY	Back Yard (BY)	838	30	36	56	59	168	209	143	94	-	-	-	-	-
BE-316-DZ	Drip Zone (DZ)	139	49	61	57	55	918	963	727	349	5.1	5.1	139	-	-
BE-316-ED	Earthen Drive (ED)	96	9	10	16	28	336	169	103	109	-	-	-	-	-
BE-316-FG	Flower Garden (FG)	344	27	36	30	22	1170	943	227	77	6.4	6.4	344	-	-
BE-316-FY	Front Yard (FY)	3,819	17	27	39	37	216	252	159	75	-	-	-	-	-
	TOTALS	5,450									15.5	15.5	697		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

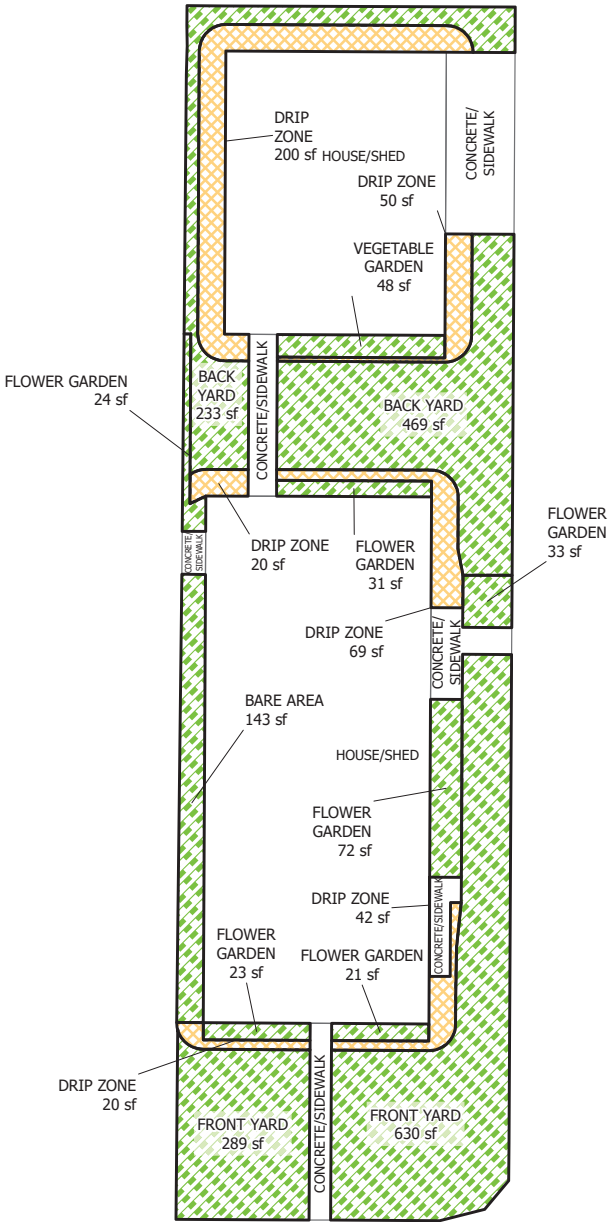
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-317

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-317			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-317-BA	Bare Area (BA)	143	45	52	56	34	400	247	134	55	-	-	-	-	-
BE-317-BY	Back Yard (BY)	702	32	40	38	36	277	237	211	113	-	-	-	-	-
BE-317-DZ	Drip Zone (DZ)	401	45	32	33	39	525	343	181	124	7.4	7.4	401	-	-
BE-317-FG	Flower Garden (FG)	204	23	28	31	30	241	285	225	36	-	-	-	-	-
BE-317-FY	Front Yard (FY)	919	16	16	18	23	347	91	39	8	-	-	-	-	-
BE-317-VG	Vegetable Garden (VG)	48	24	31	15	14	123	165	35	15	-	-	-	-	-
	TOTALS	2,417									7.4	7.4	401		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

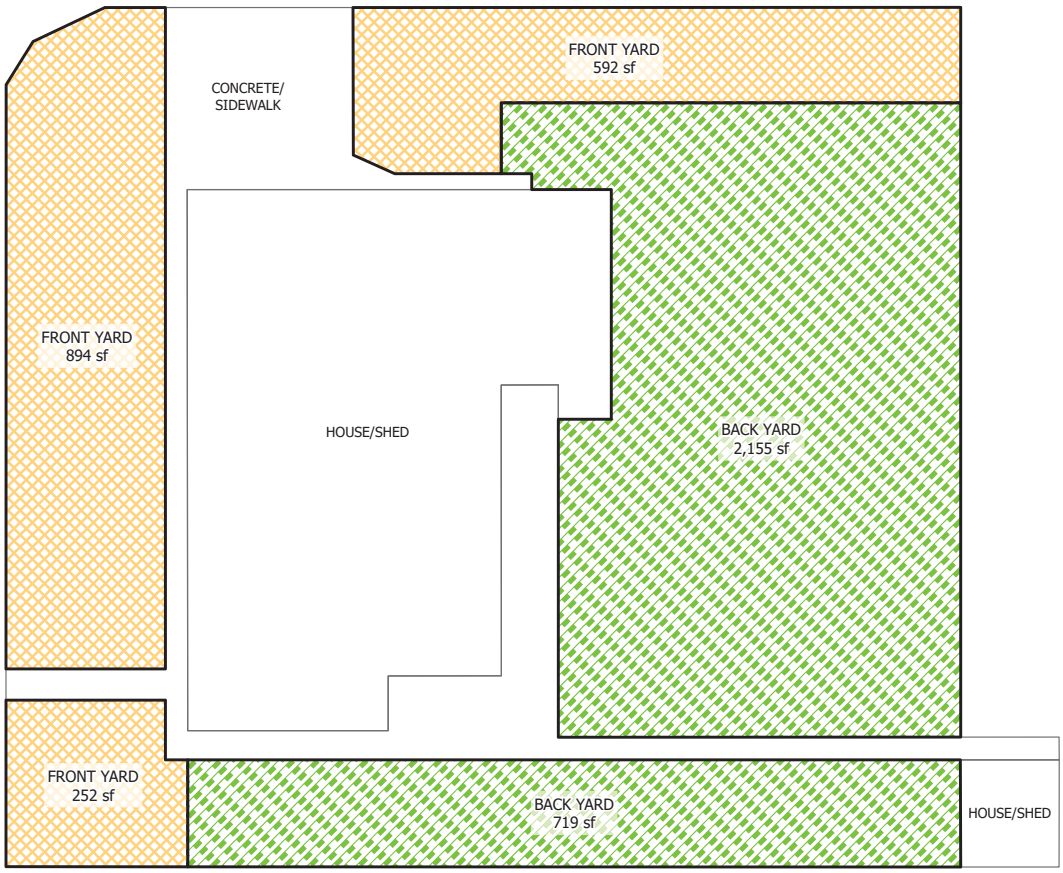
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-318

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-318			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-318-BY	Back Yard (BY)	2,874	18	24	27	18	152	133	98	35	-	-	-	-	-
BE-318-FY	Front Yard (FY)	1,738	16	20	43	29	579	152	86	73	32.2	32.2	1,738	-	-
	TOTALS	4,612									32.2	32.2	1,738		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

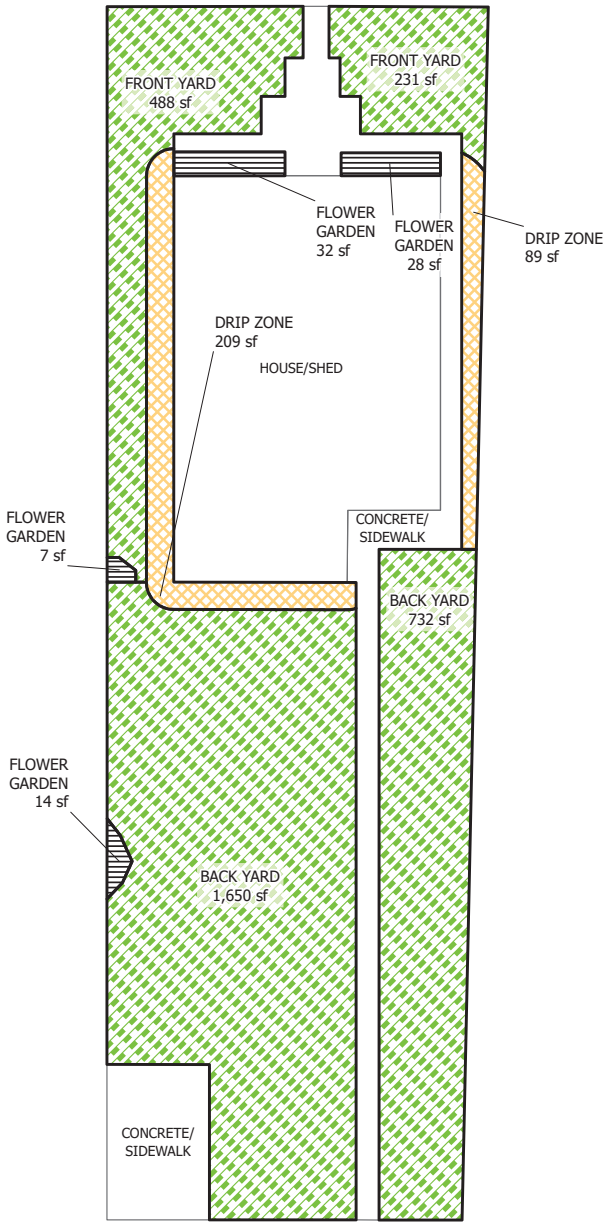
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-325

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-325			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-325-BY	Back Yard (BY)	2,382	23	25	29	30	189	181	90	62	-	-	-	-	-
BE-325-DZ	Drip Zone (DZ)	298	19	23	25	44	664	327	101	111	5.5	5.5	298	-	-
BE-325-FG	Flower Garden (FG)	81	18	23	28	39	353	604	227	903	6.0	6.0	81	-	-
BE-325-FY	Front Yard (FY)	719	16	22	10	7	228	270	12	12	-	-	-	-	-
	TOTALS	3,480									11.5	11.5	379		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

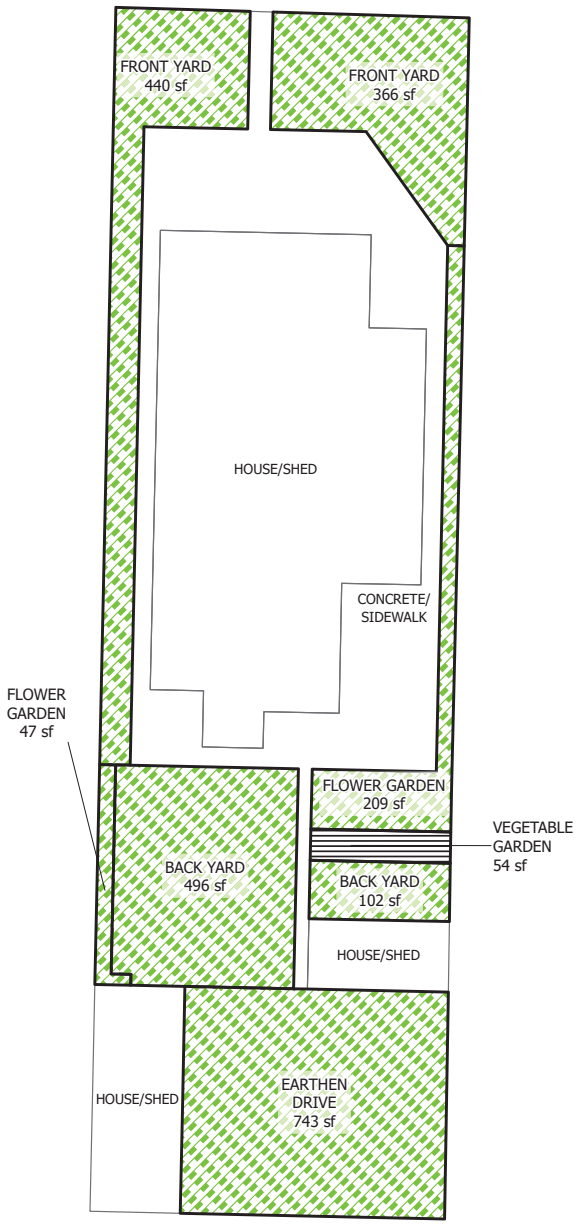
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-326

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-326			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-326-BY	Back Yard (BY)	598	39	51	41	43	374	295	342	47	-	-	-	-	-
BE-326-DZ	Drip Zone (DZ)	220	19	22	29	26	274	302	170	33	-	-	-	-	-
BE-326-ED	Earthen Drive (ED)	743	14	14	42	51	110	172	367	265	-	-	-	-	-
BE-326-FG	Flower Garden (FG)	256	18	23	34	32	271	343	322	65	-	-	-	-	-
BE-326-FY	Front Yard (FY)	806	33	35	84	26	192	163	73	15	-	-	-	-	-
BE-326-RG	Rock Garden (RG)	150	15	17	38	38	149	221	77	35	-	-	-	-	-
BE-326-VG	Vegetable Garden (VG)	54	18	18	30	36	297	290	807	420	4.0	4.0	54	-	-
	TOTALS	2,827									4.0	4.0	54		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

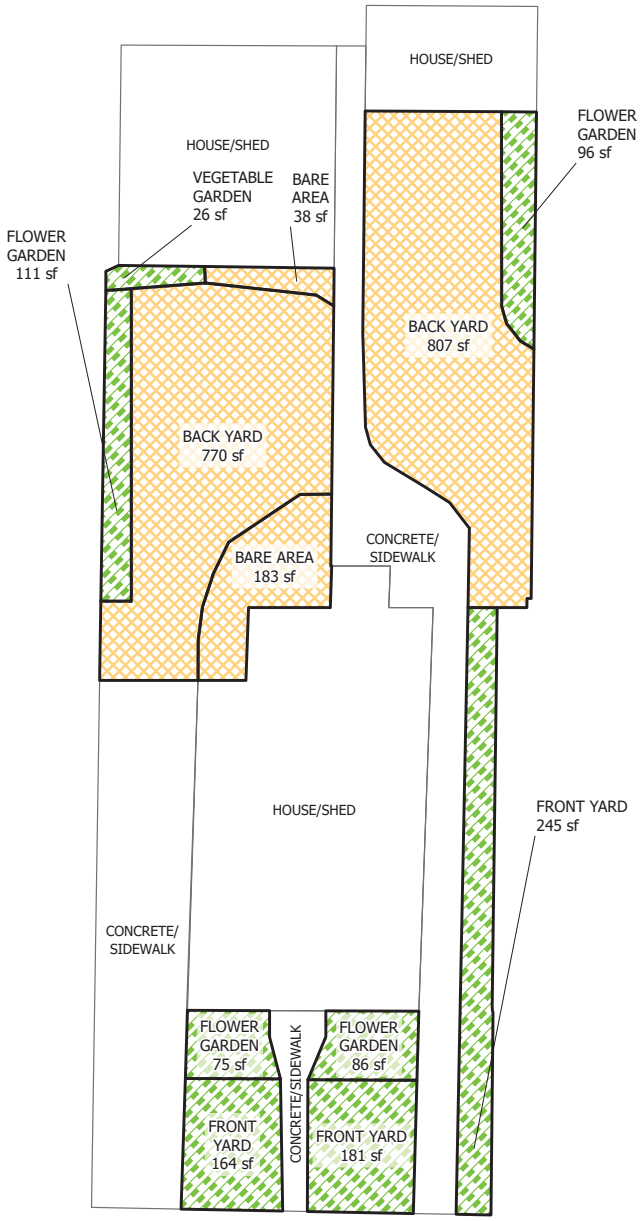
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 24" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-332

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-332			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-332-BA	Bare Area (BA)	221	11	31	40	30	36	449	257	39	4.1	4.1	221	-	-
BE-332-BY	Back Yard (BY)	1,577	9	24	31	42	82	406	369	87	29.2	29.2	1,577	-	-
BE-332-DZ	Drip Zone (DZ)	220	8	16	43	30	13	33	153	94	-	-	-	-	-
BE-332-FG	Flower Garden (FG)	368	0	15	30	42	0	92	267	179	-	-	-	-	-
BE-332-FY	Front Yard (FY)	590	17	27	30	25	290	269	120	60	-	-	-	-	-
BE-332-VG	Vegetable Garden (VG)	26	7	12	29	79	11	111	300	103	-	-	-	-	-
	TOTALS	3,002									33.3	33.3	1,798		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

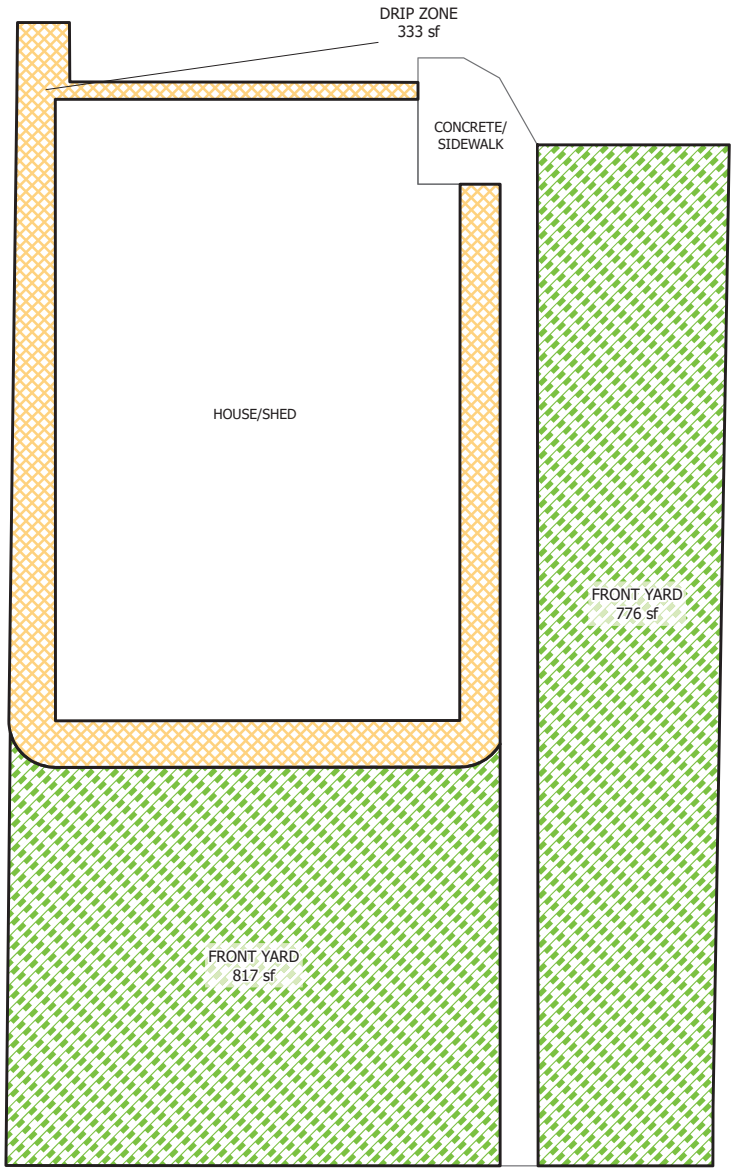
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-333A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-333A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-333A-DZ	Drip Zone (DZ)	333	44	102	120	47	416	265	295	195	6.2	6.2	333	-	-
BE-333A-FY	Front Yard (FY)	1,593	12	18	38	28	223	74	62	26	-	-	-	-	-
	TOTALS	1,926									6.2	6.2	333		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/**Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

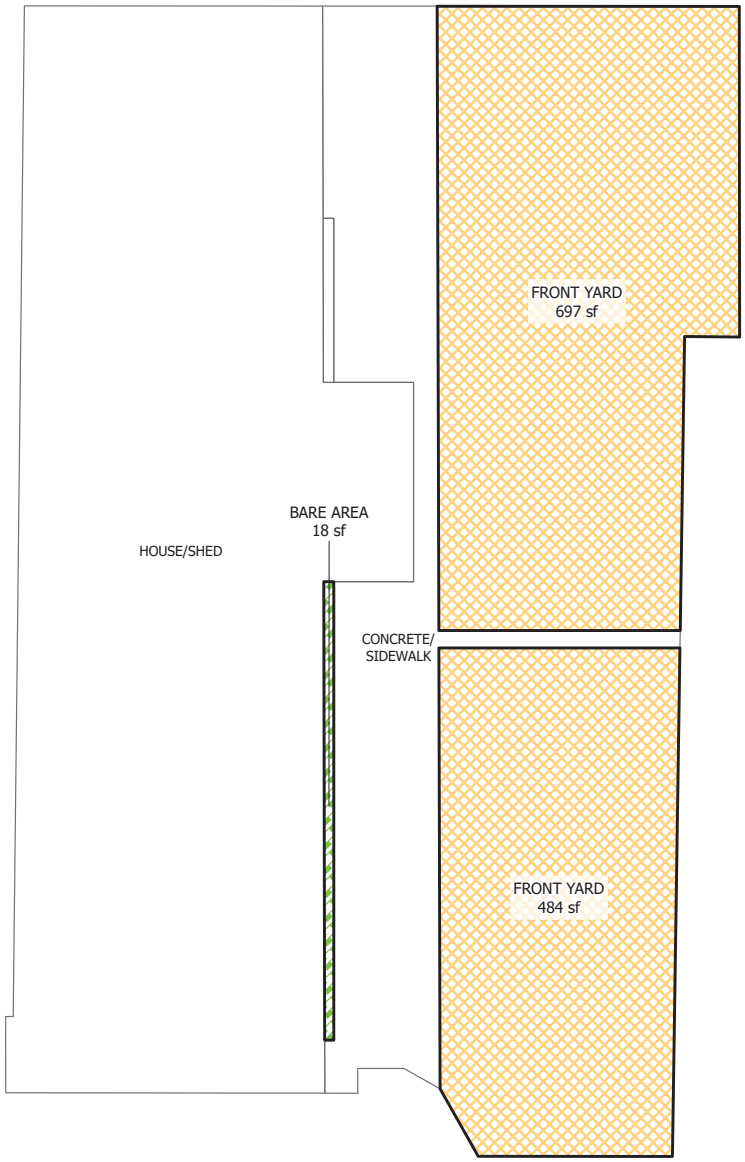
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-333B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-333B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-333B-BA	Bare Area (BA)	18	29	31	27	9	276	290	70	88	-	-	-	-	-
BE-333B-DZ	Drip Zone (DZ)	220	17	54	72	66	376	213	48	25	-	-	-	-	-
BE-333B-FY	Front Yard (FY)	1,181	19	29	35	18	151	406	221	29	21.9	21.9	1,181	-	-
	TOTALS	1,419									21.9	21.9	1,181		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

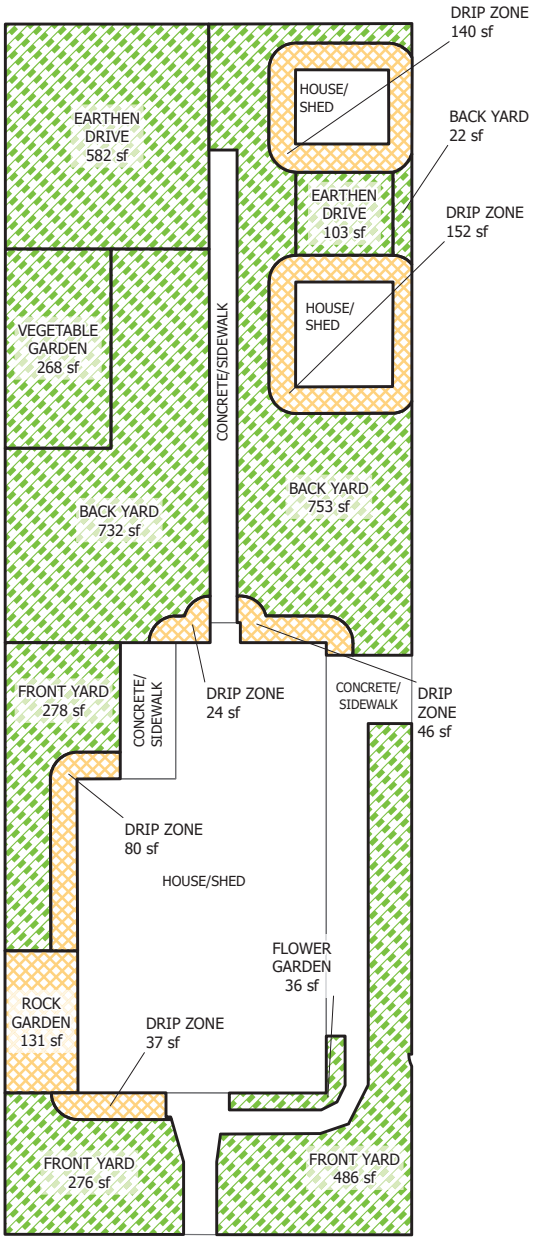
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-335

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-335			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-13"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-335-BY	Back Yard (BY)	1,507	20	23	26	32	173	272	176	33	-	-	-	-	-
BE-335-DZ	Drip Zone (DZ)	479	28	34	39	134	527	468	140	58	8.9	8.9	479	-	-
BE-335-ED	Earthen Drive (ED)	685	7	26	31	28	16	294	270	273	-	-	-	-	-
BE-335-FG	Flower Garden (FG)	36	25	45	24	33	386	171	361	38	-	-	-	-	-
BE-335-FY	Front Yard (FY)	1,040	17	30	65	64	199	243	99	56	-	-	-	-	-
BE-335-RG	Rock Garden (RG)	131	25	34	58	56	1870	358	121	63	2.4	2.4	-	-	-
BE-335-VG	Vegetable Garden (VG)	268	17	23	25	27	104	157	170	135	-	-	-	-	-
	TOTALS	4,146									11.3	11.3	479		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

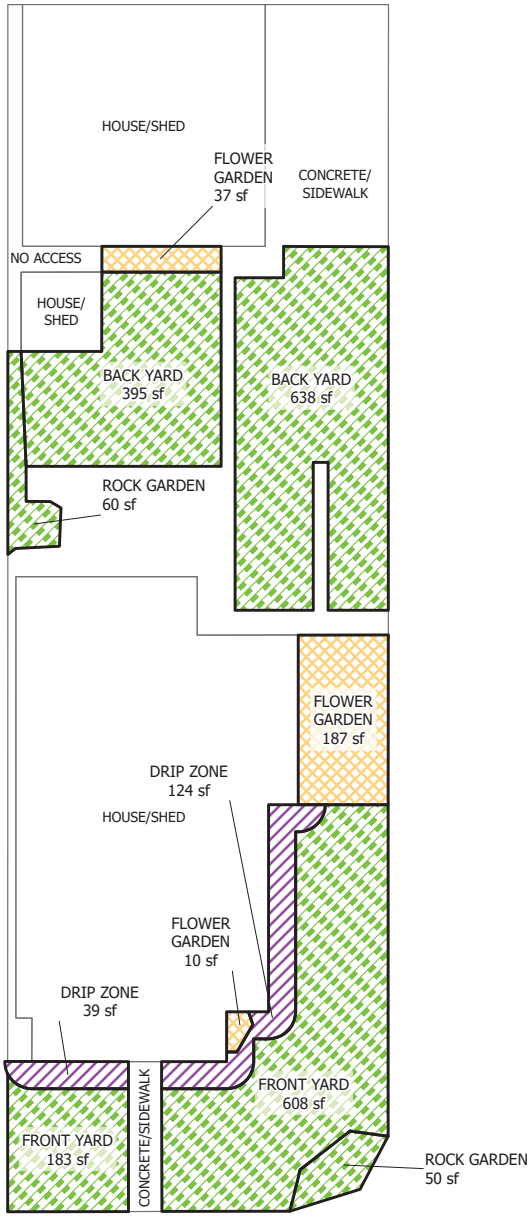
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-336

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-336			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-336-BY	Back Yard (BY)	1,033	18	17	30	14	249	205	118	11	-	-	-	-	-
BE-336-DZ	Drip Zone (DZ)	163	21	26	39	39	233	557	681	125	6.0	6.0	163	-	-
BE-336-FG	Flower Garden (FG)	234	10	36	21	23	244	464	17	21	4.3	4.3	234	-	-
BE-336-FY	Front Yard (FY)	791	11	18	38	29	160	285	238	112	-	-	-	-	-
BE-336-RG	Rock Garden (RG)	110	13	18	21	22	98	202	133	12	-	-	-	-	-
	TOTALS	2,331									10.3	10.3	397		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

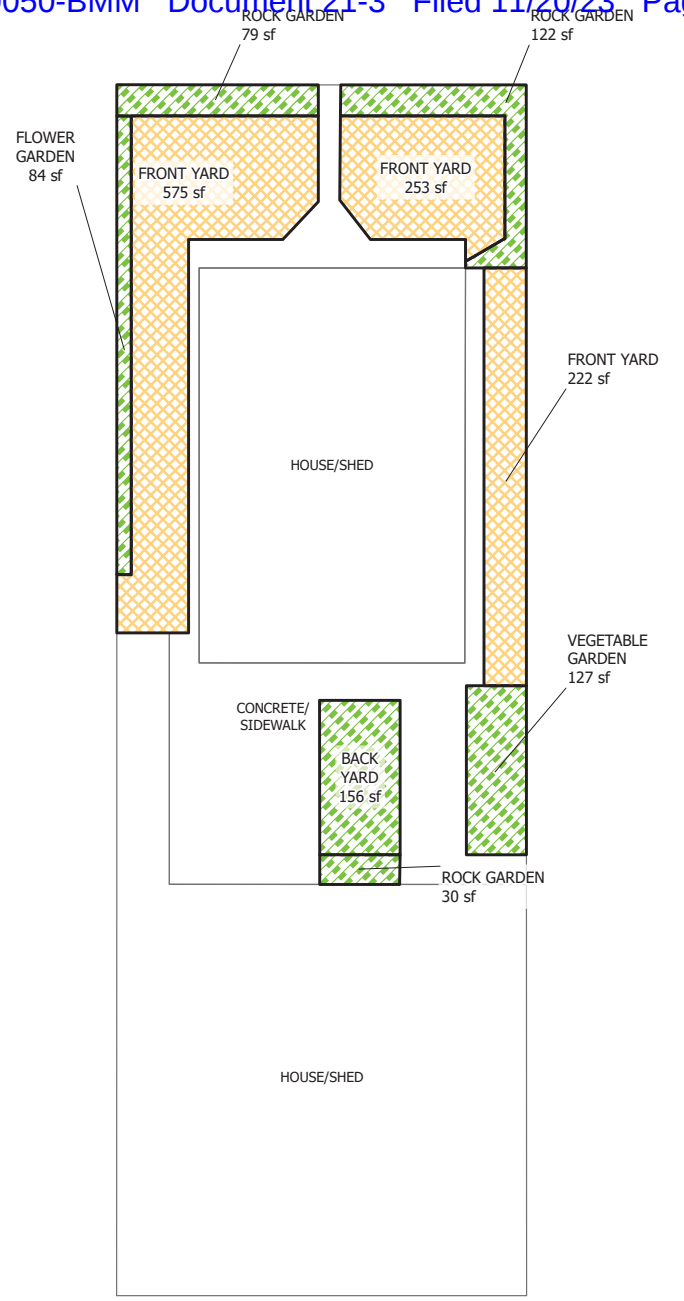
Legend
- No Action
- 6" RA
- 12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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PROPERTY ADDRESS: 1912 MONTANA AVE
RESIDENT ID: BE-340



Resident ID
BE-340

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-340			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-340-BY	Back Yard (BY)	156	22	23	29	54	325	360	351	82	-	-	-	-	-
BE-340-FG	Flower Garden (FG)	84	26	27	39	67	174	168	146	111	-	-	-	-	-
BE-340-FY	Front Yard (FY)	1,050	31	47	64	73	615	139	123	128	19.4	19.4	1,050	-	-
BE-340-RG	Rock Garden (RG)	231	23	30	59	63	128	111	64	58	-	-	-	-	-
BE-340-VG	Vegetable Garden (VG)	127	19	19	22	39	203	237	244	43	-	-	-	-	-
	TOTALS	1,648									19.4	19.4	1,050		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

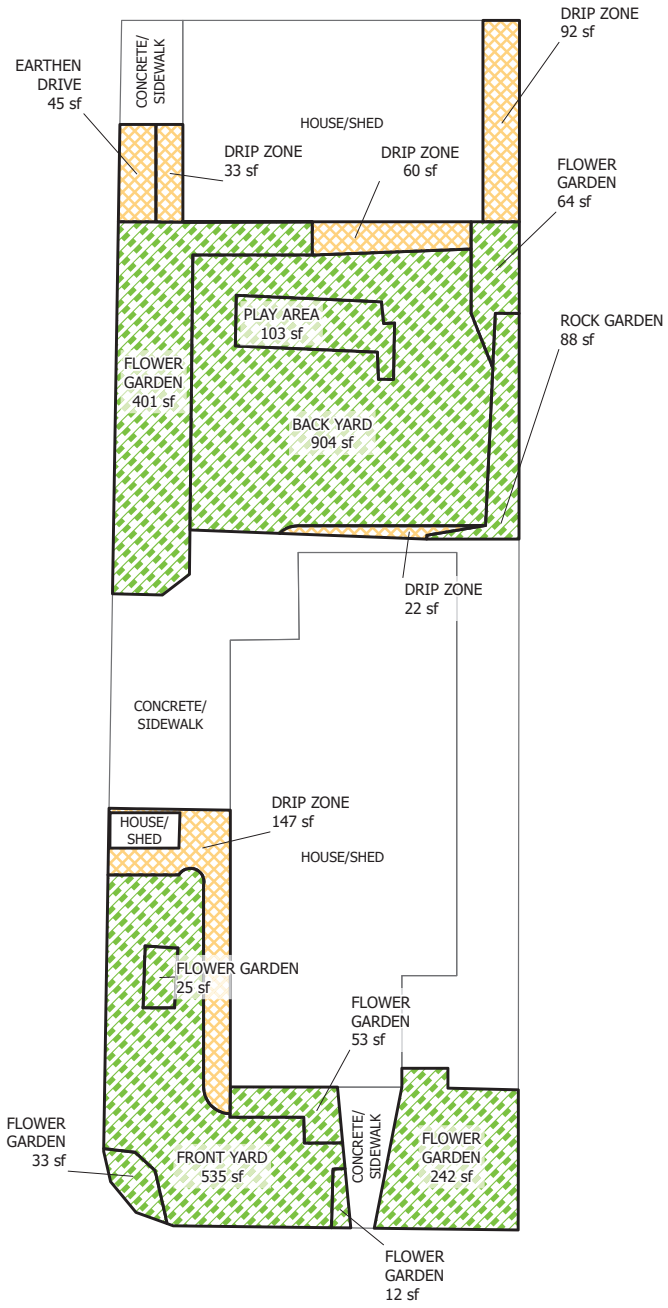
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-345

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-345			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-345-BY	Back Yard (BY)	904	14	36	29	52	98	250	320	96	-	-	-	-	-
BE-345-DZ	Drip Zone (DZ)	354	36	38	63	59	801	457	154	157	6.6	6.6	354	-	-
BE-345-ED	Earthen Drive (ED)	45	12	51	65	73	248	410	242	176	0.8	-	-	0.8	-
BE-345-FG	Flower Garden (FG)	830	19	27	44	62	197	332	128	116	-	-	-	-	-
BE-345-FY	Front Yard (FY)	535	14	14	25	18	126	99	83	11	-	-	-	-	-
BE-345-PA	Play Area (PA)	103	7	24	54	36	46	120	63	17	-	-	-	-	-
BE-345-RG	Rock Garden (RG)	88	25	39	52	76	260	287	218	129	-	-	-	-	-
	TOTALS	2,859									7.4	6.6	354	0.8	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

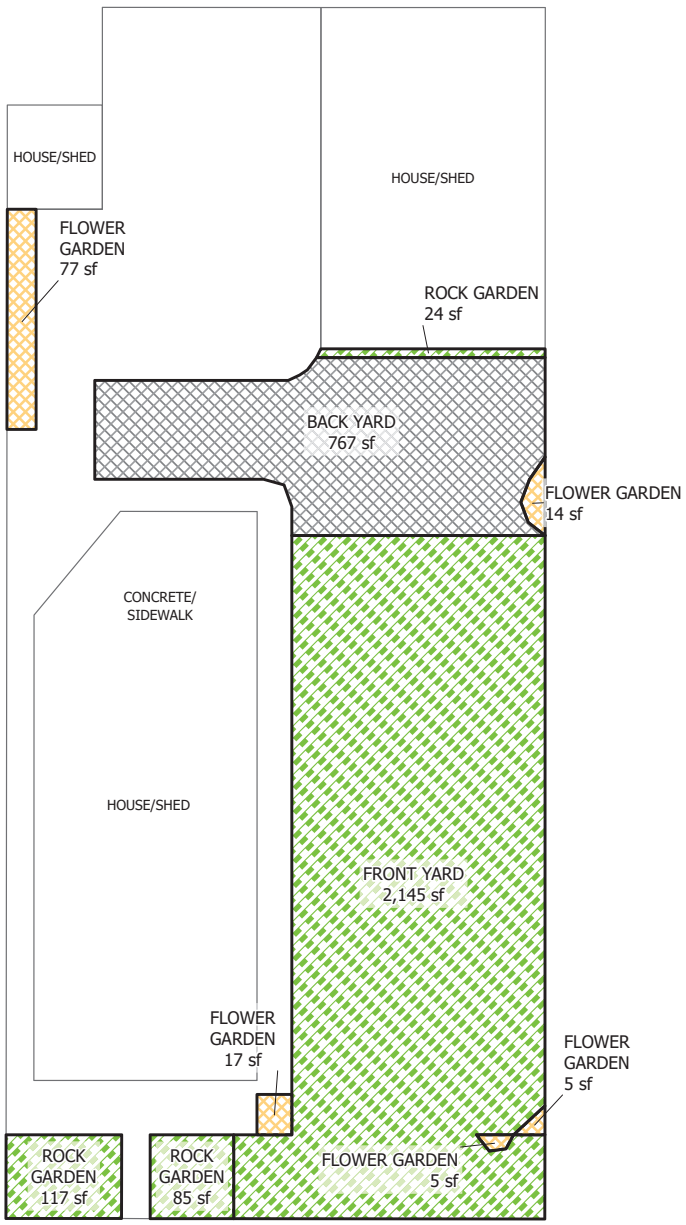
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-346

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-346			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-346-BY	Back Yard (BY)	767	27	39	69	66	248	417	748	413	42.6	42.6	767	-	-
BE-346-FG	Flower Garden (FG)	118	78	51	60	53	282	354	321	137	2.2	2.2	118	-	-
BE-346-FY	Front Yard (FY)	2,145	23	33	33	29	189	220	116	42	-	-	-	-	-
BE-346-RG	Rock Garden (RG)	226	17	37	74	99	116	190	120	33	-	-	-	-	-
	TOTALS	3,256									44.8	44.8	885		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

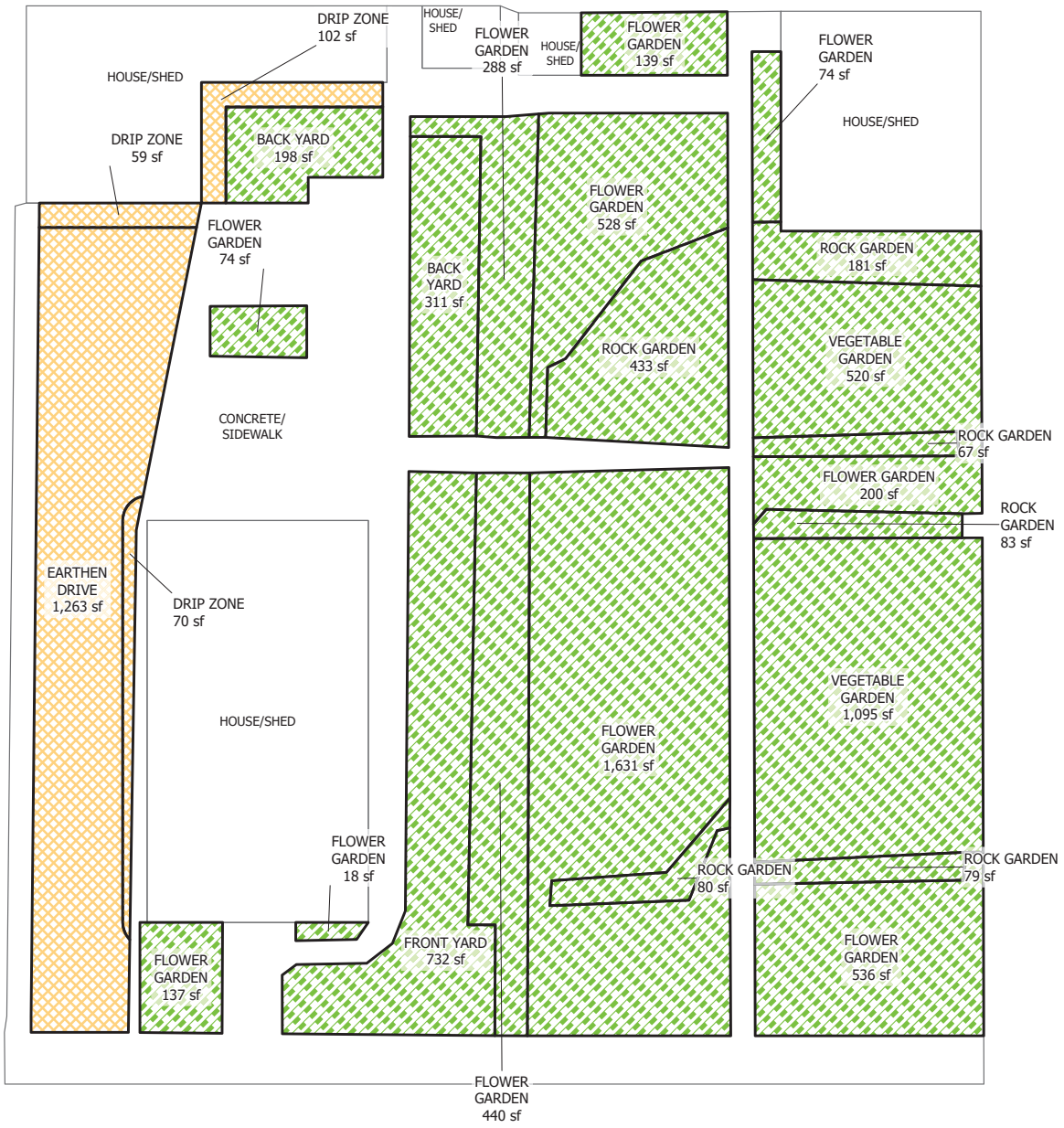
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-347

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-347			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-347-BY	Back Yard (BY)	509	24	46	49	50	270	378	352	67	-	-	-	-	-
BE-347-DZ	Drip Zone (DZ)	231	27	33	36	66	571	109	56	47	4.3	4.3	231	-	-
BE-347-ED	Earthen Drive (ED)	1,263	45	73	62	52	543	330	101	18	23.4	-	-	23.4	-
BE-347-FY	Front Yard (FY)	732	16	25	33	47	119	197	239	76	-	-	-	-	-
BE-347-LFG	Flower Garden (FG)	3,108	41	41	37	38	226	258	175	85	-	-	-	-	-
BE-347-RG	Rock Garden (RG)	923	29	52	75	40	138	300	374	135	-	-	-	-	-
BE-347-UFG	Flower Garden (FG)	957	57	37	33	39	224	368	183	112	-	-	-	-	-
BE-347-VG	Vegetable Garden (VG)	1,615	31	39	37	37	150	201	171	80	-	-	-	-	-
	TOTALS	9,338									27.7	4.3	231	23.4	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/Flower garden component** sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

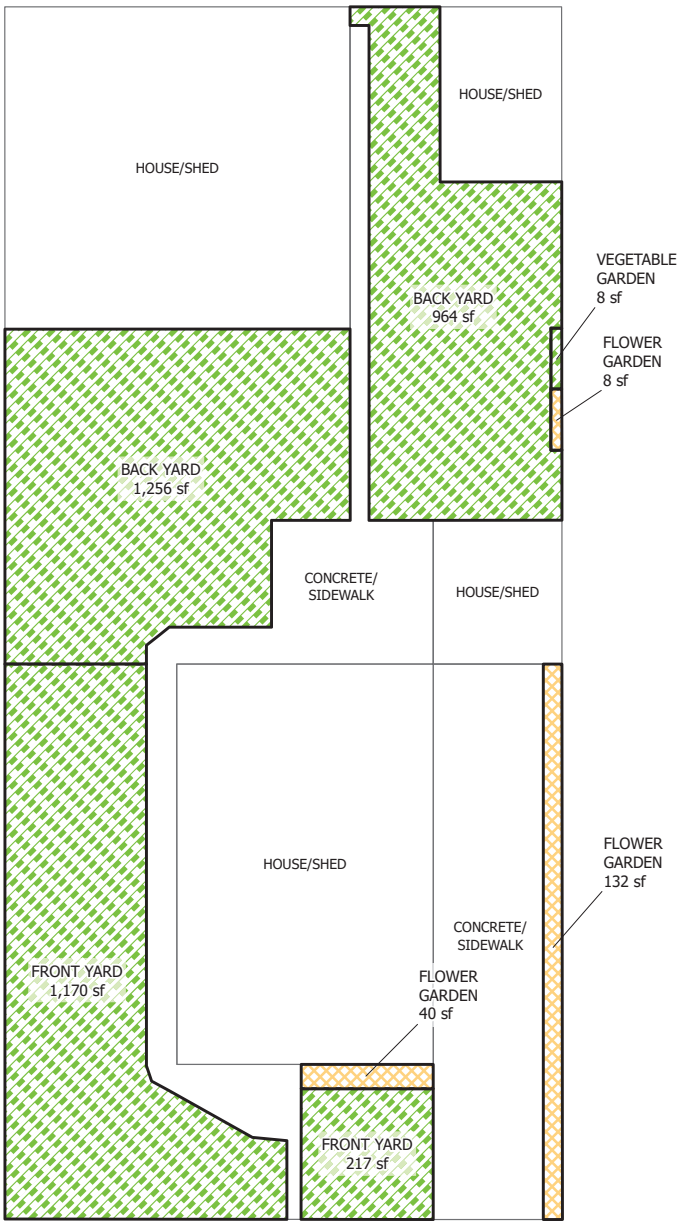
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-348

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-348			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-348-BY	Back Yard (BY)	2,220	22	31	41	33	185	172	62	35	-	-	-	-	-
BE-348-DZ	Drip Zone (DZ)	220	6	17	22	25	14	141	257	85	-	-	-	-	-
BE-348-FG	Flower Garden (FG)	180	19	26	33	42	413	337	69	93	3.3	3.3	180	-	-
BE-348-FY	Front Yard (FY)	1,387	12	20	25	71	72	155	176	336	-	-	-	-	-
BE-348-VG	Vegetable Garden (VG)	8	13	12	31	35	22	64	51	22	-	-	-	-	-
	TOTALS	4,015									3.3	3.3	180		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/**Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

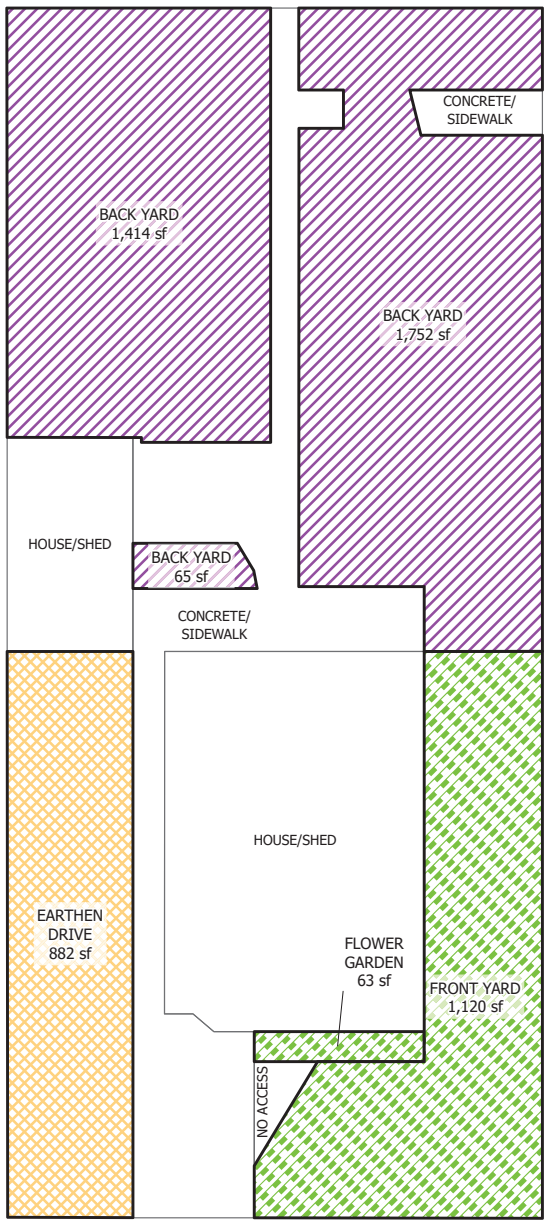
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-349

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-349			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-349-BY	Back Yard (BY)	3,231	77	23	50	61	169	360	513	101	119.7	119.7	3,231	-	-
BE-349-DZ	Drip Zone (DZ)	220	57	19	23	31	74	222	318	226	-	-	-	-	-
BE-349-ED	Earthen Drive (ED)	882	8	8	102	63	406	36	252	326	16.3	-	-	16.3	-
BE-349-FG	Flower Garden (FG)	63	71	21	38	62	101	241	106	94	-	-	-	-	-
BE-349-FY	Front Yard (FY)	1,121	26	56	51	65	223	375	304	54	-	-	-	-	-
	TOTALS	5,517									136.0	119.7	3,231	16.3	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

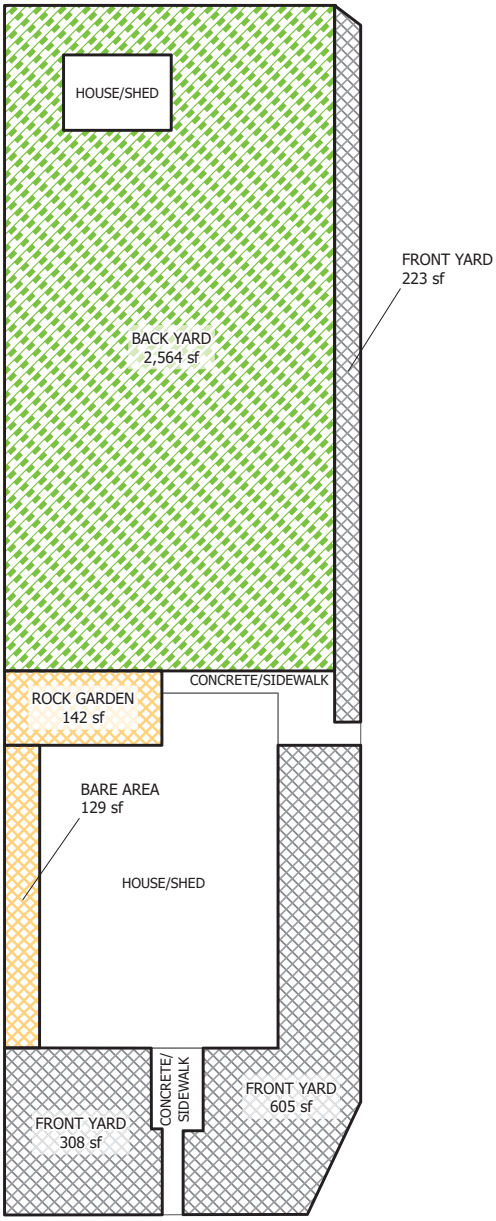
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-351

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-351			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-13"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-351-BA	Bare Area (BA)	129	26	32	47	104	780	608	193	64	2.4	2.4	129	-	-
BE-351-BY	Back Yard (BY)	2,564	29	38	55	68	193	228	277	99	-	-	-	-	-
BE-351-DZ	Drip Zone (DZ)	220	34	13	24	28	51	162	345	258	-	-	-	-	-
BE-351-FY	Front Yard (FY)	1,136	23	35	45	15	272	318	131	651	63.1	63.1	1,136	-	-
BE-351-RG	Rock Garden (RG)	142	23	38	44	117	630	389	214	180	2.6	2.6	-	-	-
	TOTALS	4,191									68.1	68.1	1,265		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

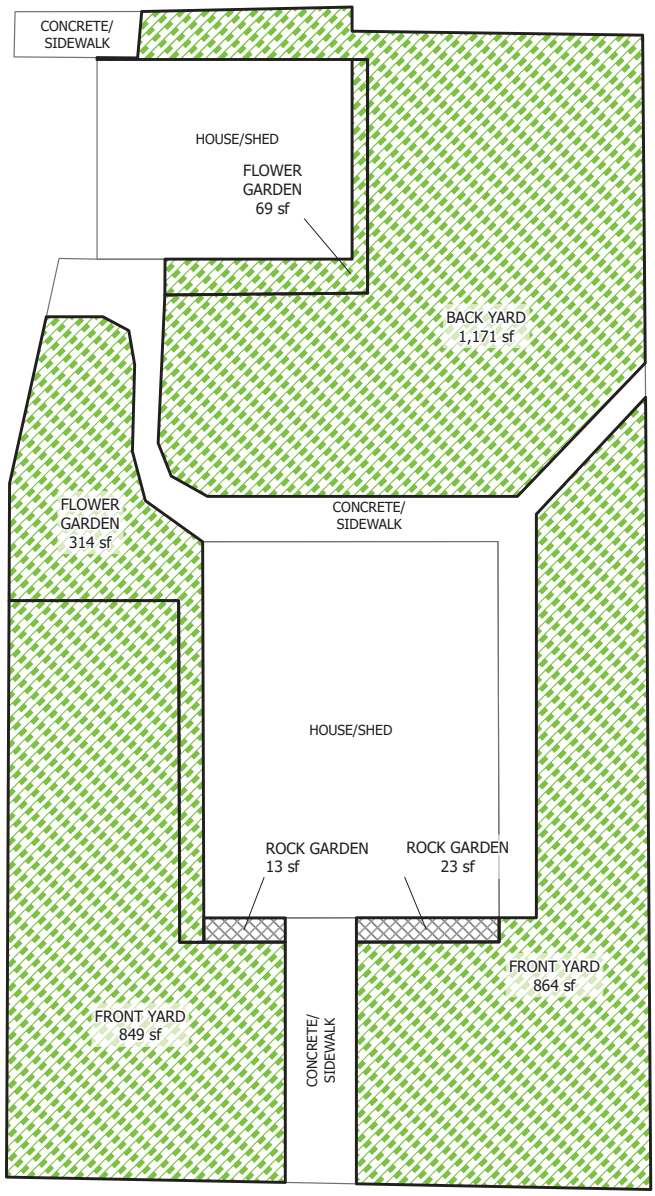
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-355

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-355			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-355-BY	Back Yard (BY)	1,171	17	30	30	19	284	127	58	12	-	-	-	-	-
BE-355-DZ	Drip Zone (DZ)	220	24	12	13	27	110	112	158	251	-	-	-	-	-
BE-355-FG	Flower Garden (FG)	383	15	15	14	13	224	328	102	131	-	-	-	-	-
BE-355-FY	Front Yard (FY)	1,713	15	14	20	43	207	76	132	115	-	-	-	-	-
BE-355-RG	Rock Garden (RG)	36	21	14	27	33	154	74	403	402	2.0	2.0	-	-	-
	TOTALS	3,523									2.0	2.0			

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

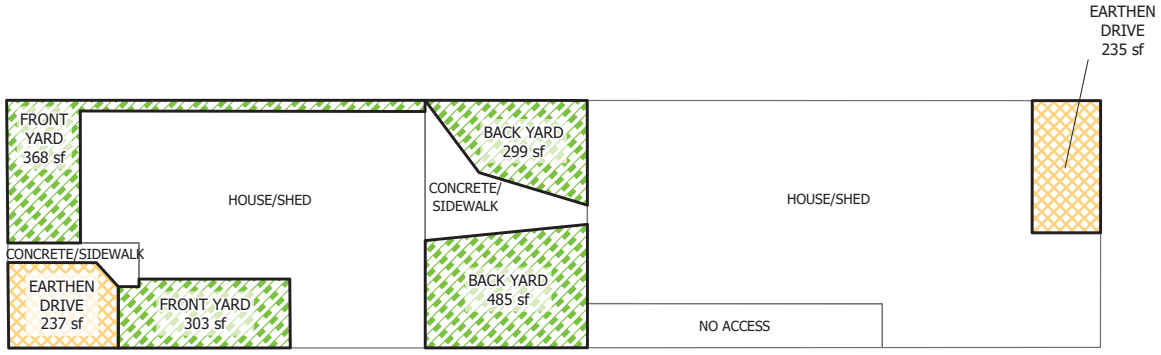
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-409

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-409			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-409-BY	Back Yard (BY)	784	13	14	15	31	123	127	86	85	-	-	-	-	-
BE-409-DZ	Drip Zone (DZ)	220	16	23	20	15	332	283	169	42	-	-	-	-	-
BE-409-ED	Earthen Drive (ED)	472	13	22	55	23	176	450	72	50	8.7	-	-	8.7	-
BE-409-FY	Front Yard (FY)	671	21	19	18	20	214	143	19	18	-	-	-	-	-
	TOTALS	2,147									8.7			8.7	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

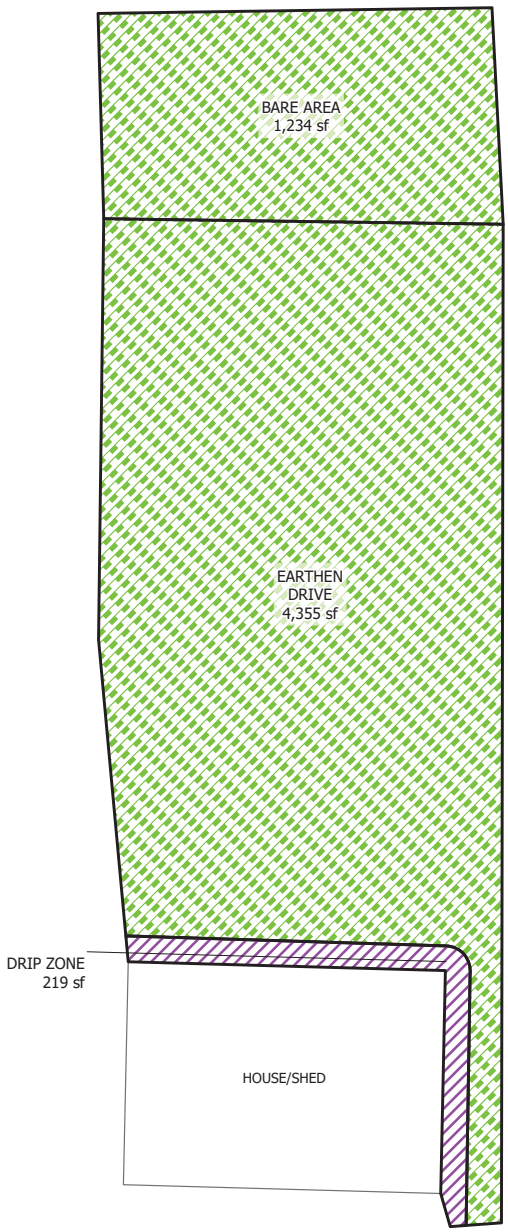
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-423

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-423			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-423-BA	Bare Area (BA)	1,234	12	19	34	42	357	216	261	68	-	-	-	-	-
BE-423-DZ	Drip Zone (DZ)	219	7	8	51	56	28	24	874	104	8.1	8.1	219	-	-
BE-423-ED	Earthen Drive (ED)	4,355	15	27	53	70	352	256	240	98	-	-	-	-	-
	TOTALS	5,808									8.1	8.1	219		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg
N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

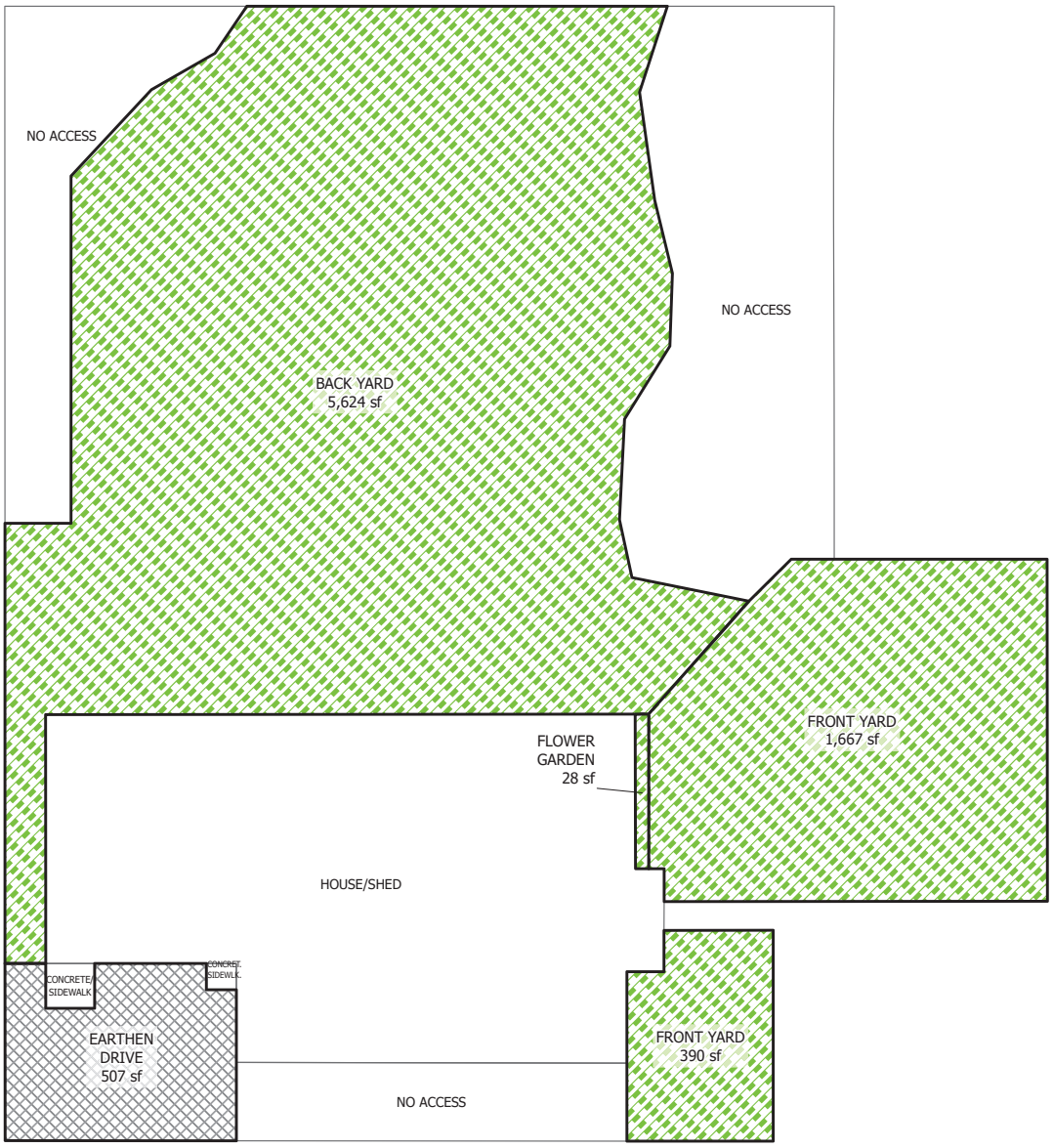
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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NOTE: ED Sampling refusal at 6 or 12 inches during sampling. Concentrations to 18 inches assumed based upon the 0 to 6 inch samples. No further sampling planned.

Resident ID
BE-424

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-424			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-424-BY	Back Yard (BY)	5,624	21	29	29	26	120	153	157	80	-	-	-	-	-
BE-424-DZ	Drip Zone (DZ)	220	29	39	37	37	231	152	45	48	-	-	-	-	-
BE-424-ED	Earthen Drive (ED)	507	20	24	N/A	N/A	451	1100	N/A	N/A	28.2	18.8	-	9.4	-
BE-424-FG	Flower Garden (FG)	28	9	12	21	26	23	22	53	57	-	-	-	-	-
BE-424-FY	Front Yard (FY)	2,057	21	39	52	86	85	122	123	60	-	-	-	-	-
	TOTALS	8,436									28.2	18.8		9.4	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

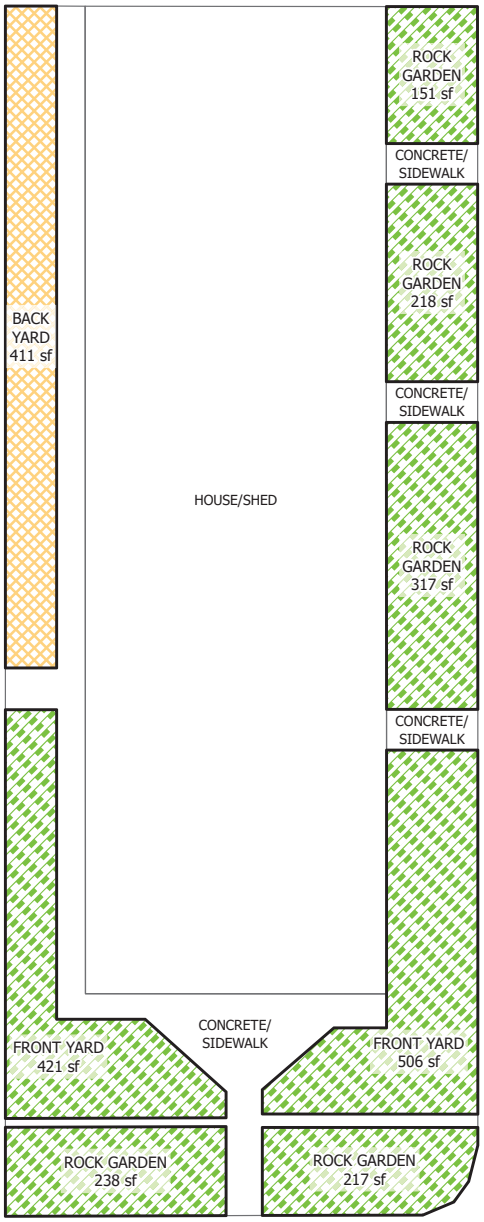
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-430

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-430			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-430-BY	Back Yard (BY)	411	19	16	40	29	546	105	54	24	7.6	7.6	411	-	-
BE-430-DZ	Drip Zone (DZ)	220	22	25	37	51	128	288	384	145	-	-	-	-	-
BE-430-FY	Front Yard (FY)	927	22	57	96	74	242	177	229	80	-	-	-	-	-
BE-430-RG	Rock Garden (RG)	1,141	15	21	25	30	208	114	100	87	-	-	-	-	-
	TOTALS	2,699									7.6	7.6	411		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

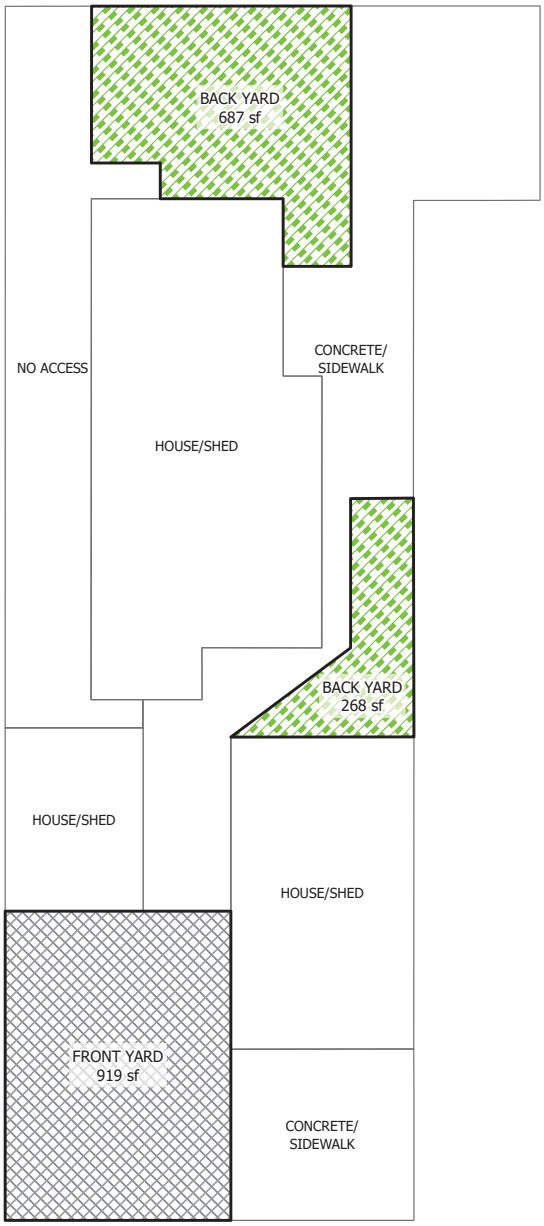
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-433B

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-433B			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-433B-BY	Back Yard (BY)	955	9	10	11	14	31	27	32	30	-	-	-	-	-
BE-433B-FY	Front Yard (FY)	919	14	13	13	29	75	93	237	639	51.1	51.1	919	-	-
	TOTALS	1,874									51.1	51.1	919		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/**Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

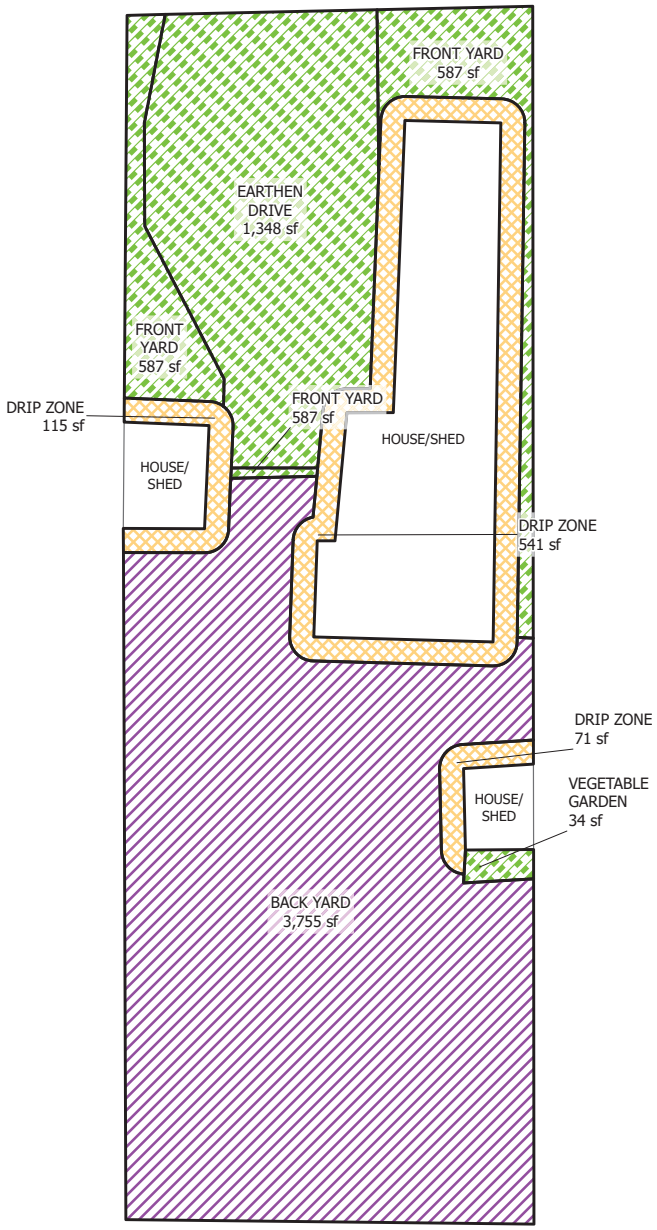
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-437

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-437			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-437-BY	Back Yard (BY)	3,755	18	60	264	75	26	35	62	42	139.1	139.1	3,755	-	-
BE-437-DZ	Drip Zone (DZ)	726	23	114	246	132	23	28	43	47	13.4	13.4	726	-	-
BE-437-ED	Earthen Drive (ED)	1,348	16	38	32	35	30	35	37	29	-	-	-	-	-
BE-437-FY	Front Yard (FY)	587	21	13	47	63	23	22	25	23	-	-	-	-	-
BE-437-VG	Vegetable Garden (VG)	34	20	44	59	46	28	25	26	25	-	-	-	-	-
	TOTALS	6,450									152.5	152.5	4,481		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

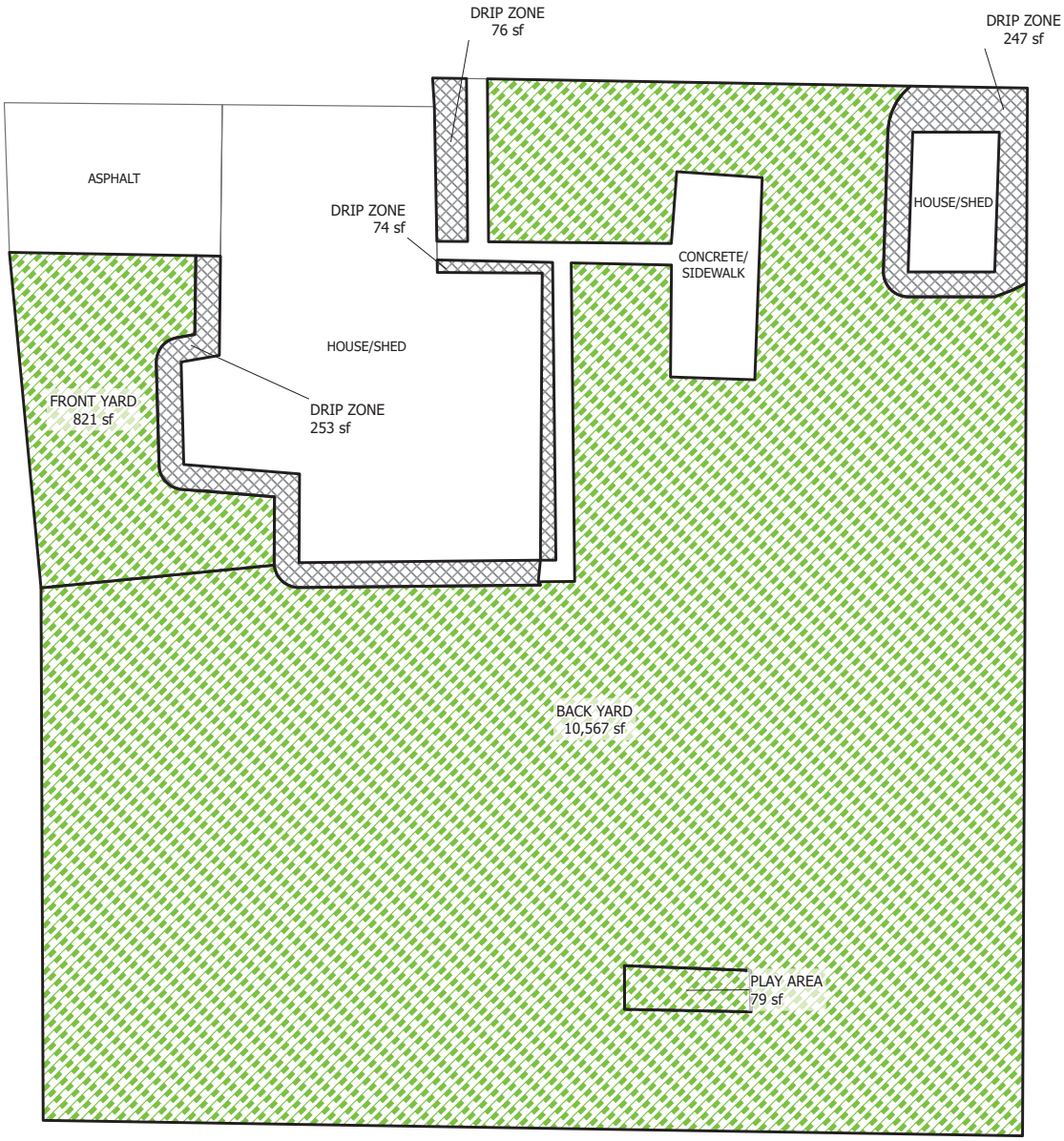
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-459

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-459			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-459-BY	Back Yard (BY)	10,567	23	28	42	55	183	140	94	51	-	-	-	-	-
BE-459-DZ	Drip Zone (DZ)	650	11	23	22	53	170	546	183	551	36.1	36.1	650	-	-
BE-459-FY	Front Yard (FY)	821	12	32	19	118	107	114	157	54	-	-	-	-	-
BE-459-PA	Play Area (PA)	79	16	11	11	66	49	23	45	106	-	-	-	-	-
	TOTALS	12,117									36.1	36.1	650		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

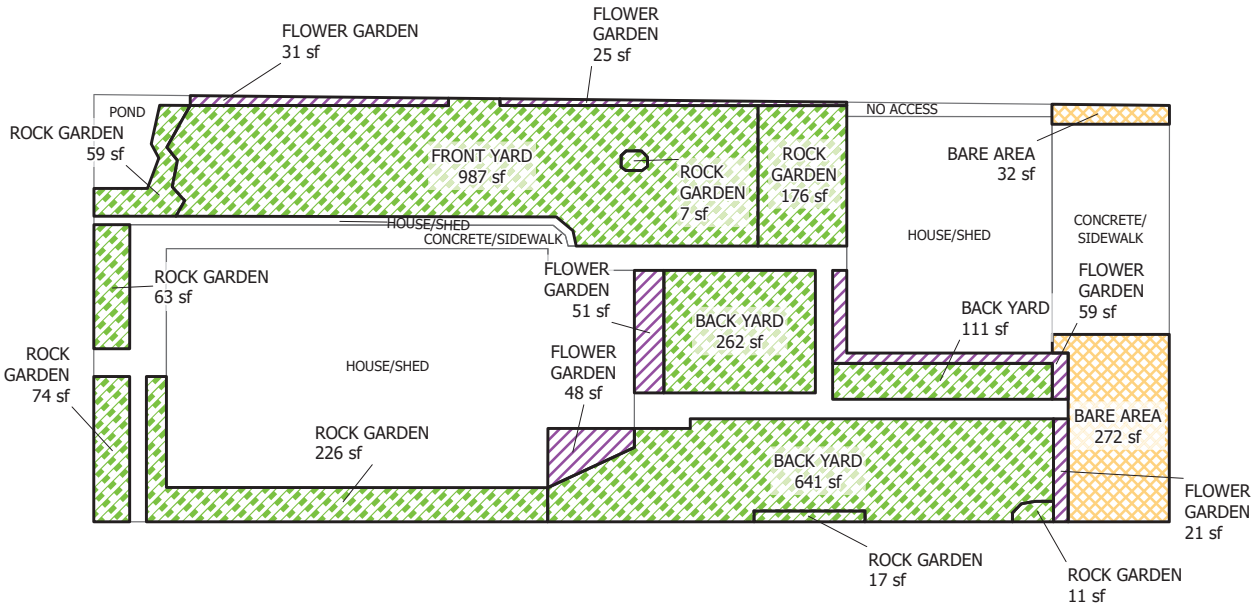
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 18" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-506

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-506			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-506-BA	Bare Area (BA)	304	25	30	47	38	404	366	49	115	5.6	5.6	304	-	-
BE-506-BY	Back Yard (BY)	1,014	30	33	36	10	70	283	170	76	-	-	-	-	-
BE-506-DZ	Drip Zone (DZ)	220	36	40	52	56	219	196	186	214	-	-	-	-	-
BE-506-FG	Flower Garden (FG)	235	31	12	31	30	173	95	555	331	8.7	8.7	235	-	-
BE-506-FY	Front Yard (FY)	987	24	41	46	37	178	259	120	191	-	-	-	-	-
BE-506-RG	Rock Garden (RG)	633	18	28	31	32	170	181	172	75	-	-	-	-	-
	TOTALS	3,393									14.3	14.3	539		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

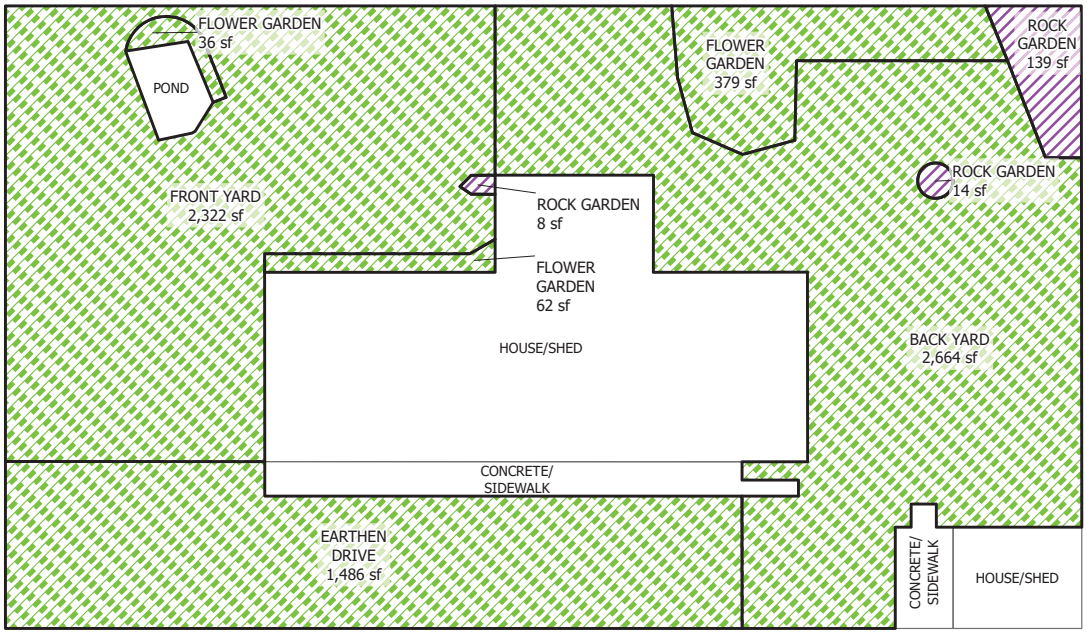
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-508

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-508			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-508-BY	Back Yard (BY)	2,664	19	30	36	30	93	119	117	69	-	-	-	-	-
BE-508-DZ	Drip Zone (DZ)	220	17	30	47	89	112	239	186	146	-	-	-	-	-
BE-508-ED	Earthen Drive (ED)	1,486	11	22	37	33	119	106	94	62	-	-	-	-	-
BE-508-FG	Flower Garden (FG)	477	15	105	55	93	82	212	156	179	-	-	-	-	-
BE-508-FY	Front Yard (FY)	2,322	16	22	36	32	100	177	203	123	-	-	-	-	-
BE-508-RG	Rock Garden (RG)	161	75	158	161	103	259	721	636	216	6.0	6.0	-	-	-
	TOTALS	7,330									6.0	6.0			

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

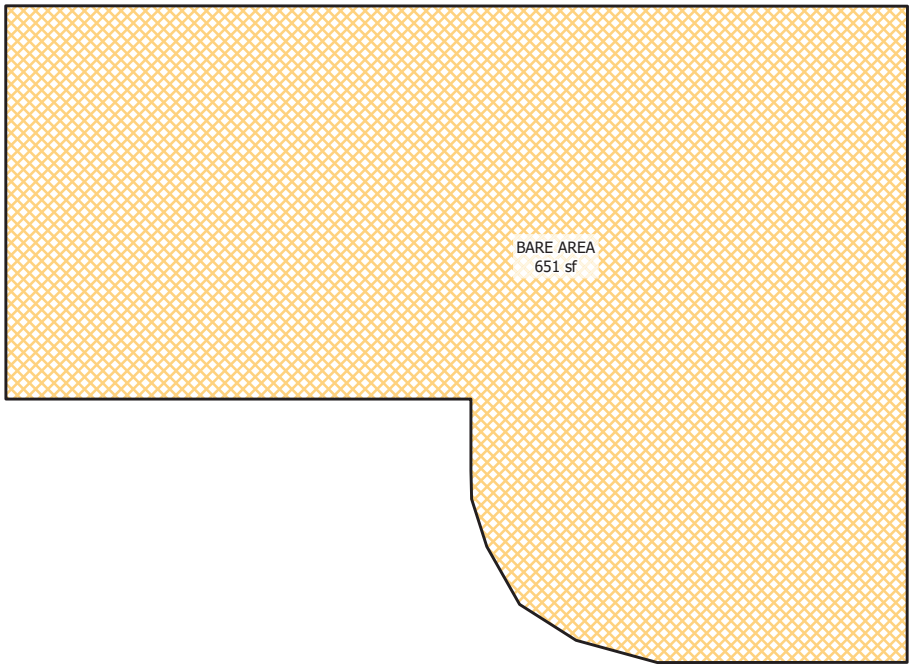
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-516A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-516A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-516A-BA	Bare Area (BA)	651	19.1	29	36	53	692	92	64	137	12.1	12.1	651	-	-
BE-516A-DZ	Drip Zone (DZ)	220	14	15	12	10	78	18	16	13	-	-	-	-	-
	TOTALS	871									12.1	12.1	651		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/**Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

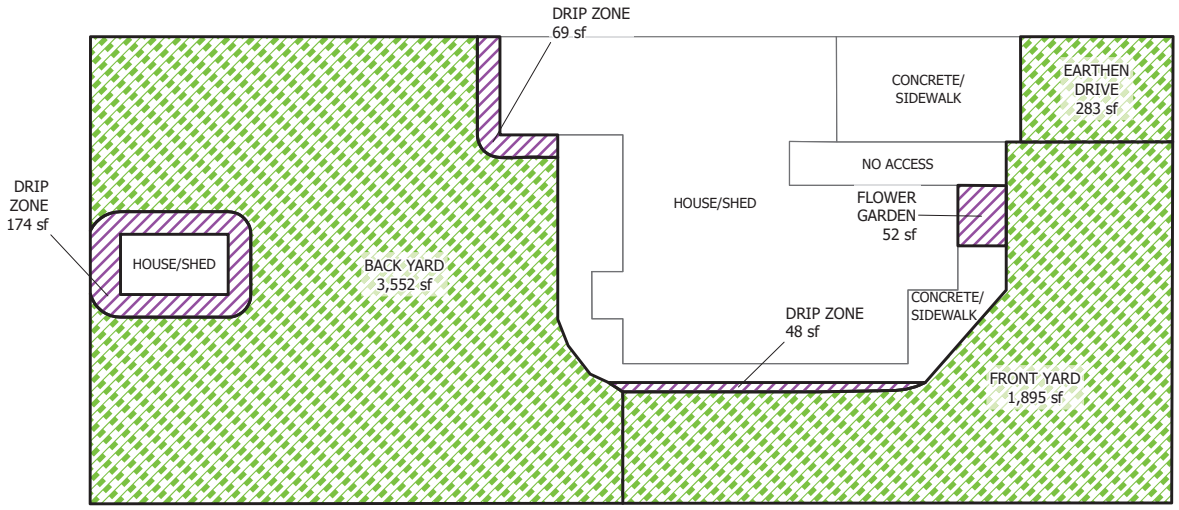
Legend

6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-517

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-517			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-517-BY	Back Yard (BY)	3,552	17	96	67	27	137	213	155	61	-	-	-	-	-
BE-517-DZ	Drip Zone (DZ)	291	18	21	25	22	403	616	417	80	10.8	10.8	291	-	-
BE-517-ED	Earthen Drive (ED)	283	12	13	20	18	214	55	62	48	-	-	-	-	-
BE-517-FG	Flower Garden (FG)	52	16	24	27	31	346	611	601	186	1.9	1.9	52	-	-
BE-517-FY	Front Yard (FY)	1,895	14	15	21	27	161	107	149	201	-	-	-	-	-
	TOTALS	6,073									12.7	12.7	343		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

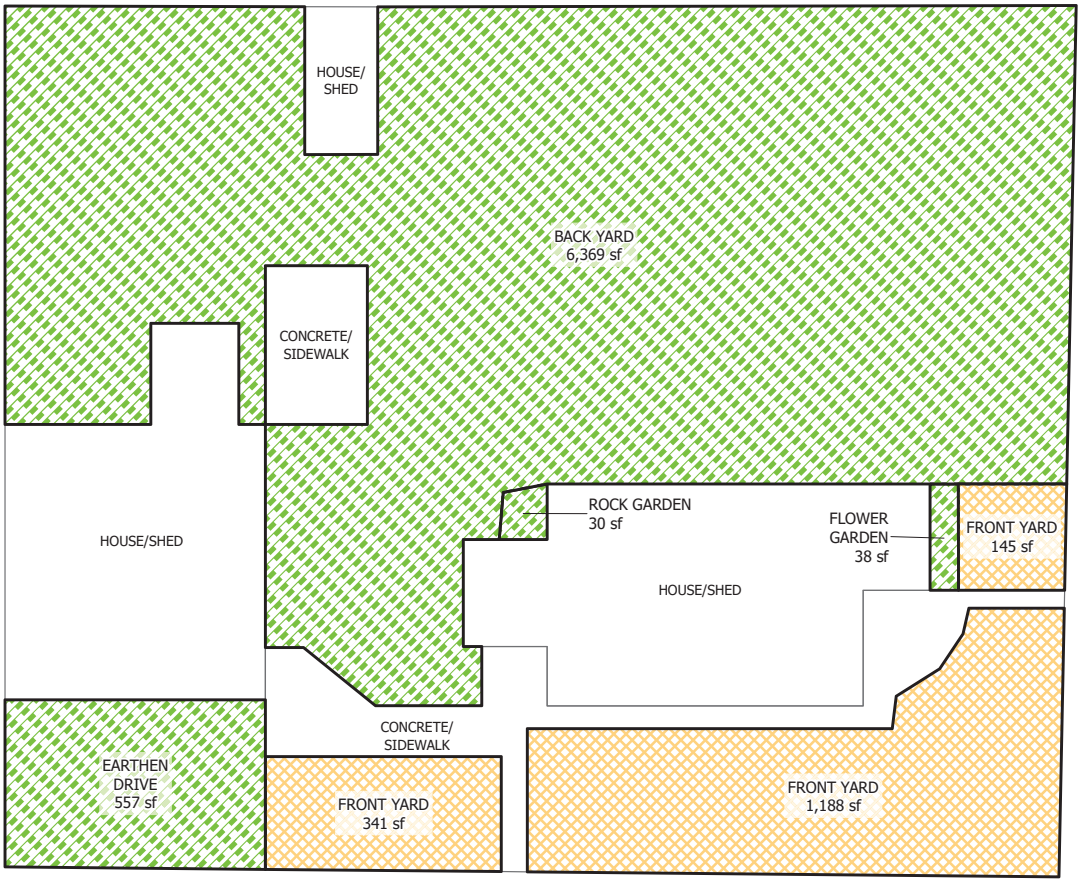
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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NOTE: RG Not sampled due to gas line. No further sampling planned.

Resident ID
BE-521

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-521			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-521-BY	Back Yard (BY)	6,369	28	36	45	38	151	126	73	31	-	-	-	-	-
BE-521-DZ	Drip Zone (DZ)	220	24	32	36	52	239	188	97	123	-	-	-	-	-
BE-521-ED	Earthen Drive (ED)	557	12	15	24	50	173	101	126	31	-	-	-	-	-
BE-521-FG	Flower Garden (FG)	38	27	35	43	42	376	196	135	271	-	-	-	-	-
BE-521-FY	Front Yard (FY)	1,674	18	52	1	53	407	123	0	110	31.0	31.0	1,674	-	-
BE-521-RG	Rock Garden (RG)	30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	-	-	-	-
	TOTALS	8,888									31.0	31.0	1,674		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

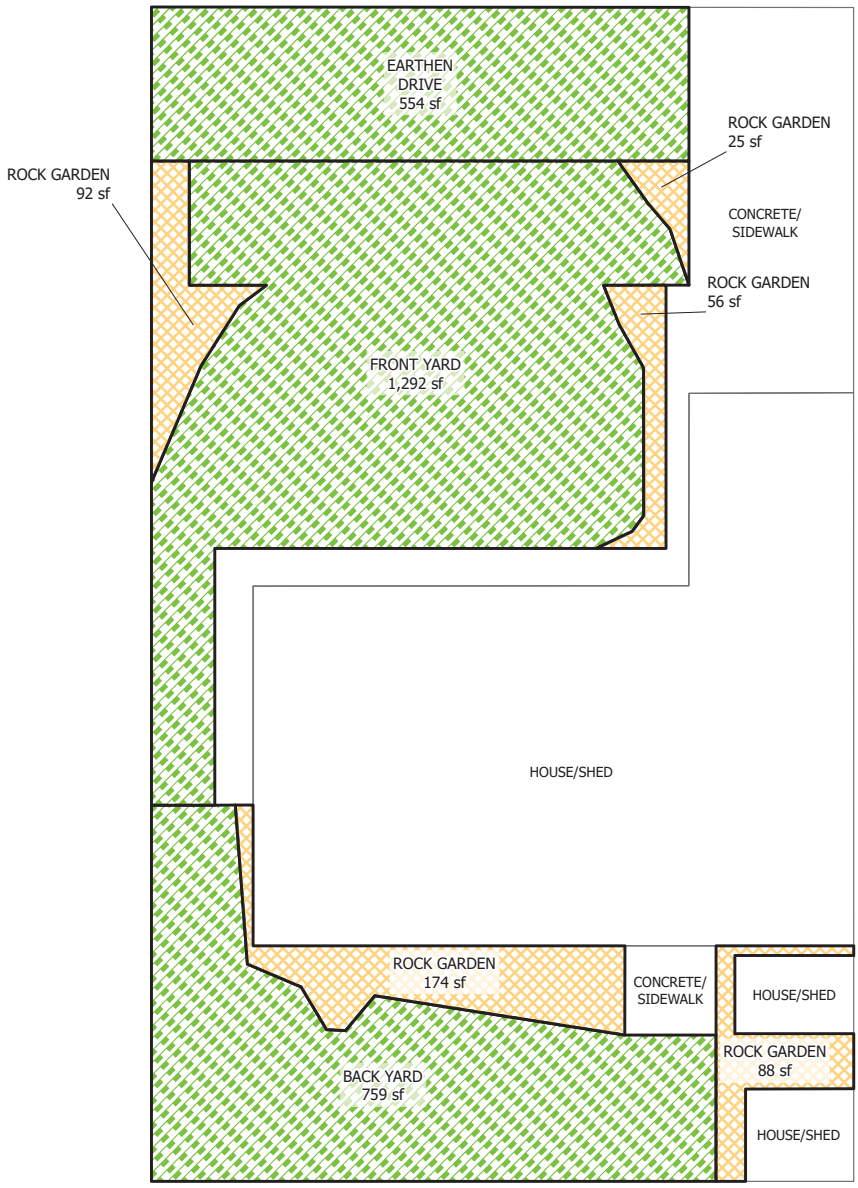
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-523

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-523			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-523-BY	Back Yard (BY)	759	35	27	36	60	202	159	184	169	-	-	-	-	-
BE-523-DZ	Drip Zone (DZ)	220	44	63	44	40	174	201	239	152	-	-	-	-	-
BE-523-ED	Earthen Drive (ED)	554	10	13	23	100	42	114	59	96	-	-	-	-	-
BE-523-FY	Front Yard (FY)	1,292	20	19	39	40	167	81	105	52	-	-	-	-	-
BE-523-RG	Rock Garden (RG)	435	25	82	41	114	164	610	54	34	8.1	8.1	-	-	-
	TOTALS	3,260									8.1	8.1			

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

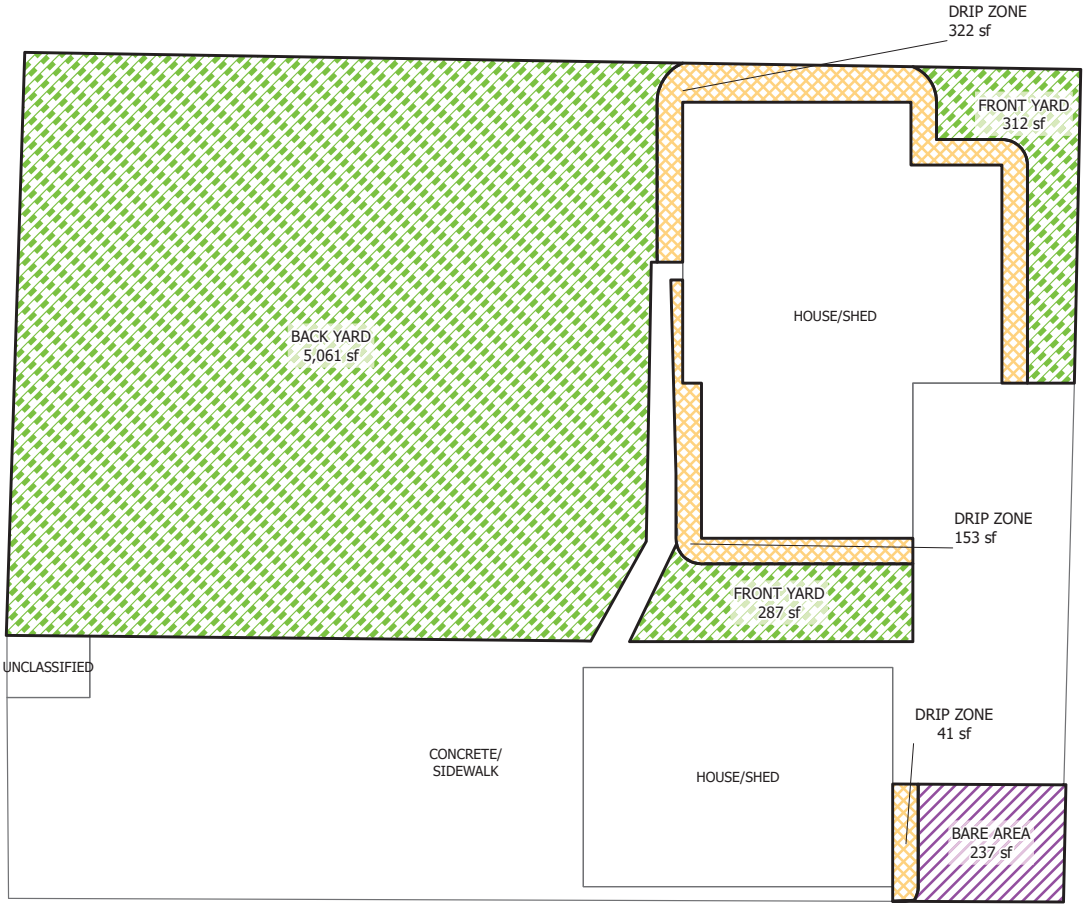
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-528

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-528			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-528-BA	Bare Area (BA)	237	11	23	133	90	118	481	1530	174	8.8	8.8	237	-	-
BE-528-BY	Back Yard (BY)	5,061	16	26	32	34	72	125	86	48	-	-	-	-	-
BE-528-DZ	Drip Zone (DZ)	516	16	31	48	45	236	434	235	160	9.6	9.6	516	-	-
BE-528-FY	Front Yard (FY)	599	20	32	88	80	175	163	276	88	-	-	-	-	-
	TOTALS	6,413									18.4	18.4	753		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to **24 inches** below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

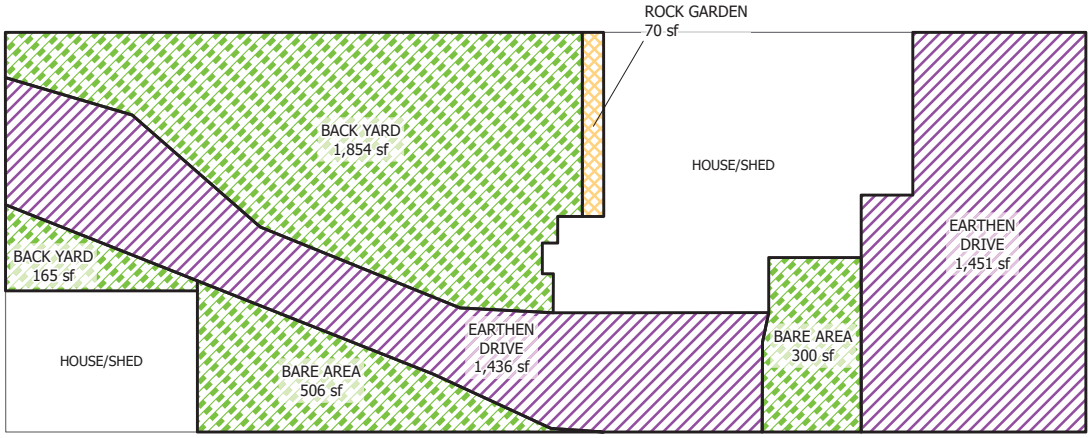
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA
- 12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-534

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-534			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-534-BA	Bare Area (BA)	806	27	35	69	49	86	180	139	109	-	-	-	-	-
BE-534-BY	Back Yard (BY)	2,019	22	43	55	32	53	108	100	35	-	-	-	-	-
BE-534-DZ	Drip Zone (DZ)	220	32	46	40	35	134	124	54	32	-	-	-	-	-
BE-534-ED	Earthen Drive (ED)	2,887	14	65	62	58	82	104	605	188	106.9	53.5	-	53.5	-
BE-534-RG	Rock Garden (RG)	70	45	104	38	32	51	59	17	13	1.3	1.3	-	-	-
	TOTALS	6,002									108.2	54.8		53.5	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

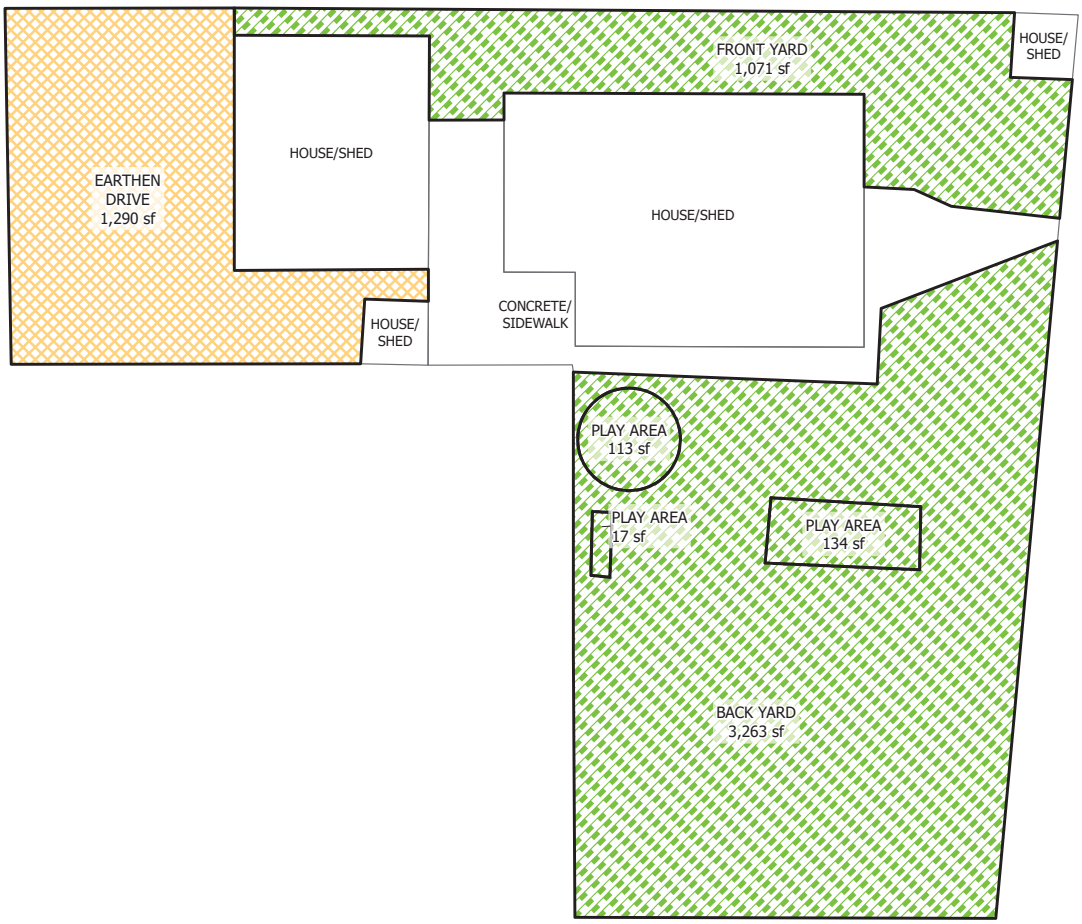
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA
12" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-538

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-538			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-538-BY	Back Yard (BY)	3,263	15	12	10	17	56	36	18	30	-	-	-	-	-
BE-538-DZ	Drip Zone (DZ)	220	17	17	24	31	76	43	35	46	-	-	-	-	-
BE-538-ED	Earthen Drive (ED)	1,290	21	49	37	21	293	430	86	21	23.9	-	-	23.9	-
BE-538-FY	Front Yard (FY)	1,071	20	16	20	25	54	27	27	51	-	-	-	-	-
BE-538-PA	Play Area (PA)	264	16	9	18	28	58	26	96	35	-	-	-	-	-
	TOTALS	6,108									23.9			23.9	

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

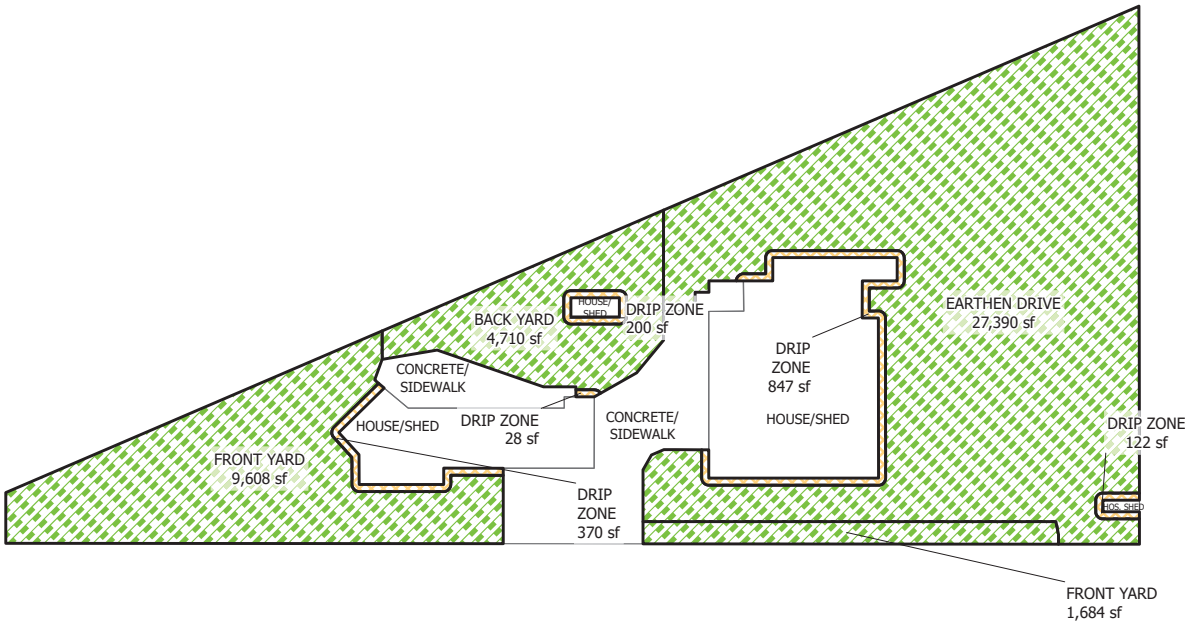
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
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Resident ID
BE-540

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-540			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-13"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-540-BY	Back Yard (BY)	4,710	12	12	8	6	137	32	11	9	-	-	-	-	-
BE-540-DZ	Drip Zone (DZ)	1,567	14	44	50	63	546	173	44	44	29.0	29.0	1,567	-	-
BE-540-ED	Earthen Drive (ED)	27,390	17	8	10	6	55	14	10	7	-	-	-	-	-
BE-540-FY	Front Yard (FY)	11,292	12	35	32	43	57	102	57	146	-	-	-	-	-
	TOTALS	44,959									29.0	29.0	1,567		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

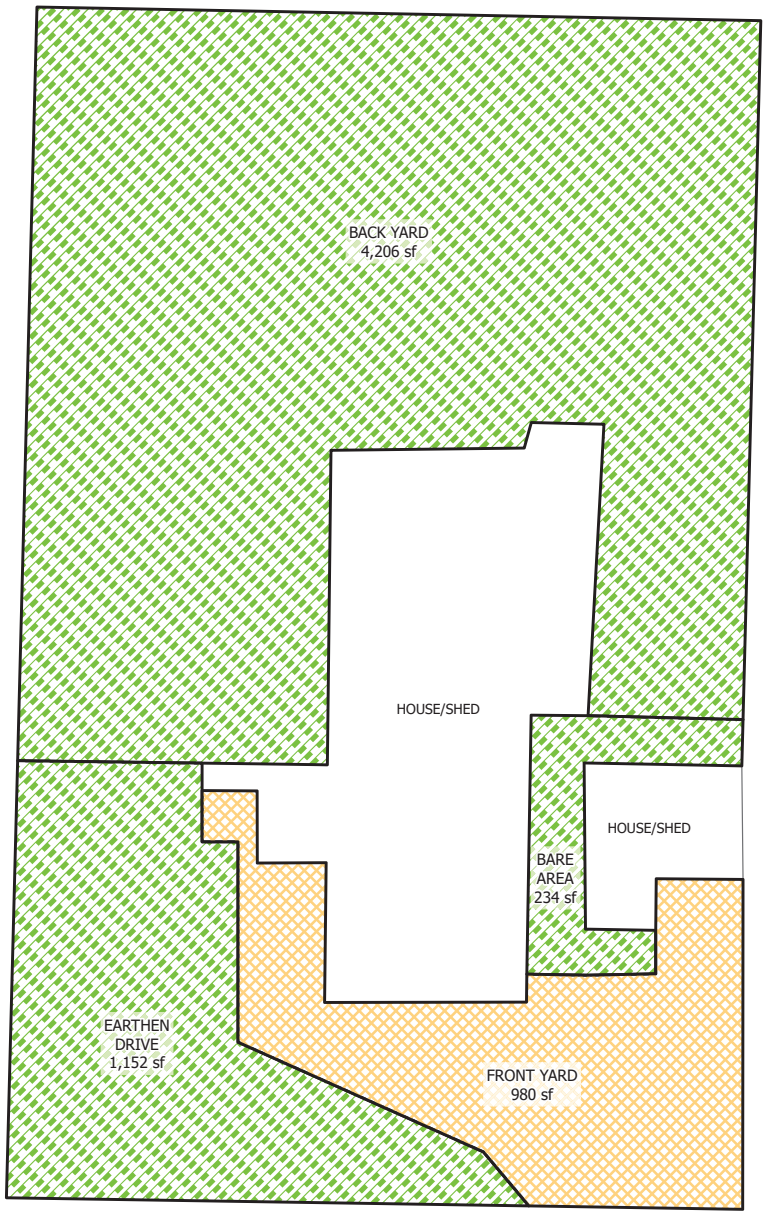
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA

N

Woodard & Curran
PROJECT #: 0231336
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Resident ID
BE-542C

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-542C			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-542C-BA	Bare Area (BA)	234	6	21	22	19	10	47	61	82	-	-	-	-	-
BE-542C-BY	Back Yard (BY)	4,206	23	38	13	8	37	51	15	11	-	-	-	-	-
BE-542C-DZ	Drip Zone (DZ)	220	36	27	16	10	38	24	16	12	-	-	-	-	-
BE-542C-ED	Earthen Drive (ED)	1,152	11	46	9	15	29	38	12	16	-	-	-	-	-
BE-542C-FY	Front Yard (FY)	980	36	24	11	8	884	238	131	27	18.1	18.1	980	-	-
	TOTALS	6,792									18.1	18.1	980		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

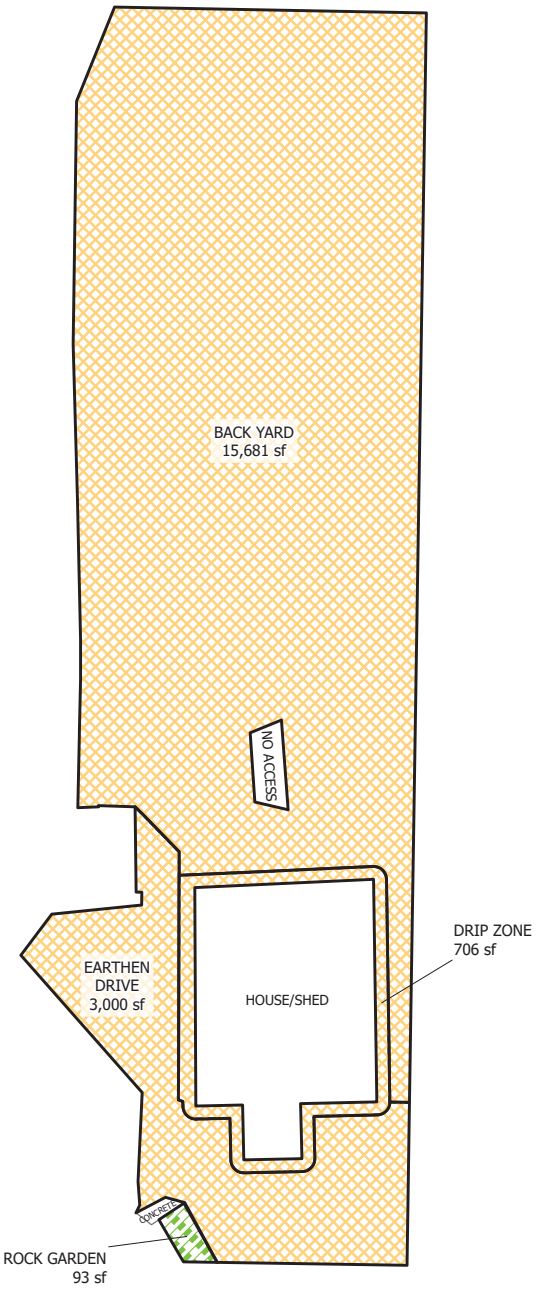
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions.
Any reliance upon the map or data contained herein shall be at the users' sole risk. Data Sources: GPS Survey



NOTE: RG Could not sample due to access

Resident ID
BE-542L

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-542L			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-542L-BY	Back Yard (BY)	15,681	28	65	53	12	56	88	49	13	290.4	290.4	15,681	-	-
BE-542L-DZ	Drip Zone (DZ)	706	43	64	40	32	125	65	20	19	13.1	13.1	706	-	-
BE-542L-ED	Earthen Drive (ED)	3,000	46	84	29	13	70	26	17	13	55.6	-	-	55.6	-
BE-542L-RG	Rock Garden (RG)	93	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	-	-	-	-
	TOTALS	19,480									359.1	303.5	16,387	55.6	

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

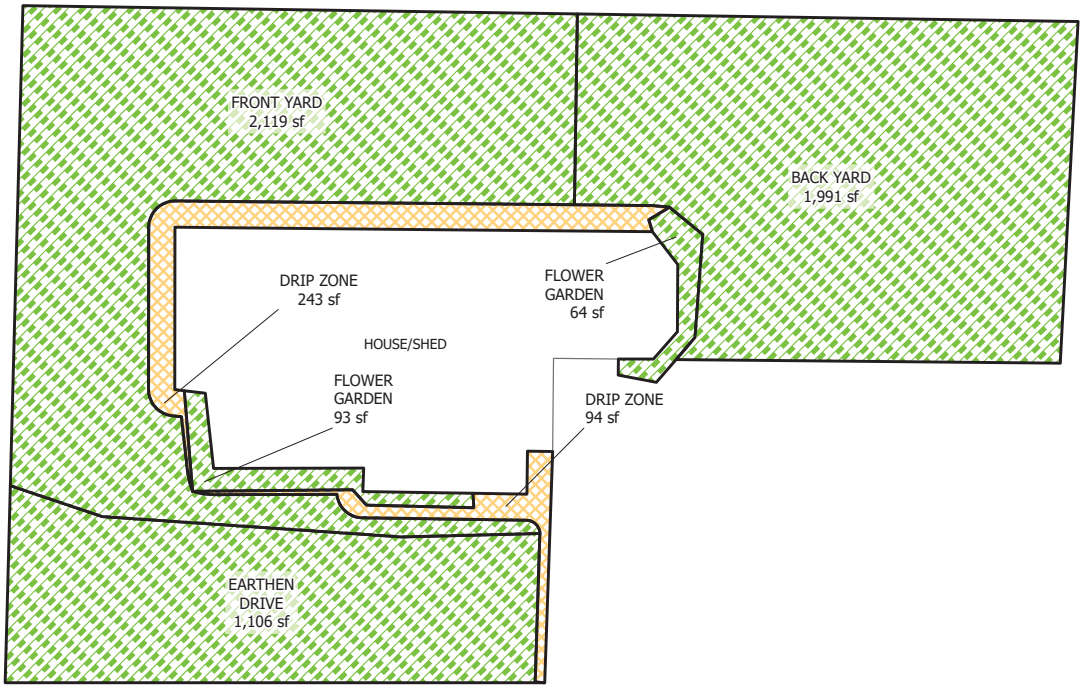
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-546A

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-546A			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-13"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-546A-BY	Back Yard (BY)	1,991	26	48	30	20	43	43	20	10	-	-	-	-	-
BE-546A-DZ	Drip Zone (DZ)	337	20	34	54	32	599	166	79	32	6.2	6.2	337	-	-
BE-546A-ED	Earthen Drive (ED)	1,106	15	24	43	49	82	174	99	112	-	-	-	-	-
BE-546A-FG	Flower Garden (FG)	157	22	25	25	19	59	47	21	14	-	-	-	-	-
BE-546A-FY	Front Yard (FY)	2,119	26	41	44	27	57	40	28	19	-	-	-	-	-
	TOTALS	5,710									6.2	6.2	337		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

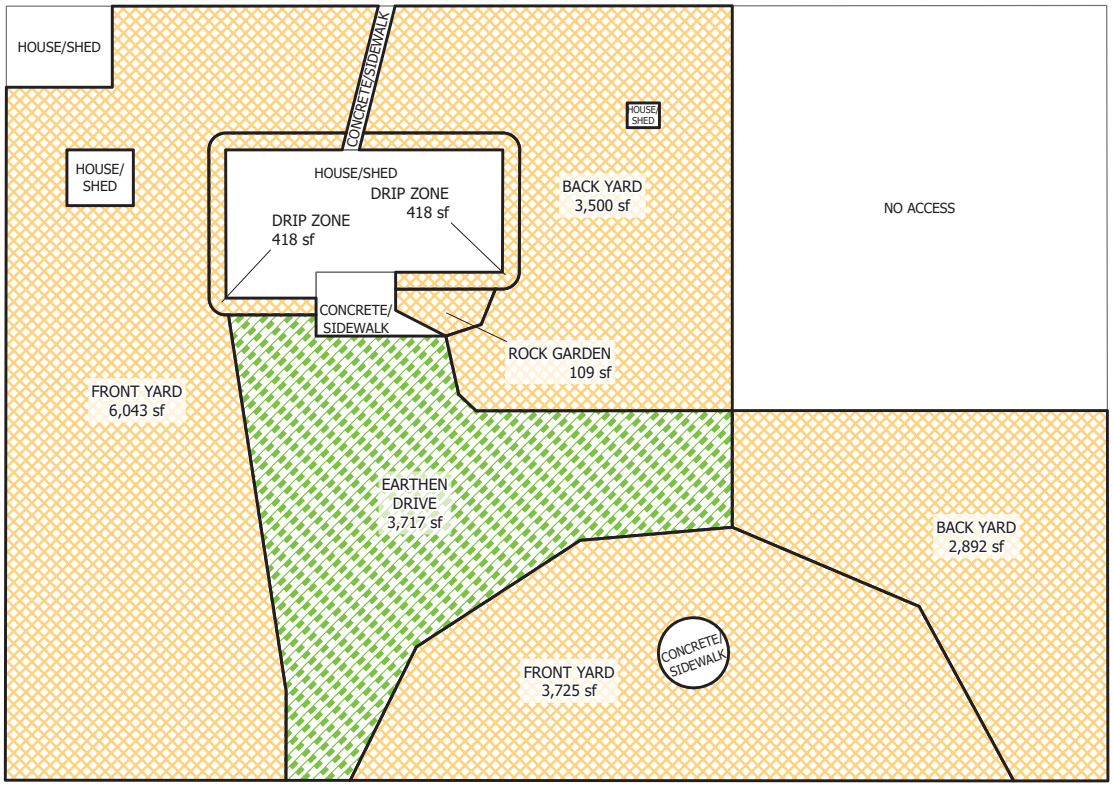
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-702

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-702			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-702-BY	Back Yard (BY)	6,392	32	94	29	17	92	42	17	18	118.4	118.4	6,392	-	-
BE-702-DZ	Drip Zone (DZ)	418	21	39	19	50	139	384	132	19	7.7	7.7	418	-	-
BE-702-ED	Earthen Drive (ED)	3,717	34	79	78	18	107	122	41	20	-	-	-	-	-
BE-702-FY	Front Yard (FY)	9,768	29	84	84	24	90	97	22	41	180.9	180.9	9,768	-	-
BE-702-RG	Rock Garden (RG)	109	16	104	21	102	90	107	60	25	2.0	2.0	-	-	-
	TOTALS	20,404									309.0	309.0	16,578		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

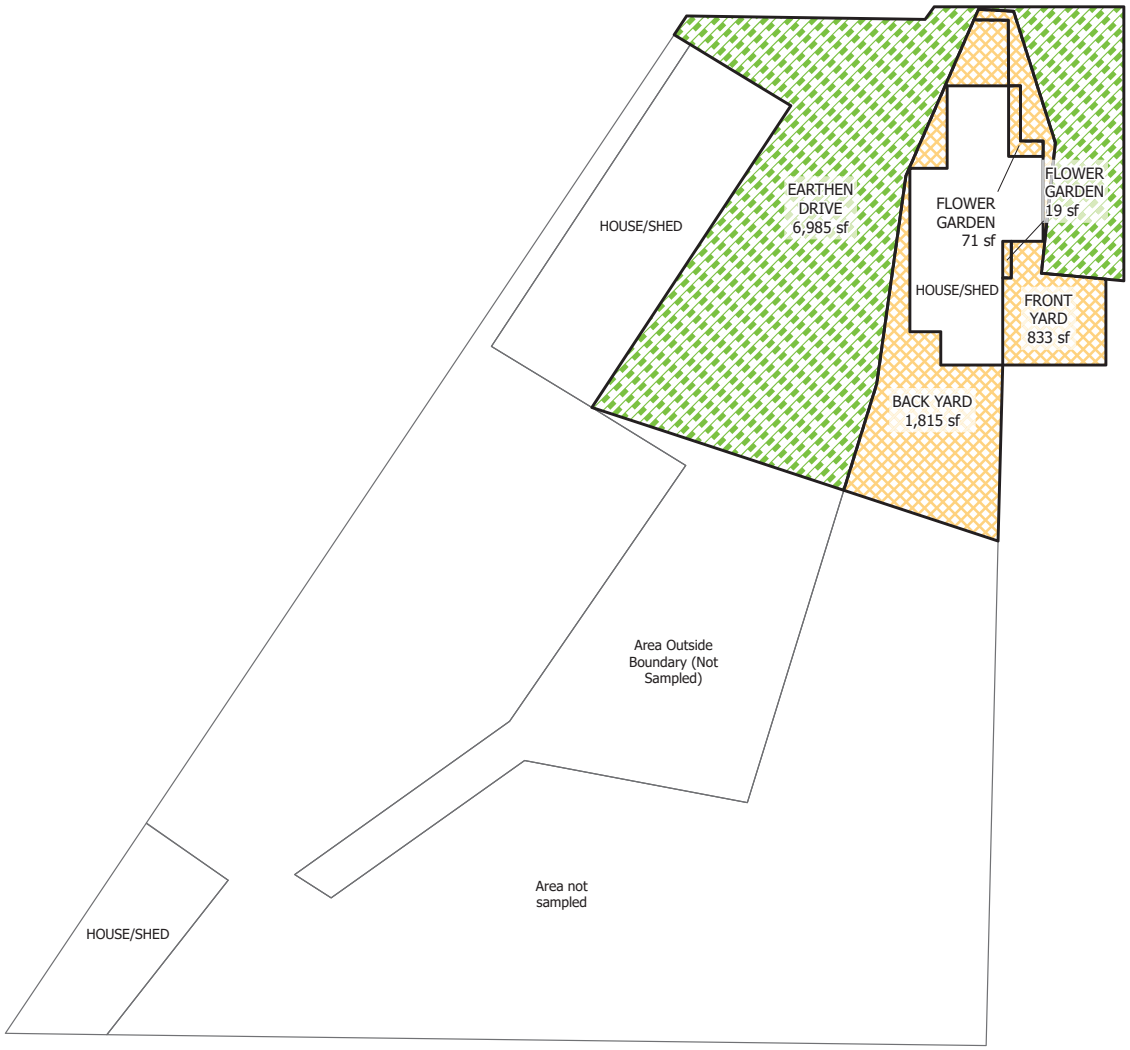
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
- No Action
- 6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-703

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-703			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-703-BY	Back Yard (BY)	1,815	31	57	120	75	59	103	72	8	33.6	33.6	1,815	-	-
BE-703-DZ	Drip Zone (DZ)	220	17	47	84	64	36	77	30	9	-	-	-	-	-
BE-703-ED	Earthen Drive (ED)	6,985	32	65	53	19	136	175	49	12	-	-	-	-	-
BE-703-FG	Flower Garden (FG)	90	40	40	73	102	78	78	64	16	1.7	1.7	90	-	-
BE-703-FY	Front Yard (FY)	833	37	140	106	17	226	84	11	11	15.4	15.4	833	-	-
	TOTALS	9,943									50.7	50.7	2,738		

Component Arsenic Concentration is > 250 mg/kg
Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

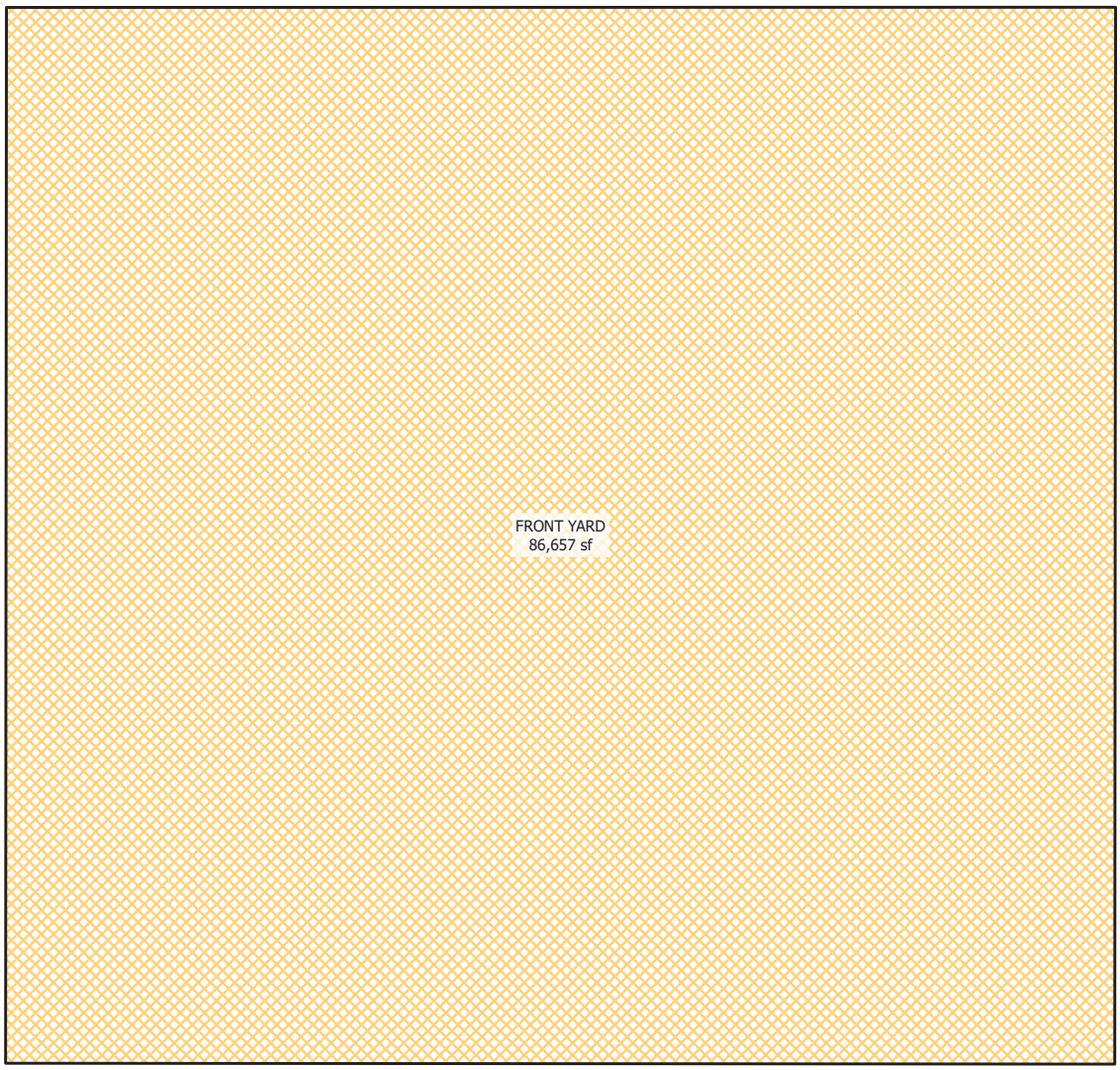
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-704

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-704			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-704-FY	Front Yard (FY)	86,657	90	94	21	18	195	52	30	31	1,604.8	1,604.8	86,657	-	-
	TOTALS	86,657									1,604.8	1,604.8	86,657		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/Flower** garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to **24 inches** below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

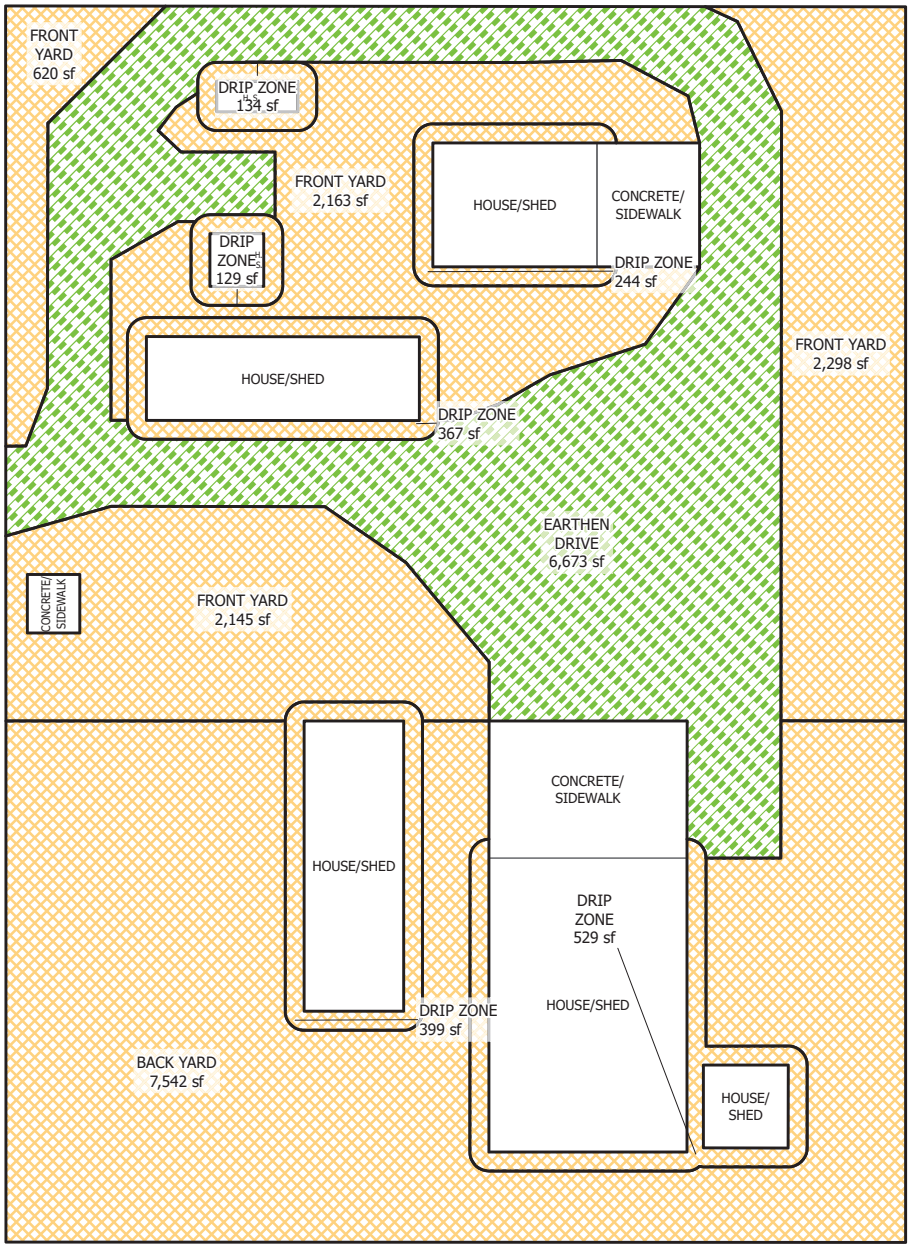
Legend

6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-705

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-705			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-705-BY	Back Yard (BY)	7,542	86	58	40	42	157	34	42	214	139.7	139.7	7,542	-	-
BE-705-DZ	Drip Zone (DZ)	1,802	171	814	99	25	288	634	43	26	33.4	33.4	1,802	-	-
BE-705-ED	Earthen Drive (ED)	6,673	24	64	65	21	31	101	35	17	-	-	-	-	-
BE-705-FY	Front Yard (FY)	7,226	64	89	77	36	131	112	128	28	133.8	133.8	7,226	-	-
	TOTALS	23,243									306.9	306.9	16,570		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: Vegetable/Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

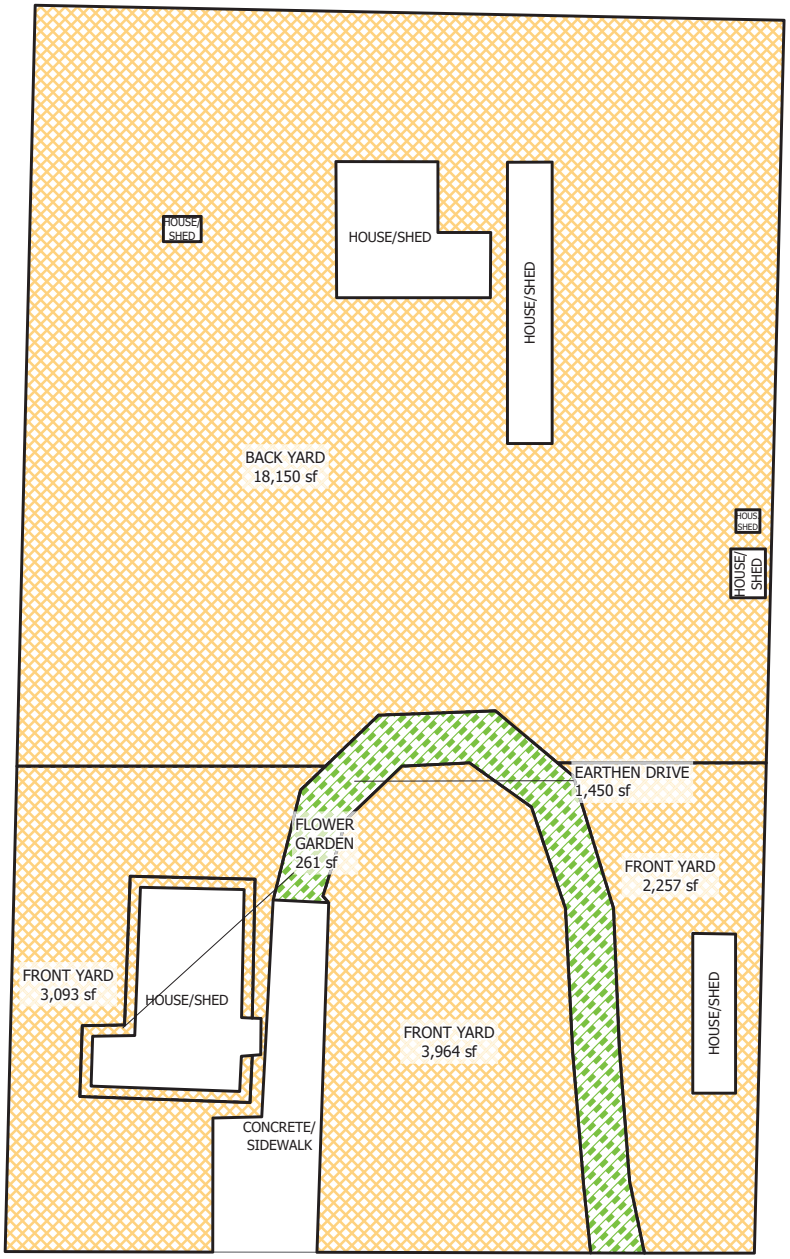
Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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Resident ID
BE-801

REMEDIAL ACTION SUMMARY TABLE

RESIDENTIAL IDENTIFIER	RESIDENTIAL YARD COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)				COMPONENT LEAD CONCENTRATION (mg/kg)				ESTIMATED QUANTITIES				
BE-801			0-2"	2-6"	6-12"	12-18"	0-2"	2-6"	6-12"	12-18"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)	Aggregate Mix No. 1	Aggregate Mix No. 2
BE-801-BY	Back Yard (BY)	18,150	67	61	21	8	267	29	15	10	336.1	336.1	18,150	-	-
BE-801-DZ	Drip Zone (DZ)	220	25	32	76	44	38	61	93	39	-	-	-	-	-
BE-801-ED	Earthen Drive (ED)	1,450	56	52	11	11	51	17	13	14	-	-	-	-	-
BE-801-FG	Flower Garden (FG)	261	31	80	106	78	44	142	139	48	4.8	4.8	261	-	-
BE-801-FY	Front Yard (FY)	9,314	45	90	24	15	173	89	27	26	172.5	172.5	9,314	-	-
	TOTALS	29,395									513.4	513.4	27,725		

Component Arsenic Concentration is > 250 mg/kg

Component Lead Concentration is > 400 mg/kg

N/A = Not applicable unless otherwise noted above

Note: **Vegetable/**Flower garden component sampling was completed to a depth of 18 inches below ground surface. Vegetable/Flower garden remedial action is applicable to 24 inches below ground surface. The 12-18" depth interval sample results are used to determine if removal to 24 inches in vegetable/flower gardens is necessary.

Individual Site Work Plan
ACM Smelter and Refinery site
Great Falls, Montana
Atlantic Richfield Company

Legend
No Action
6" RA

N

Woodard & Curran
PROJECT #: 0231336
MAP CREATED: MAR 2023

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RESIDENTIAL ACCESS AGREEMENT EXAMPLE

Atlantic Richfield Company

317 Anaconda Road
Butte, MT 59701

June 2, 2023

LANDOWNER NAME
MAILING ADDRESS
CITY, STATE, ZIP CODE

Re: ACM Smelter and Refinery Site Community Soils Residential Soil Sampling Access Agreement

Dear Landowner:

Atlantic Richfield Company will be conducting surveying and soil sampling of residential properties located in and around Black Eagle, Montana. These tasks are required under the Community Soils Operable Unit (OU1) Record of Decision (ROD) for Remedial Action (RA) for the Anaconda Copper Mining Company (ACM) Smelter and Refinery Site (ACM Site) for residential and non-residential soils issued by the U.S. Environmental Protection Agency (EPA) and the Montana Department of Environmental Quality (DEQ) in September 2021 (ROD).

By way of this letter and the enclosed Access Agreement, Atlantic Richfield is requesting access to your property to collect soil samples. Representatives of the EPA and the DEQ may also be present to provide oversight during the sampling activities.

Soil samples collected from your property will be sent to a laboratory and analyzed for concentrations of lead and arsenic. The results from these samples will be shared with you after proper data validation is complete and used to determine whether any further action is needed to meet EPA remedy requirements. Atlantic Richfield will make every reasonable effort to schedule sampling at a time that is convenient for you and to minimize any inconvenience to you during the sampling work.

Atlantic Richfield asks that you review and sign the enclosed Access Agreement. Please return the signed Access Agreement in the self-addressed stamped envelope provided. Also, please include a phone number, and optionally an email, where you can be contacted to notify you of the proposed surveying and sampling schedule. I will countersign the Access Agreement and provide you with a fully signed copy of the Agreement for your records. Your cooperation during this sampling effort is appreciated. If you have any questions or concerns, please do not hesitate to call me at (406) 723-1832.

Sincerely,

Luke Pokorny
Liability Manager
Remediation Management Services Company
An affiliate of Atlantic Richfield Company

Enclosure

cc: Bryan Lobar/US EPA
Dick Sloan/MDEQ

ACCESS AGREEMENT

("OWNER"), whose mailing address is ${address}, ${city}, ${state} ${zip}, and Atlantic Richfield Company ("Atlantic Richfield"), whose mailing address is 317 Anaconda Road, Butte, MT 59701, enter into this Access Agreement ("Agreement") this _____day of _____, 2023 and agree as follows:

1. GRANT OF ACCESS. OWNER hereby grants to Atlantic Richfield, including its authorized representatives (and, as may be appropriate, to the EPA and/or the State of Montana and the authorized representatives of each) the right to enter OWNER's real property, as described in Exhibit A, which is attached hereto and incorporated herein by reference (the "Property"), to conduct all activities related to sampling. OWNER represents to Atlantic Richfield that, to the best of OWNER's knowledge, OWNER possesses ownership interests in the Property sufficient to grant access to Atlantic Richfield to conduct the Sampling.

2. ATLANTIC RICHFIELD REPRESENTATIONS. Atlantic Richfield or its representative will notify OWNER, either in writing or verbally, at least 24 hours prior to first commencing sampling on the Property. Atlantic Richfield will make every reasonable effort to minimize any inconvenience to OWNER during its sampling on the Property, to return the Property to the condition it was at the time Atlantic Richfield first entered the Property under this Agreement, and to consult with OWNER to address any concerns OWNER may have about the sampling.

3. SPLIT SAMPLE. Atlantic Richfield agrees to use its best efforts to provide, upon OWNER's prior written request, a portion of any sample taken on OWNER's Property for subsequent laboratory analysis, provided that: a sufficient quantity of the materials to be sampled are available on the day of sampling; the sampling requirements of Atlantic Richfield are satisfied.

4. TERMINATION. This Access Agreement will terminate thirty (30) days following receipt of the written notice from Atlantic Richfield stating that sampling on your property has been completed.

IN WITNESS WHEREOF, OWNER and Atlantic Richfield Company have executed this Agreement effective as of the date first written above.

OWNER:	ATLANTIC RICHFIELD COMPANY:
By: _____	By: _____
Telephone: _____	Title: Liability Manager_____

EXHIBIT A

For the purposes of this Access Agreement, the term Property refers to the following described real estate, situated in the County of Cascade, State of Montana:

Property/Physical Address: _____

Property Geocode: _____

Legal Description: _____

DATA NOTIFICATION LETTER EXAMPLES

Atlantic Richfield Company

317 Anaconda Road
Butte, MT 59701
Main: (406) 723-1832

June 2, 2023

LANDOWNER NAME
MAILING ADDRESS
CITY, STATE, ZIP CODE

Dear Landowner:

This letter is in response to sampling activities conducted within the Community Soils (CS) Operable Unit (OU 1) of the Anaconda Copper Mining Company (ACM) Smelter and Refinery Site (ACM Site) by Atlantic Richfield Company on your property. Sampling was conducted pursuant to the OU1 Record of Decision issued by the United States Environmental Protection Agency (the EPA) with concurrence by the State of Montana Department of Environmental Quality (the State), and under the direct supervision of the EPA. On behalf of the EPA and Atlantic Richfield Company, we would like to provide you the results from the sampling that was conducted on your property.

The arsenic and lead concentrations for soil samples collected from your property are attached to this letter. Your results are below the action levels for arsenic and lead established by the EPA for residential soils within the ACM Site. Therefore, further sampling or remediation is not required in your residential yard.

We would like to thank you for your cooperation during this effort. If you have any questions or require further explanation concerning the above information, please give me a call at the number listed below. You may also call Bryan Lobar with the EPA (406) 457-5040 or Dick Sloan with the State (406) 444-6442 with any questions or concerns.

Sincerely,

Luke Pokorny
Liability Manager
Remediation Management Services Company
An affiliate of Atlantic Richfield Company

Attachment: Analytical Soil Sampling Results

cc: Bryan Lobar/EPA
Dick Sloan/MDEQ

ANALYTICAL RESULTS FROM SOIL SAMPLING
CONDUCTED ON YOUR PROPERTY

Property/Physical Address: _____

Property Geocode: _____

Legal Description: _____

[Insert Analytical Results]

Sample Identifier	Yard Component	Component Arsenic Concentration (mg/kg)				Component Lead Concentration (mg/kg)				Average arsenic concentration in 0-6" (mg/kg) *	Average lead concentration in 0-6" (mg/kg) *
		0 - 2"	2-6"	6-12"	12-18"	0 - 2"	2-6"	6-12"	12-18"		
BE-XXX-DZ	Drip Zone										
BE-XXX-FG	Flower Garden										
BE-XXX-FY	Front Yard										
BE-XXX-BY	Back Yard										

EPA Action Levels to Determine the Need for Remediation:

Remediation through soil removal/replacement will be performed for any yard component that exceeds 250 mg/kg arsenic or 400 mg/kg lead, and/or if the average concentration for the entire yard (*following removal of any exceeding yard components) exceeds 54 mg/kg arsenic or 281 mg/kg lead.

Definitions of words and abbreviations used above:

Component Concentration - The concentration of arsenic or lead within a residential yard component at a given depth interval.

Milligrams per Kilogram (mg/kg) – Milligrams per Kilogram is an expression of concentration. A kilogram contains 1,000,000 milligrams. A good analogy: If you had 20 mg/kg, it would be like having 20 white marbles and 999,980 black marbles in a group of 1,000,000 total marbles.

Atlantic Richfield Company

317 Anaconda Road
Butte, MT 59701
Main: (406) 723-1832

June 2, 2023

LANDOWNER NAME
MAILING ADDRESS
CITY, STATE, ZIP CODE

Dear Landowner:

Thank you for allowing Atlantic Richfield Company to collect soil samples on your property. This letter contains your soil sample test results.

You will see that one or more of the samples contained arsenic or lead above the residential soil action levels established by the U.S. Environmental Protection Agency (EPA) for this area. EPA has determined that such soil should be removed from the surface of your property and replaced with clean soil and new vegetation.

This letter describes the work that is proposed for your property and asks you for permission to perform that work at Atlantic Richfield Company's expense. The proposal is described in more detail below, and in the proposed access agreement and work plan attached to this letter.

Sample Results

Sampling was conducted under the Community Soils Operable Unit (OU1) Record of Decision (ROD) for Remedial Action (RA) for the Anaconda Copper Mining Company (ACM) Smelter and Refinery Site (ACM Site) for residential and non-residential soils (the "ROD"). The ROD is a public document that explains the plan for cleaning up environmental contamination at a site. The ROD was issued by the EPA in September 2021, with the concurrence of the State of Montana Department of Environmental Quality (the State).

The arsenic and lead concentrations for soil samples collected from your property are attached to this letter. Your sample results, which have been reviewed and approved by the EPA, indicate that the concentrations of arsenic and/or lead detected in your yard exceed the residential soil action level(s) established by the EPA for residential soils within the ACM Site. Therefore, some or all of your property is eligible for soil remediation.

Proposed Remedy and Access Agreement

Atlantic Richfield Company requests your permission to perform the soil remedy that the EPA has selected for your property, at Atlantic Richfield's expense. In order to move forward with soil remediation on your property, you will need to provide us with an access agreement that allows us to perform that work.

We have enclosed an Access Agreement with this letter for your review and signature. By signing this agreement, you agree to grant access to your property to: Atlantic Richfield Company, the EPA, the State, and their respective representatives, to perform the proposed soil remediation work.

An Individual Site Work Plan (ISWP) for your property is attached as Exhibit B to the Access Agreement. The ISWP, which also has been approved by the EPA, describes the details of the soil remediation work proposed for your property.

Atlantic Richfield Company asks that you review the attached Access Agreement and ISWP. After doing so, if you would like to proceed with the proposed soil remediation, please sign the Access Agreement and return it to me in the enclosed self-addressed stamped envelope. I will countersign the Access Agreement upon receipt and provide you with a copy for your records. After the Access Agreement is fully executed, you will be contacted to schedule the remediation work.

Release and Covenant Not to Sue Agreement

We have also enclosed a separate **Release and Covenant Not to Sue Agreement** for your consideration. The Release and Covenant Not to Sue Agreement would release any legal claims which you and your successors, assigns, and transferees (i.e., future owners of the property) may have against Atlantic Richfield Company related to any residual "smelter-related material" that may remain on your property following completion of the EPA-approved work described in the ISWP. However, **the Release and Covenant Not to Sue Agreement will not release or discharge Atlantic Richfield Company's obligation to perform the soil remediation work described in the ISWP under the terms of the Access Agreement. It also will not release Atlantic Richfield Company from liability for any additional remediation work that may be required on your property in the future by EPA**. In exchange for your signing the Release and Covenant Not to Sue Agreement, Atlantic Richfield Company will pay you $1,000. Atlantic Richfield Company will make this payment after we receive your signed Release and Covenant Not to Sue Agreement.

If **the Release and Covenant Not to Sue Agreement is acceptable to you**, please sign the Release and Covenant Not to Sue Agreement and return it to me in the enclosed self-addressed stamped envelope. Your signature on the Release and Covenant Not to Sue Agreement must also be witnessed and verified by a Notary Public. You can obtain notary services at most local banks and credit unions and at the Great Falls Public Library. If you return the signed and notarized Release and Covenant Not to Sue Agreement to me in the enclosed self-addressed stamped envelope, I will see to it that it is recorded with the Cascade County Clerk and Recorder's Office, and arrange to send you a check for $1,000.

If **the Release and Covenant Not to Sue Agreement is not acceptable to you for any reason**, you have no obligation to sign it and you do not need to take any further action regarding that agreement. If you decide not to sign the Release and Covenant Not to Sue Agreement, Atlantic Richfield Company still will perform the EPA-approved soil remediation work on your property upon receipt of a signed **Access Agreement**, but you will not be eligible to receive the $1,000 payment.

We appreciate your cooperation during this effort. If you have any questions or would like further explanation concerning the above, please call me at (406) 723-1832.

Sincerely,

Luke Pokorny
Liability Manager
Remediation Management Services Company
An affiliate of Atlantic Richfield Company

Attachments: Exhibit A: Analytical Sampling Results
Exhibit B: Construction Access Agreement
Exhibit C: Legal Description of Property
Exhibit D: Individual Site Work Plan (ISWP)
Exhibit E: Covenant Not to Sue Agreement

cc: Mr. Bryan Lobar
U.S. Environmental Protection Agency
Region VIII, Montana Office
Federal Building
10 West 15th Street., Suite 3200
Helena, MT 59626

Mr. Richard Sloan
MT Department of Environmental Quality
Regional Counsel, Region VIII
P.O. Box 200901
Helena, MT 59620-0901

EXHIBIT A: ANALYTICAL RESULTS FROM SOIL SAMPLING CONDUCTED ON YOUR PROPERTY

[Insert Analytical Results]

Sample Identifier	Yard Component	Component Arsenic Concentration (mg/kg)				Component Lead Concentration (mg/kg)				Average arsenic concentration in 0-6" (mg/kg) *	Average lead concentration in 0-6" (mg/kg) *
		0 - 2"	2-6"	6-12"	12-18"	0 - 2"	2-6"	6-12"	12-18"		
BE-XXX-DZ	Drip Zone										
BE-XXX-FG	Flower Garden										
BE-XXX-FY	Front Yard										
BE-XXX-BY	Back Yard										

EPA Action Levels to Determine the Need for Remediation:

Remediation through soil removal/replacement will be performed for any yard component that exceeds 250 mg/kg arsenic or 400 mg/kg lead, and/or if the average concentration for the entire yard (* following removal of any exceeding yard components) exceeds 54 mg/kg arsenic or 281 mg/kg lead.

Definitions of words and abbreviations used above:

COMPONENT CONCENTRATION - The concentration of arsenic or lead within a residential yard component at a given depth interval.

Milligrams per Kilogram (mg/kg) – Milligrams per Kilogram is an expression of concentration. A kilogram contains 1,000,000 milligrams. A good analogy: If you had 20 mg/kg, it would be like having 20 white marbles and 999,980 black marbles in a group of 1,000,000 total marbles.

EXHIBIT B: REMEDIAL ACTION ACCESS AGREEMENT

("Owner") and **Atlantic Richfield Company** ("Atlantic Richfield") enter into this Remedial Action Access Agreement ("Agreement") this _____day of _____, 2023.

1. Atlantic Richfield is conducting certain remedial activities on properties in and near Black Eagle, Montana.

2. Access to property owned by Owner and as described in Exhibit A is needed to conduct this remedial work.

3. Owner agrees to permit Atlantic Richfield to conduct such work on Owner's property.

Therefore, in the mutual interest of Owner and Atlantic Richfield, Owner and Atlantic Richfield further agree as follows:

1. GRANT OF ACCESS. Owner hereby grants to Atlantic Richfield, Environmental Protection Agency ("EPA") and the State of Montana ("State"), including the authorized representatives of each, the right to enter Owner's real property described in Exhibit A hereto (the "Property"), to conduct all activities described in the Individual Site Work Plan attached as Exhibit B hereto, including without limitation, excavation and/or removal of soils, monitoring and sampling (or to receive split samples) of environmental media, ingress and egress of equipment, machinery and personnel, staging and temporary storage of equipment, and conducting other information gathering activities such as field investigation, data collection, surveys and testing (collectively referred to as "Work"). Owner warrants and represents to Atlantic Richfield that, to the best of Owner's knowledge, Owner possesses ownership interests in the Property sufficient to grant access to Atlantic Richfield to conduct the Work. Atlantic Richfield shall provide Owner, either in writing or verbally, at least 24 hours notice prior to first commencing the Work on the Property. Atlantic Richfield will make every reasonable effort to minimize any inconvenience to Owner during its Work on the Property and will work closely with Owner to address any concerns Owner may have about the Work.

2. INDEMNIFICATION OF OWNER. Atlantic Richfield agrees to indemnify and hold harmless Owner from any and all actions, claims, damages, losses, liabilities, or expenses, including damage to property or for loss of use of property ("Liabilities"), which may be imposed on or incurred by Owner as a result of Atlantic Richfield's negligent, wrongful acts or omissions while on the Property to conduct the Work, except to the extent that such liabilities result from the acts or omissions of Owner. Provided that the Work is conducted without negligence or wrongful acts or omissions by Atlantic Richfield, Owner and Atlantic Richfield agree that the Work conducted pursuant to this Agreement shall not give rise to a claim for indemnification under this provision.

3. NOTICE. All written notices pertaining to this Agreement shall be sent to Owner and Atlantic Richfield at the respective addresses below. Either Owner or Atlantic Richfield may designate a different address for receipt of notice by providing written notice of such change to the other.

TO Atlantic Richfield: Luke Pokorny
317 Anaconda Road
Butte, MT 59701

TO OWNER: [Owner Name]
{address}
{city}, {state} {zip}

4. CONDITION OF THE PROPERTY. If the Work entails the excavation and removal of soils, Atlantic Richfield may photograph the Property prior to and upon completion of the excavation and removal of soils to document and obtain a fair and accurate representation of the condition of the Property.

5. RESTORATION OF PROPERTY. Upon completion of the Work, Atlantic Richfield will use its best efforts to return the Property to the condition it was at the time Atlantic Richfield first entered the Property under this Agreement, provided such restoration is not inconsistent with the Work conducted pursuant to this Agreement.

6. MISCELLANEOUS.

a. Effect of Agreement. This Agreement and the rights and obligations created hereby shall be binding upon and inure to the benefit of Owner and Atlantic Richfield and their respective assigns and successors in interest.

b. Negation of agency relationship. This Agreement shall not be construed to create, either expressly or by implication, the relationship of agency or partnership between Owner and Atlantic Richfield. Neither Owner nor Atlantic Richfield is authorized to act on behalf of the other in any manner relating to the subject matter of this Agreement.

c. Termination. Except with respect to paragraphs 2, 3 and 6.a of this Agreement, this Agreement will terminate thirty (30) days following Atlantic Richfield's written notification to Owner that the Work is complete.

d. Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of Montana.

e. Construction. The invalidity or unenforceability of any provision of this Agreement shall not affect the validity or enforceability of any other provision.

f. Entire Agreement. This Agreement embodies the entire agreement of Owner and Atlantic Richfield with respect to the subject matter hereof, and no prior oral or written representation shall serve to modify or amend this Agreement. This Agreement may be modified only by a written agreement signed by Owner and Atlantic Richfield.

IN WITNESS WHEREOF, Owner and Atlantic Richfield have executed this Agreement effective as of the date first written above.

OWNER:	ATLANTIC RICHFIELD COMPANY:
By: _____	By: _____
Telephone: _____	Title: Liability Manager

EXHIBIT C: LEGAL DESCRIPTION OF PROPERTY

For the Purposes of this Remedial Action Access Agreement, the term Property refers to the following described real estate, situated in the County of Cascade, State of Montana:

Property/Physical Address: _____

Property Geocode: _____

Legal Description: _____

EXHIBIT D: INDIVIDUAL SITE WORK PLAN

EXHIBIT E: COVENANT NOT TO SUE AGREEMENT

Atlantic Richfield Company
317 Anaconda Road
Butte, MT 59701
Attention: Luke Pokorny

RELEASE AND COVENANT NOT TO SUE

NOTICE IS HEREBY GIVEN:

The undersigned, _____ ("Owner"), is/are the owner(s) of that certain real property described in Exhibit "1" attached hereto (the "Property"). Pursuant to the terms of a certain Remedial Action Access Agreement ("Access Agreement") between Owner and Atlantic Richfield Company ("Atlantic Richfield"), Owner has permitted the Atlantic Richfield, the United States Environmental Protection Agency (the "EPA"), the State of Montana (the "State") and the authorized representatives of each to undertake and perform certain environmental remedial action work on the Property. In consideration of Atlantic Richfield's performance of such work, Owner, on its own behalf and on behalf of Owner's successors, assigns and transferees with respect to the Property, hereby fully and irrevocably releases and covenants not to sue Atlantic Richfield and its affiliates, officers, directors, agents, representatives, contractors, insurers, employees, successors and assigns ("Released Parties") for any claims, causes of action or liabilities that Owner may now have or hereafter acquire against the Released Parties for any cost, loss, liability, damage, expense, demand, action or cause of action, arising from or related to the presence of smelter-related material on, at, under, near, or associated with the Property. For purposes of this release and covenant not to sue, the term "smelter-related material" shall include, without limitation, ore, tailings, slag, flue dust, metals/metalloids, contaminated soils and other waste materials and their constituents resulting from or related to milling, smelting, refining or other mineral extraction, beneficiation or processing and any structures, bricks and debris associated with such operations.

Upon its execution, this Release and Covenant Not to Sue shall be recorded by the undersigned in the Cascade County real property records. No modification of this Release and Covenant Not to Sue shall be effective unless it is (i) in writing, (ii) dated after the date of this agreement, (iii) executed by Owner and Atlantic Richfield, with each signature duly notarized, and (iv) duly recorded in the Cascade County real property records.

This Release and Covenant Not to Sue shall not apply to any claims by Owner against Atlantic Richfield for breach of the Access Agreement referenced above. Pursuant to Mont. Code Ann. § 70-20-101, Atlantic Richfield will provide a complete copy of the Access Agreement upon request without charge.

This Release and Covenant Not to Sue shall also not apply to any environmental remediation work that may be required on or with respect to the property by EPA in the future pursuant to the requirements of the Comprehensive Environmental Response, Compensation and Liability Act, 42 USC § 9601, et.seq. ("CERCLA").

IN WITNESS WHEREOF, Owner has signed this Release and Covenant Not to Sue this ____ day of _____, 20__.

OWNER:

_____

STATE OF _____)

COUNTY OF_____)

On this ___ day of _____, 20__, personally appeared before me, a Notary Public for the State of _____, known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same.

Witness my hand and official seal.

Notary Public for the State of _____

(SEAL)

Residing at:_____

My commission expires:_____

EXHIBIT "1"
(Release and Covenant Not to Sue)

LEGAL DESCRIPTION OF THE REAL PROPERTY

For the Purposes of this Release and Covenant Not to Sue, the term Property refers to the following described real estate, situated in the County of Cascade, State of Montana:

Property Address:

Property Geocode:

Legal Description:

STATEMENT OF COMPLETION EXAMPLE

STATEMENT OF COMPLETION

Resident ID: _____

Address: _____

Landowner:

Landowner hereby acknowledges, by signing this Statement of Completion, that remedial action work performed by the Atlantic Richfield Company on Landowner's property was conducted as stated in the Individual Site Work Plan (Exhibit A) and completed to the satisfaction of the landowner. EPA has determined that the work is also complete and is operational and functional. Landowner accepts any and all further maintenance and responsibility of the yard. The maintenance activities include the following:

- Noxious weed control,
- Vegetation maintenance, and
- Storm water maintenance.

At the Community Soils Operable Unit (OU1), landowners are expected to perform noxious weed control, routine vegetation maintenance, and storm water run-on/runoff ditch refuse cleaning. Landowners whose property received new sod application as part of the remedial action were provided a pamphlet that describes appropriate sod maintenance procedures.

Approved by: _____ _____
Landowner Date

Approved by: _____ _____
Landowner Date

Approved by: _____ _____
Atlantic Richfield Representative Date

Approved by: _____ _____
EPA Authorized Representative Date

APPENDIX F: OU1 TYPE A COVER SOIL SAMPLING RESULTS

ACM SMELTER & REFINERY SITE OU1 COMMUNITY SOILS

Final

Appendix F

Type A Cover Soil Sampling Results

Prepared for:

Atlantic Richfield Company

317 Anaconda Road

Butte, Montana 59701

Prepared by:

Woodard & Curran

601 Riverside Drive South

Great Falls, Montana 59405

woodardcurran.com

0231336

Atlantic Richfield Company

June 2023

COMMITMENT & INTEGRITY
DRIVE RESULTS

1800 West Koch, Suite 6
Bozeman, MT 59715
www.woodardcurran.com

T 800.426.4262

MEMORANDUM

TO: Charles Coleman, Richard Sloan

CC: Charlie Partridge, Robin Higham, Terry Moore, Douglas Naftz, Douglas Birkbeck, Nathan Block, Mave Gasaway, Bill Duffy, Don Booth, Julie Tu, Kathy Tegtmeyer

FROM: Stacey Hellekson

DATE: 1 March 2019

RE: OU1 Type A Cover Soil Sampling Results

This memo presents the analytical results of samples collected as outlined in the OU1 Cover Soil Quality Assurance Project Plan (QAPP).

BACKGROUND

In preparation for remedial activities outlined in the forthcoming Proposed Plan for Operable Unit 1 (OU1), Atlantic Richfield (AR) must procure soils that meet Type A Cover Soil Criteria for the purpose of revegetation via seeding and/or receiving sod for OU1 yard replacement efforts. Numerous yards will require remediation efforts; thus, an adequate volume, estimated at 14,000 cubic yards, of Type A Cover Soil must be procured to complete work. An OU1 Cover Soil QAPP was developed to collected soil samples from the Shumaker stockpile to gain Agency approval to use the soil as Type A cover soil for remedial activities.

A potential source (Shumaker stockpile) was identified for a Type A Cover soil owned by Shumaker Trucking and Excavation Company located outside of Black Eagle, MT. The stockpiled soils originated from an approximate 120-acre agriculture tract of land north of Black Eagle, MT in Cascade County. The estimated stockpile is approximately 16,000 cubic yards of material. The Shumaker stockpile was sampled in 2013 by Pioneer Technical Services and was identified as a promising source. Soil suitability criteria were developed to further assess the potential use of the Shumaker stockpile for use as Type A Cover Soil for upcoming OU1 yard replacement efforts.

Soil suitability criteria parameters are presented in the Table 1 below.

Table 1.

Type A Cover Soil Criteria	
Parameter	**Acceptance Criteria**
Texture	Cannot be sand, clay, or loamy sand
Rock Fragments	<45% by volume in the bank, 6-inch maximum rock diameter
Saturation Percent	>25% and <85%
pH	>6.5 and <8.5 standard units
Electrical Conductivity	<4,000 umhos/cm with standard seed mix < 6,000 umhos/cm for salt tolerant <12 for root zone materials
Sodium Adsorption Rate	<20 for general fill
Total Elemental Concentration	
Arsenic	< 30 mg/kg
Cadmium	<4 mg/kg
Copper	<250 mg/kg
Lead	<100 mg/kg
Zinc	<250 mg/kg
Organic Matter	Minimum 1.5 % (existing or amended to)

SAMPLE RESULTS

The sampling effort collected a total of 32, three-point composite samples of the Shumaker stockpile in November 2018 and were analyzed by Pace Analytical. Per the OU1 Cover Soil QAPP acceptance of the average value of each parameter would be used for acceptance of the stockpile. The average of the sample results indicate the Shumaker stockpile has an acceptable composition to be used as Type A Cover soil. Table 2, attached, presents a summary of the analytical results below.

SUMMARY

The Shumaker stockpile is a soil that is representative of soils in the area. The stockpile meets all of the acceptance criteria, specifically with regards to criteria that are not amenable to soil amendments (i.e., metals). All average values for lead, copper, arsenic, cadmium and zinc are below the acceptance criteria. Use of the Shumaker stockpile for Type A cover soil for OU1 remedial activities will be suitable to establish typical residential yard vegetation while protecting human health.

AR seeks approval of the Shumaker stockpile by the U.S. Environmental Protection Agency (EPA) and Montana Department of Environmental Quality (MDEQ) to be procured for OU1 remedial activities.

If you have any questions or comments, please call me at (406) 723-1832.

Sincerely,

Stacey Hellekson

Contractor Project Manager

Table 2. Shumaker Stockpile Analytical Summary

	Units	Acceptance Criteria	Average	Max. Lab Values	Min. Lab Values	Standard Deviation	90% Upper Confidence	90% Lower Confidence	Confidence Range
Sp.Conductance Saturated Paste	mmhos/cm		0.55	1.6	0.3	0.26	0.56	0.53	0.03
Lead	mg/kg	<100 mg/kg	24.87	32.1	15.1	4.20	25.08	24.65	0.43
Organic Matter	%	1.5% min.	1.63	2.2	1	0.30	1.65	1.62	0.03
Percent Silt	%		25.30	30	20	2.60	25.44	25.17	0.27
Copper	mg/kg	<250 mg/kg	77.76	105	41.3	16.53	78.61	76.91	1.70
Percent Clay	%		38.88	47.5	35	3.22	39.04	38.71	0.33
Potassium	mg/kg		632.25	1060	351	141.39	639.52	624.98	14.54
pH at 25 Degrees C	s.u.	6.5 - 8.5 s.u.	7.32	7.6	6.8	0.24	7.33	7.31	0.02
Arsenic	mg/kg	<30 mg/kg	28.16	38.3	15.9	5.43	28.44	27.88	0.56
Available Nitrate	mg/kg		18.11	39.8	5.8	9.79	18.61	17.61	1.01
Percent Sand	%		35.84	42.6	27.6	3.72	36.04	35.65	0.38
Sodium Adsorption Ratio	ratio	<20	0.24	0.39	0.14	0.06	0.24	0.24	0.01
Cadmium	mg/kg	<4 mg/kg	0.87	1.3	0.32	0.24	0.88	0.86	0.02
Magnesium saturated paste			1.38	4.3	0.84	0.66	1.42	1.35	0.07
Zinc	mg/kg	<250 mg/kg	163.07	217	95.1	31.39	164.68	161.45	3.23
Percent Moisture	%		15.37	22.3	8.6	3.84	15.57	15.17	0.39
Calcium saturated paste	meq/L		2.75	8	1.3	1.43	2.82	2.68	0.15
Soil Moisture Content	%		16.92	25.4	9.5	5.30	17.19	16.65	0.55
Sodium saturated paste	meq/L		0.57	0.89	0.44	0.18	0.58	0.56	0.02
Available Phosphorus	mg/kg		33.28	52.1	14.9	7.81	33.68	32.88	0.80
Saturation Percent	%	>25% and <85%	58	106	27.3	11.49	58.59	57.41	1.18

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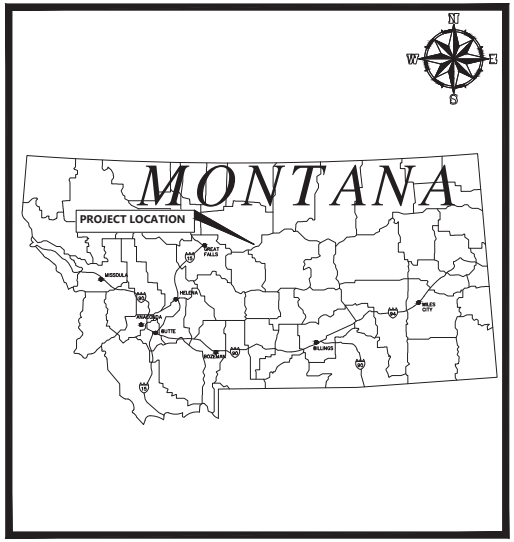
APPENDIX G: STANDARD DRAWINGS

22x34
PLOT SCALE: 1:1

ATLANTIC RICHFIELD COMPANY
GREAT FALLS, MONTANA

ACM SMELTER-OU1 COMMUNITY SOILS REMEDIAL ACTION WORK PLAN

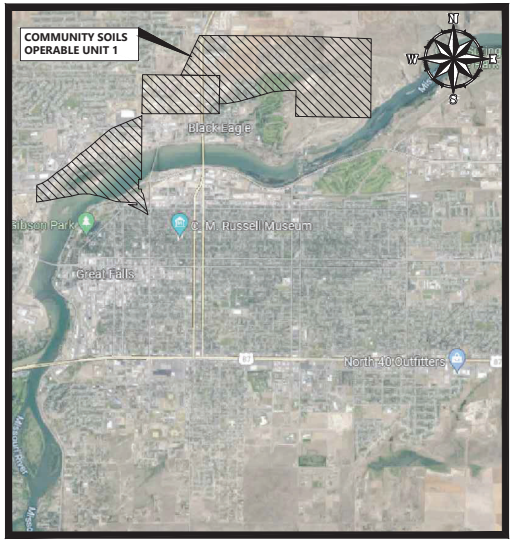
PROJECT NO. 0231336
MARCH 17, 2023



PROJECT LOCATION MAP

Woodard & Curran

600 Central Avenue, Suite 204
Great Falls, Montana 59401
406.952.0745 | www.woodardcurran.com



SITE LOCATION MAP
SOURCE: USGS TOPO QUADRANGLE

Woodard & Curran
600 Central Avenue, Suite 204
Great Falls, Montana 59401
406.952.0745 | www.woodardcurran.com

THIS DOCUMENT IS THE PROPERTY OF WOODARD & CURRAN AND ITS CLIENT. REPRODUCTION OR MODIFICATION WITHOUT OUR WRITTEN PERMISSION IS PROHIBITED.

PE SEAL:

NOT FOR CONSTRUCTION

CLIENT INFO:
ATLANTIC RICHFIELD COMPANY
GREAT FALLS, MONTANA

ACM SMELTER-OU1 COMMUNITY SOILS REMEDIAL ACTION WORK PLAN

REV	MM/DD/YY	DESCRIPTION

JOB NO:	0231336.06
DATE:	FEB. 2023
SCALE:	AS NOTED
DESIGNED BY:	-
DRAWN BY:	CJL
CHECKED BY:	-
FILENAME:	PAGE_01.dwg

DRAWING TITLE:
FIGURES

COVER SHEET

DRAWING NO:
G-000

SHEET: 1 OF 12

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\\woodardcurran.net\shared\Projects\REC\0310.AR.M1\GIS\Refinery_OU\MXD\COVER_MAP.mxd 3/7/2023 - 10:45am MWORSON

22x34
PLOT SCALE: 1:1

GENERAL:

1. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES AND UTILITY OWNERS AND DETERMINE EXACT LOCATION OF ALL UNDERGROUND UTILITIES BEFORE COMMENCING WORK. NOTICE TO UTILITIES (LOCATE TICKETS) SHALL BE SUBMITTED TO ATLANTIC RICHFIELD COMPANY; 48-HOUR NOTICE IS REQUIRED. CONTRACTOR IS RESPONSIBLE FOR PROTECTING AND REPAIRING ANY DAMAGED UTILITIES. CONTRACTOR SHALL NOTIFY ONE-CALL UTILITY LOCATE AT (800) 424-5555 AT LEAST 48-HOURS PRIOR TO CONSTRUCTION.

   1A. CONTRACTOR SHALL NOTIFY THE ATLANTIC RICHFIELD COMPANY REPRESENTATIVE OF ALL UTILITIES ENCOUNTERED DURING CONSTRUCTION AND SHALL NOT BACKFILL UNTIL THE CONTRACTOR HAS MADE A RECORD OF ITS TYPE, SIZE, AND LOCATION.

2. CONTRACTOR SHALL RESPECT ALL RIGHT-OF-WAY BOUNDARIES. CONTRACTOR IS TO PROTECT FROM DAMAGE, BUILDINGS, WALLS, MONUMENTS, TREES AND OTHER LANDSCAPING, UTILITY POLES, AND OTHER FEATURES INSIDE AND OUTSIDE ANY RIGHTS-OF-WAY.

3. EXCAVATION:

   A. GENERAL: THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DESIGNING AND CONSTRUCTING STABLE, TEMPORARY EXCAVATIONS AND SHALL SHORE, SLOPE, OR BENCH THE SIDES OF THE EXCAVATIONS AS REQUIRED TO MAINTAIN STABILITY OF THE EXCAVATION SIDES AND BOTTOM. ALL EXCAVATIONS SHALL COMPLY WITH APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS INCLUDING THE CURRENT OSHA EXCAVATION AND TRENCH SAFETY STANDARDS. CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR, WHO SHALL ALSO BE SOLELY RESPONSIBLE FOR THE MEANS, METHODS, AND SEQUENCING OF CONSTRUCTION OPERATIONS. UNDER NO CIRCUMSTANCES SHOULD THE INFORMATION PROVIDED BE INTERPRETED TO MEAN THAT THE ATLANTIC RICHFIELD COMPANY IS ASSUMING RESPONSIBILITY FOR CONSTRUCTION SITE SAFETY OR THE CONTRACTOR'S ACTIVITIES. SUCH RESPONSIBILITY IS NOT BEING IMPLIED AND SHALL NOT BE INFERRED.

   B: EXCAVATION AND SLOPES: IN NO CASE SHOULD SLOPE HEIGHT, SLOPE INCLINATION, OR EXCAVATION DEPTH, INCLUDING UTILITY TRENCH EXCAVATION DEPTH, EXCEED THOSE SPECIFIED IN LOCAL, STATE, AND FEDERAL SAFETY REGULATIONS. SPECIFICALLY, THE CURRENT OSHA HEALTH AND SAFETY STANDARDS FOR EXCAVATIONS, 29 CFR PART 1926, SHALL BE FOLLOWED.

5. CONTRACTOR SHALL REMOVE AND REPLACE ALL EXISTING FEATURES DISTURBED DURING CONSTRUCTION TO ORIGINAL CONDITION, AND AS OTHERWISE DIRECTED, INCLUDING BUT NOT LIMITED TO, SIGNS, MAILBOXES, ENTRANCE STRUCTURES, DRAINAGE DITCHES, APPROACHES, DELINEATORS, GRAVEL SURFACES, CONCRETE STRUCTURES INCLUDING CURBS AND SIDEWALKS, ASPHALT PAVEMENT, AND FENCES.

6. ALL FENCES REMOVED TO ALLOW FOR CONSTRUCTION SHALL ONLY BE REMOVED AFTER RECEIVING PERMISSION FROM LAND OWNER. REMOVED FENCES SHALL BE REINSTALLED TO A CONDITION THAT IS EQUAL TO OR BETTER THAN THE ORIGINAL, UNLESS OTHERWISE DIRECTED BY THE ATLANTIC RICHFIELD COMPANY.

7. TRAFFIC CONTROL:

   A. GENERAL: CONSTRUCTION SHALL NOT COMMENCE ON THE PROJECT UNTIL NECESSARY CONSTRUCTION WARNING SIGNS AND TRAFFIC CONTROL ARE IN PLACE AND APPROVED BY THE ATLANTIC RICHFIELD COMPANY REPRESENTATIVE.

   B. TRAFFIC PLAN: CONTRACTOR SHALL PREPARE AND SUBMIT FOR REVIEW BY ATLANTIC RICHFIELD COMPANY A TRAFFIC CONTROL PLAN. ALL TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

   C. LOAD LIMITS: LEGAL LOAD LIMIT REQUIREMENTS SHALL BE ENFORCED ON ALL STATE HIGHWAYS, CITY STREETS, AND COUNTY ROADS.

8. ANY DISTURBED PROPERTY, SECTION CORNERS, OR HIGHWAY MONUMENTS, PROPERTY PINS, OR OTHER MDT HIGHWAY CONTROL ARE TO BE RESET BY A PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF MONTANA AT THE CONTRACTOR'S EXPENSE. THESE ITEMS ARE NOT SHOWN ON THE DRAWINGS.

9. ALL PERMITS REQUIRED TO PERFORM THE WORK SHALL BE ACQUIRED BY THE CONTRACTOR.

10. ALL EXISTING DRAINAGE PATTERNS SHALL BE MAINTAINED UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS.

SHEET INDEX

G-000 COVER SHEET

G-001 GENERAL NOTES AND SHEET INDEX

G-002 LEGEND AND ABBREVIATIONS

G-003 LAWN/YARD REMOVAL AND REPLACEMENT DETAILS

G-004 GARDEN SOIL REMOVAL/REPLACEMENT DETAILS

G-005 EARTHEN DRIVEWAY REMOVAL/REPLACEMENT DETAILS

G-006 ROCK GARDEN REMOVAL/REPLACEMENT DETAILS

G-007 NON-RESIDENTIAL SOIL REMOVAL/REPLACEMENT DETAILS

G-008 REMOVAL NEAR OBSTACLES DETAILS

G-009 SOD INSTALLATION DETAILS

G-010 CHAIN LINK FENCNG DETAILS

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REV	MM/DD/YY	DESCRIPTION

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DATE:	FEB. 2023
SCALE:	AS NOTED
DESIGNED BY:	-
DRAWN BY:	CJL
CHECKED BY:	-
FILENAME:	PAGE_02.dwg

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FIGURES

GENERAL NOTES AND SHEET INDEX

DRAWING NO:

G-001

SHEET: 2 OF 12

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22x34
PLOT SCALE: 1:1

LEGEND

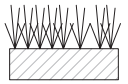
EXISTING–PLAN VIEW

- INDEX CONTOURS
- INTERMEDIATE CONTOURS
- ROADS
- RAILROADS
- CULVERTS
- X — FENCE
- OE — OVERHEAD ELECTRIC
- GAS — GAS LINE
- SS — SANITARY SEWER LINE
- DRAINAGE
- UE — UNDERGROUND ELECTRIC
- FIB — FIBER OPTIC LINE
- WTR — WATER LINE
- TEL — TELEPHONE LINE
- SD — STORM DRAIN LINE
- TV — BURIED TELEVISION LINE

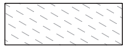
PROPOSED–PLAN VIEW/DETAILS



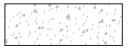
SLOPE DESIGNATION



SOD MAT



TYPE A BORROW SOIL



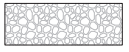
TYPE B BORROW SOIL



AGGREGATE MIX NO. 1



AGGREGATE MIX NO. 2



DECORATIVE AGGREGATE

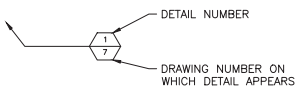


NATIVE MATERIAL

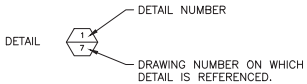
ABBREVIATIONS

CC	CASCADE COUNTY
BM	BENCHMARK
CMP	CORRUGATED METAL PIPE
CONC	CONCRETE
COORD	COORDINATE
CP	SURVEY CONTROL POINT
DIA	DIAMETER
E	EAST
EL, ELEV	ELEVATION
EXIST	EXISTING
GRD	GROUND
H, HOR	HORIZONTAL
ID	INSIDE DIAMETER
IE, INV	INVERT ELEVATION
LF	LINEAR FEET (PLAN VIEW PROJECTION)
MAX	MAXIMUM
MIN	MINIMUM
N	NORTH
NE	NORTHEAST
N.T.S.	NOT TO SCALE
NW	NORTHWEST
O.C.	ON CENTER
OU	OPERABLE UNIT
RA	REMEDIAL ACTION
RD	REMEDIAL DESIGN
RCP	REINFORCED CONCRETE PIPE
REQ'D	REQUIRED
R.R.	RAILROAD
S	SOUTH
SCH	SCHEDULE
SE	SOUTHEAST
SHT	SHEET
SPECS	SPECIFICATIONS
STA	STATION
STD	STANDARD
SW	SOUTHWEST
TYP	TYPICAL
V, VERT	VERTICAL
W	WEST
W/	WITH
W/O	WITHOUT
WMA	WASTE MANAGEMENT AREA
X–SECT	CROSS SECTION

DETAIL INDICATOR

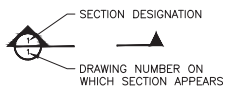


ON PLAN

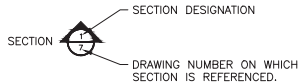


AT DETAIL

SECTION INDICATOR



ON PLAN



AT SECTION

NOTES:
ON PLANS: "–" SYMBOL IN UPPER HALF OF BUBBLE INDICATES GENERAL REFERENCE TO NOTED DRAWING NUMBER.
AT DETAIL/SECTIONS: "–" SYMBOL (NO DRAWING NUMBER) IN LOWER HALF OF BUBBLE INDICATES DETAIL/SECTION IS REFERENCED ON MORE THAN ONE DRAWING.

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REV	MM/DD/YY	DESCRIPTION

JOB NO:	0231336.06
DATE:	FEB. 2023
SCALE:	AS NOTED
DESIGNED BY:	-
DRAWN BY:	CJL
CHECKED BY:	-
FILENAME:	PAGE_03.dwg

DRAWING TITLE:
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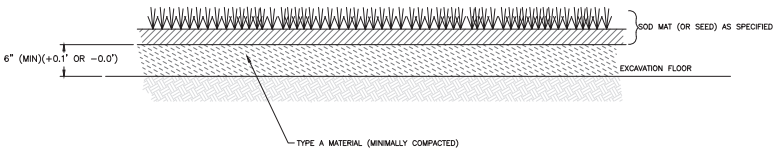
LEGEND AND ABBREVIATIONS

DRAWING NO:
G-002
SHEET: 3 OF 12

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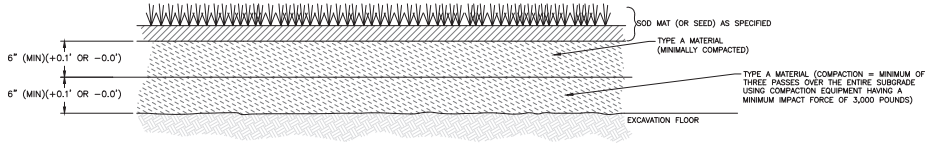
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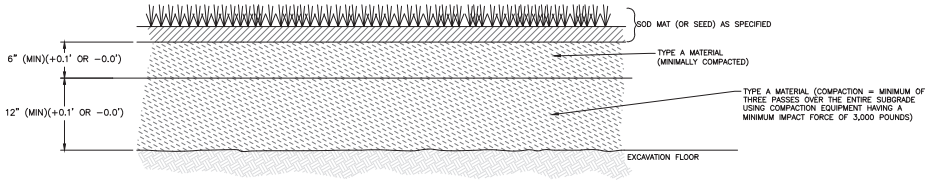
2 -- 6" SOIL AND SOD OR SEED REMOVAL/REPLACEMENT (Y6)(Y6*) DETAIL

NOTE: EXCAVATION DEPTH BELOW EXISTING SOD LAYER = 6" (MIN)(+0.1' OR −0.0')



3 -- 12" SOIL AND SOD OR SEED REMOVAL/REPLACEMENT (Y12)(Y12*) DETAIL

NOTE: EXCAVATION DEPTH BELOW EXISTING SOD LAYER = 12" (MIN)(+0.1' OR −0.0')



4 -- 18" SOIL AND SOD OR SEED REMOVAL/REPLACEMENT (Y18)(Y18*) DETAIL

NOTE: EXCAVATION DEPTH BELOW EXISTING SOD LAYER = 18" (MIN)(+0.1' OR −0.0')

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REV	MM/DD/YY	DESCRIPTION

JOB NO:	0231336.06
DATE:	FEB. 2023
SCALE:	AS NOTED
DESIGNED BY:	-
DRAWN BY:	CJL
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FIGURES

LAWN/YARD REMOVAL AND REPLACEMENT DETAILS

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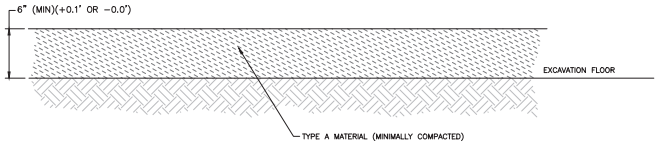
G-003

SHEET: 4 OF 12

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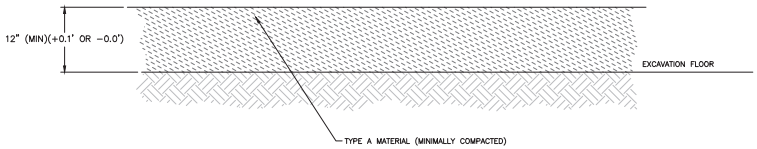
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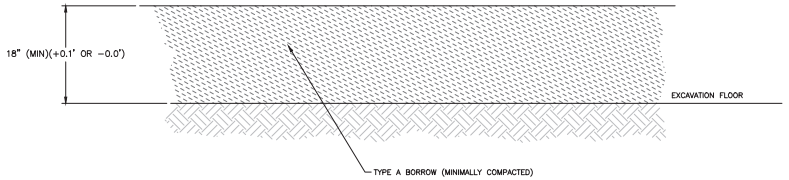
5 — 6" GARDEN SOIL REMOVAL/REPLACEMENT (G6) DETAIL

NOTE: EXCAVATION DEPTH BELOW EXISTING GROUND SURFACE = 6" (MIN)(+0.1' OR −0.0')



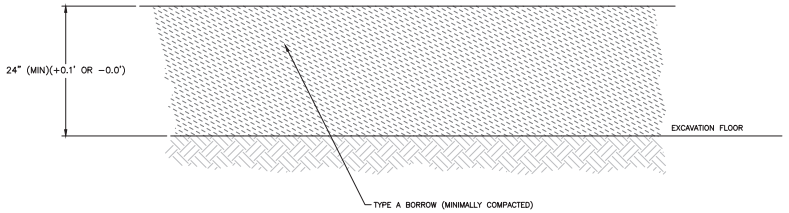
6 — 12" GARDEN SOIL REMOVAL/REPLACEMENT (G12) DETAIL

NOTE: EXCAVATION DEPTH BELOW EXISTING GROUND SURFACE = 12" (MIN)(+0.1' OR −0.0')



7 — 18" GARDEN SOIL REMOVAL/REPLACEMENT (G18) DETAIL

NOTE: EXCAVATION DEPTH BELOW EXISTING GROUND SURFACE = 18" (MIN)(+0.1' OR −0.0')



8 — 24" GARDEN SOIL REMOVAL/REPLACEMENT (G24) DETAIL

NOTE: EXCAVATION DEPTH BELOW EXISTING GROUND SURFACE = 24" (MIN)(+0.1' OR −0.0')

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DATE:	FEB. 2023
SCALE:	AS NOTED
DESIGNED BY:	-
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GARDEN SOIL REMOVAL/REPLACEMENT DETAILS

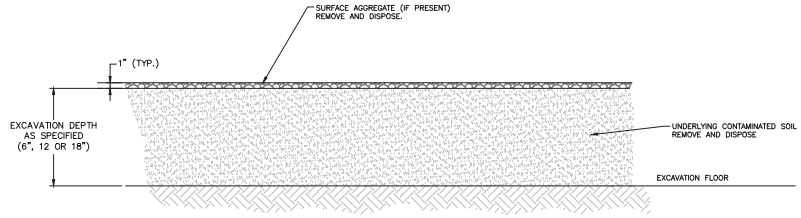
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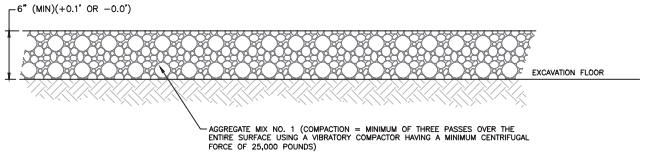
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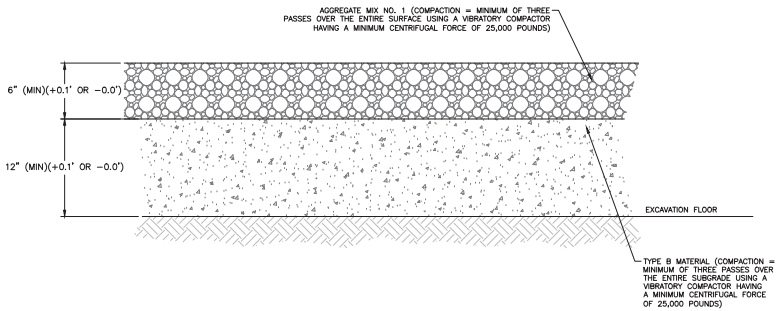
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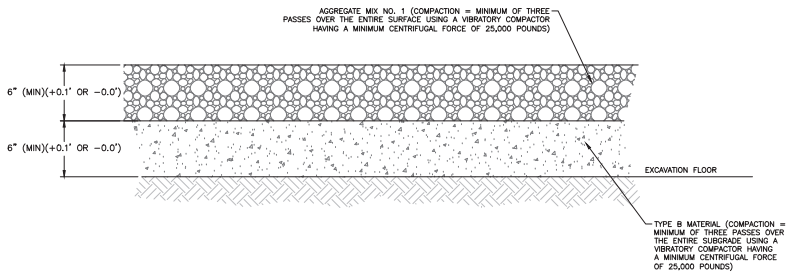
9 -- GENERAL EARTHEN DRIVEWAY REMOVAL DETAIL



11 -- 6" EARTHEN DRIVEWAY REPLACEMENT (E6) DETAIL



10 -- 18" EARTHEN DRIVEWAY REPLACEMENT (E18) DETAIL



12 -- 12" EARTHEN DRIVEWAY REPLACEMENT (E12) DETAIL

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DATE:	FEB. 2023
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DESIGNED BY:	-
DRAWN BY:	CJL
CHECKED BY:	-
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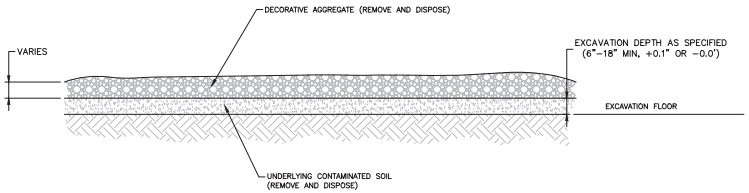
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EARTHEN DRIVEWAY REMOVAL/REPLACEMENT DETAILS

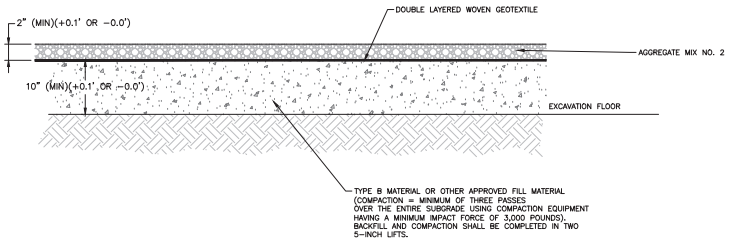
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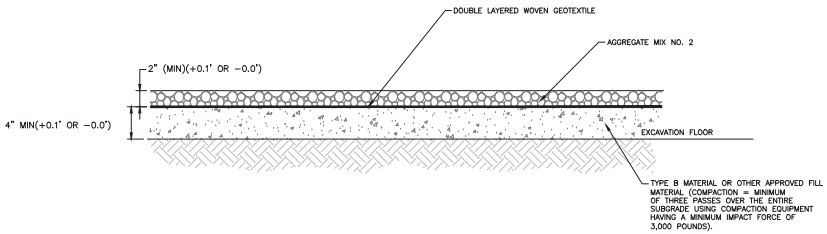
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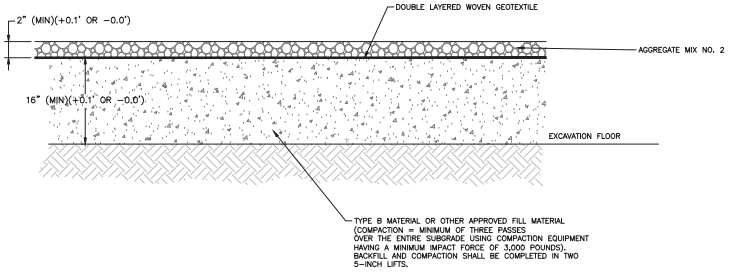
13 -- GENERAL ROCK GARDEN REMOVAL DETAIL



16 -- 12" ROCK GARDEN REPLACEMENT (R12) DETAIL



15 -- 6" ROCK GARDEN REPLACEMENT (R6) DETAIL



17 -- 18" ROCK GARDEN REPLACEMENT (R18) DETAIL

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JOB NO:	0231336.06
DATE:	FEB. 2023
SCALE:	AS SHOWN
DESIGNED BY:	-
DRAWN BY:	CJL
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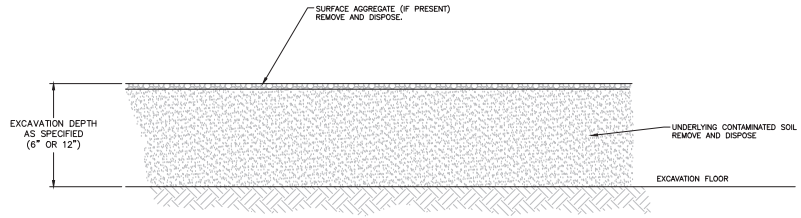
ROCK GARDEN REMOVAL/REPLACEMENT DETAILS

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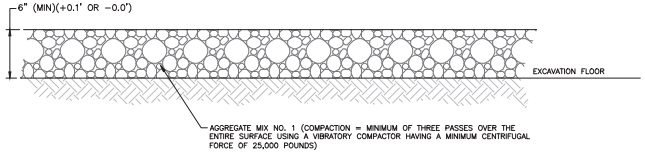
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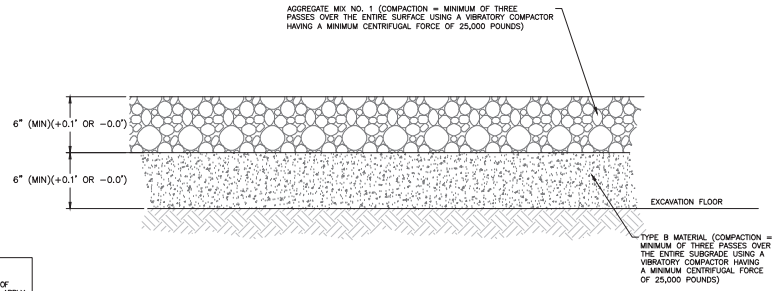
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17 -- GENERAL COMMERCIAL/INDUSTRIAL SOILS REMOVAL DETAIL



18 -- 6" COMMERCIAL/INDUSTRIAL SOILS REPLACEMENT (C6) DETAIL



NOTES:

1. LANDOWNER MAY CHOOSE SOD/SEED AS FINAL COVER IN LIEU OF AGGREGATE COVER. IN THAT CASE, DETAILS 2 -- AND 3 -- WILL APPLY.

19 -- 12" COMMERCIAL/INDUSTRIAL SOILS REPLACEMENT (C12) DETAIL

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SCALE:	AS NOTED
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DRAWN BY:	CJL
CHECKED BY:	-
FILENAME:	PAGE_08.dwg

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FIGURES

NON-RESIDENTIAL SOIL REMOVAL/REPLACEMENT DETAILS

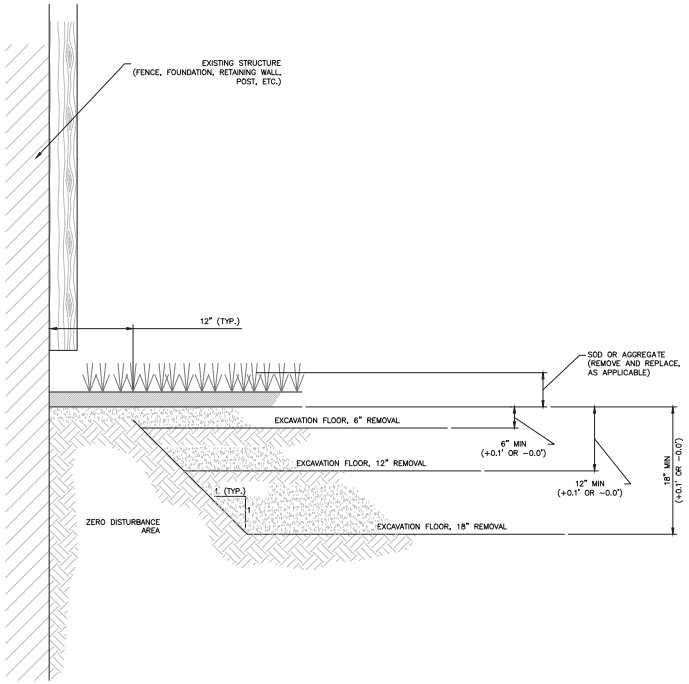
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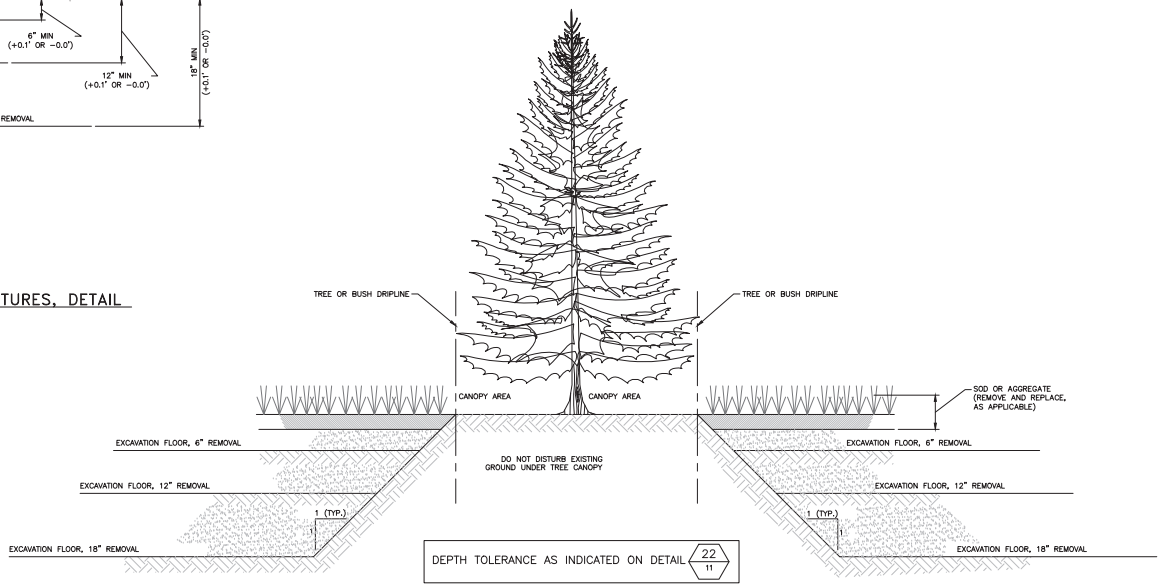
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22 — EXCAVATION NEAR EXISTING STRUCTURES, DETAIL



23 — EXCAVATION NEAR EXISTING TREES, BUSHES, AND SHRUBS, DETAIL

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CLIENT INFO:

ATLANTIC RICHFIELD COMPANY
GREAT FALLS, MONTANA

ACM SMELTER-OU1 COMMUNITY SOILS REMEDIAL ACTION WORK PLAN

REV	MM/DD/YY	DESCRIPTION

JOB NO:	0231336.06
DATE:	FEB. 2023
SCALE:	AS NOTED
DESIGNED BY:	-
DRAWN BY:	CJL
CHECKED BY:	-
FILENAME:	PAGE_10.dwg

DRAWING TITLE:
FIGURES

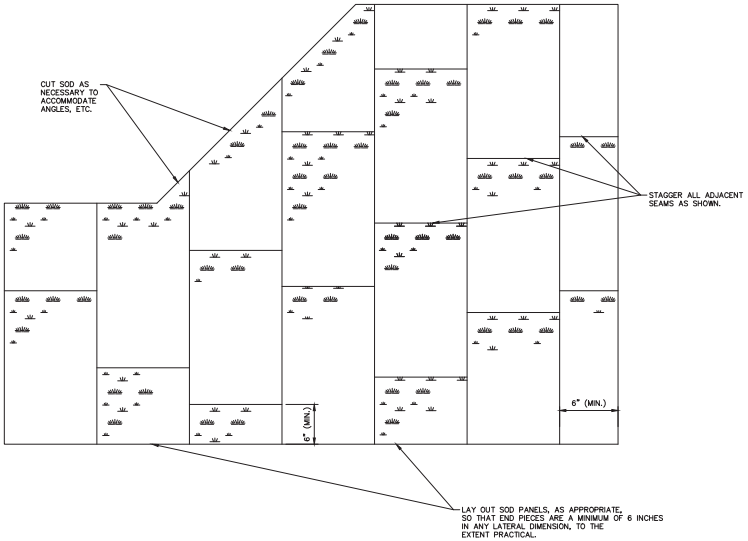
REMOVAL NEAR OBSTACLES DETAILS

DRAWING NO:
G-008

SHEET: 9 OF 12

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22x34
PLOT SCALE: 1:1



24 — PLAN VIEW OF SOD PANEL LAYOUT DETAIL

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DRAWN BY:	CJL
CHECKED BY:	-
FILENAME:	PAGE_11.dwg

DRAWING TITLE:
FIGURES

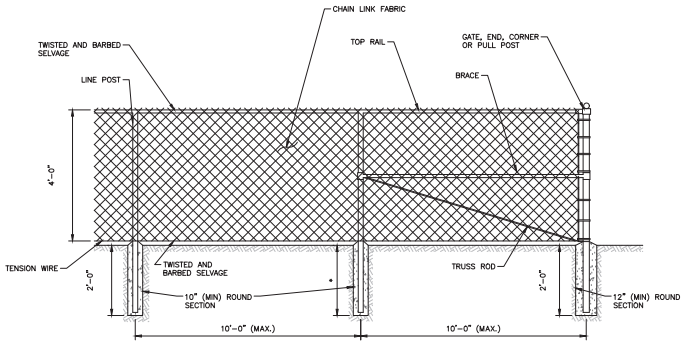
SOD INSTALLATION DETAILS

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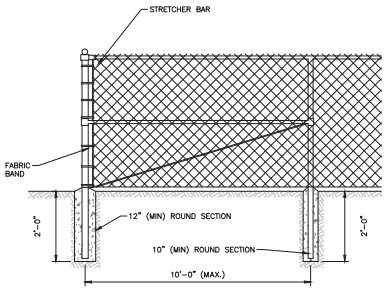
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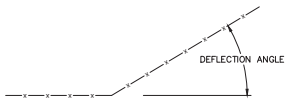
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CHAIN LINK FENCE

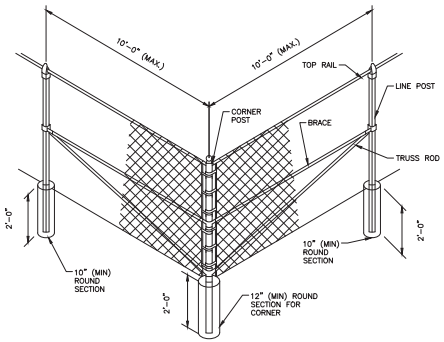


SINGLE PANEL



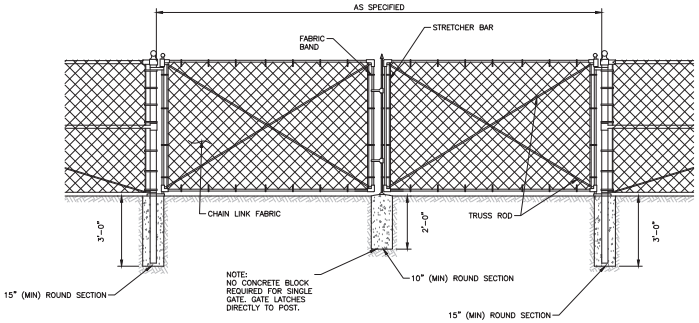
NOTES:

1. SEE THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. INSTALL DOUBLE PANELS AT 300' MAXIMUM SPACING AND AT ALL FENCE CORNERS WITH DEFLECTION ANGLES GREATER THAN 10°.
3. PULL POST BRACING IS THE SAME AS CORNER BRACING.
4. A DROP BAR LOCKING DEVICE IS REQUIRED FOR ALL DOUBLE GATE INSTALLATIONS. THE DROP BAR MUST BE ABLE TO BE INSERTED INTO THE CONCRETE BLOCK AT LEAST SIX INCHES.



DOUBLE PANEL

PULL POST AND CORNER POST BRACING



GATES

25 — CHAIN LINK FENCE DETAILS

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GREAT FALLS, MONTANA

ACM SMELTER-OU1 COMMUNITY SOILS REMEDIAL ACTION WORK PLAN

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DRAWN BY:	CJL
CHECKED BY:	-
FILENAME:	PAGE_12.dwg

DRAWING TITLE:
FIGURES

CHAIN LINK FENCNG DETAILS

DRAWING NO:
G-010

SHEET: 11 OF 12

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APPENDIX H: TECHNICAL SPECIFICATIONS

ACM SMELTER & REFINERY SITE OU1 COMMUNITY SOILS

Final

Appendix H

Technical Specifications

Prepared for:

Atlantic Richfield Company

317 Anaconda Road

Butte, Montana 59701

Prepared by:

Woodard & Curran

601 Riverside Drive South

Great Falls, Montana 59405

0231336

Atlantic Richfield Company

June 2023

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Woodard & Curran

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SUBSECTION 130.00: SUBMITTALS

130.01 GENERAL

A. DESCRIPTION: These Technical Specifications are Appendix H to the Remedial Action Work Plan / Final Design Report (RAWP/FDR) for the Community Soils Portion of Operable Unit 1 (CSOU1) of the Anaconda Copper Mining Company (ACM) Smelter and Refinery Superfund Site. The following specification includes the procedures for submitting "Shop Drawings" as is required in these Technical Specifications. Items that need to be reviewed by the DESIGN ENGINEER are included with this specification. Also refer to the "Submittal" section of each Technical Specification section for additional requirements.

B. DEFINITIONS:

Shop Drawings: The term "shop drawings" includes drawings, diagrams, layouts, schematics, descriptive literature, manufacturer's information, illustrations, schedules, performance and test data, and similar materials requested by the DESIGN ENGINEER to be furnished by the CONSTRUCTION SUBCONTRACTOR to explain in detail specific portions of the Work required by the Contract.

SUPERVISING CONTRACTOR'S Review and Approval: The SUPERVISING CONTRACTOR shall coordinate all submittals and review them for accuracy, completeness, and compliance with contract requirements and shall indicate his approval thereon as evidence of such coordination and review. All submittals shall be attached to the "Shop Drawing Submission" Form that is included in this Contract Document. The form shall be filled out, signed, and stamped by the SUPERVISING CONTRACTOR. Items submitted to the DESIGN ENGINEER without this form or SUPERVISING CONTRACTOR stamp and approval will be returned for resubmission. By attaching this form to the submittal, the SUPERVISING CONTRACTOR is representing that he has reviewed the entire submittal, that the submittal is in compliance with the Contract Documents, except as noted, and that the cover form applies to all documents that are attached to the form.

130.02 PRODUCTS

A. NONE.

130.03 EXECUTION

A. SUBMITTAL PROCEDURE: Shop Drawings shall be submitted as follows:

1. Date and Number: CONSTRUCTION SUBCONTRACTOR shall forward to the DESIGN ENGINEER all submittals required by the individual sections of the specifications. All submittals shall be returned to the CONSTRUCTION SUBCONTRACTOR within 7 days following their initial review. If follow-up reviews are required, they shall be reviewed within 5 days. Unless a different number is called for in the individual sections, submit six copies of each shop drawing, six copies of all operation and maintenance instructions, and four specimens of each sample requested, of which all but two copies

will be retained by the DESIGN ENGINEER. The other copies shall be returned to the Construction Subcontractor along with the DESIGN ENGINEER'S comments.

2. Cover Letter: All submittals shall be forwarded with a cover letter from the CONSTRUCTION SUBCONTRACTOR, identifying the project and the portion of the project to which it applies. Submittals that are related to or affect each other shall be forwarded simultaneously as a package to facilitate a coordinated review. Uncoordinated submittals will be rejected.

3. Modifications: Any modifications to the design proposed by the CONSTRUCTION SUBCONTRACTOR shall be fully explained in the submittal. All necessary calculations and supporting documentation shall be included. If requested by the DESIGN ENGINEER, the CONSTRUCTION SUBCONTRACTOR shall provide design drawings of the modification stamped by a professional engineer licensed to practice in the State of Montana.

130.04 ENGINEER'S APPROVAL

The DESIGN ENGINEER will indicate his approval or disapproval of each submittal and, if he does not approve the submittal as submitted, will indicate his reasons, therefore. Any work done prior to approval shall be at the CONSTRUCTION SUBCONTRACTOR'S own risk. Neither approvals nor lack of reviews or approval shall relieve the CONSTRUCTION SUBCONTRACTOR from responsibility for supplying materials and performing all work in accordance with the requirements of these Contract Documents. If submittals show variations from the Contract requirements, the CONSTRUCTION SUBCONTRACTOR shall describe such variations in writing, on the before mentioned form at the time of submission. Approval of such variation(s) shall be accompanied with a Contract Modification. Minor variations not involving a change in price or time of performance will not be issued a modification.

130.05 REQUIRED SUBMITTALS

A. Permits: Submit to the DESIGN ENGINEER a copy of all permits required by the governing authorities, for which the CONSTRUCTION SUBCONTRACTOR is responsible.

B. Subcontractors: The CONSTRUCTION SUBCONTRACTOR shall supply a list of all suppliers and subcontractors to be used on the project.

C. Certificates: For those items called for in individual sections, furnish certificates from manufacturers, suppliers, or others certifying that materials or equipment being furnished under the Contract comply with the requirements of these specifications.

D. Drawings: Including all materials and equipment supplied on the project. See the individual sections for specific requirements. If an alternate is proposed, explain fully and if approved, make all necessary adjustments needed to accommodate any differences in the product.

E. Progress Schedule and Sequence of Work Schedule: The CONSTRUCTION SUBCONTRACTOR shall submit to the DESIGN ENGINEER, with the completed Agreement a Progress Schedule and Sequence of Work Schedule. The Sequence of Work Schedule shall show the order in which work shall be undertaken by the

CONSTRUCTION SUBCONTRACTOR and shall show which items of Work shall be going on simultaneously. The Progress Schedule shall show estimated starting and completion dates for each part of the Work.

The Progress Schedule shall be revised monthly to show project progress revisions to the schedules. The revised schedule shall be submitted monthly.

If the CONSTRUCTION SUBCONTRACTOR is behind schedule, he shall also submit a plan as to how he will get back on schedule.

F. Site-Specific Safety and Health Plan:

CONSTRUCTION SUBCONTRACTOR shall submit a written site-specific Safety and Health Plan prior to commencing work. The plan, at a minimum, shall follow health and safety plan requirements outlined in 29 CFR 1910.120 (b).

G. Traffic Control Program: CONSTRUCTION SUBCONTRACTOR to provide as required in Section 550.

H. Materials Samples: The CONSTRUCTION SUBCONTRACTOR shall also submit to the DESIGN ENGINEER for review and approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and accompanied by a specific written indication that the CONSTRUCTION SUBCONTRACTOR has satisfied their responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended.

I. Closeout Submittals: CONSTRUCTION SUBCONTRACTOR to provide all required closeout submittals.

TRANSMITTAL OF SHOP DRAWINGS			DATE		NEW SUBMITTAL		RESUBMITTAL
Woodard & Curran XX ATTN: CC:			FROM:			TRANSMITTAL NO. PROJECT NO.	
			PROJECT TITLE AND LOCATION:				

ITEM NO.	DESCRIPTION OF ITEM SUBMITTED (Type, size, model number, etc.)		MANUFACTURER OR SUPPLIER	NO. OF COPIES	SPECIFICATION PARAGRAPH & PAGE NO.	DRAWING NO.	BID TEM NO.
1							
2							
3							
4							
5							

LIST ALL VARIANCES FROM CONTRACT DOCUMENT REQUIREMENTS

I hereby certify that all Contractor's responsibilities under the Contract Documents with respect to review and submission of the above shop drawings have been satisfied and that each shop drawing has been stamped and/or marked to indicate Contractor's compliance with the Shop Drawing review requirements.

SIGNED_____

(NAME & TITLE)

END OF SUBSECTION 130

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SUBSECTION 160.00: EXISTING UTILITIES

160.01 GENERAL

A. DESCRIPTION: The following specification includes requirements for notifying utility owners, locating utilities, and possibly relocating utilities that may be affected by the Work. This shall include gas, water, sewer, phone, electric, private, and any other utilities encountered by the Work. Notifying utility owners and marking locations of all utilities shall be considered incidental to other work items, no additional compensation will be allowed.

B. UNDERGROUND AND PRIVATE UTILITIES: The location of underground and/or private utilities are not shown on the Individual Site Work Plans (RAWP/FDR Appendix E), and ATLANTIC RICHFIELD COMPANY assumes no responsibility for determining the exact location of utilities. Failure by ATLANTIC RICHFIELD COMPANY to show the existence of subsurface objects or installations on the plans shall not relieve the CONSTRUCTION SUBCONTRACTOR from their responsibility to locate and mark all buried and private utilities, nor relieve the CONSTRUCTION SUBCONTRACTOR from all liability for damages resulting from their operations. Underground and private utility location and documentation shall be completed by the CONSTRUCTION SUBCONTRACTOR in accordance with ATLANTIC RICHFIELD COMPANY'S Remediation Management – Control or Work (CoW) Defined Practices, including completion of a Ground Disturbance Permit, blind sweep, potholing, and plot plan for each excavation area addressed in the Scope of Work.

The CONSTRUCTION SUBCONTRACTOR shall protect from damage private and public utilities, including telephone and telegraph cables, television cables, power lines, sewer and water lines, railroad tracks and appurtenances, and similar facilities. In the event that any utilities are damaged or broken, they shall be immediately replaced (at the CONSTRUCTION SUBCONTRACTOR'S expense) to a condition conforming to the standard repair procedure of the utility.

Any high voltage underground utility lines that may interfere with the specified work shall be avoided completely by the CONSTRUCTION SUBCONTRACTOR. In such areas, the specified Remedial Action work shall not encroach on the underground utility any closer than the buffer distance specified by the utility owner.

Although the majority of residential areas involved with the work are assumed connected to city water and sewer utilities, the CONSTRUCTION SUBCONTRACTOR shall be aware that active or abandoned underground septic systems may be encountered in the course of the work. In such cases, the septic system shall be avoided and protected from damage to the extent practical. Abandoned septic systems that may be encountered through the course of the work may be requested to be backfilled by ATLANTIC RICHFIELD COMPANY. Compensation for backfilling abandoned septic systems will be per miscellaneous work as described in the Scope of Work.

160.02 MATERIALS

All materials used in repairing and relocating utilities shall be in accordance with the utility CoW requirements or LANDOWNER'S requirements, whichever is more stringent.

160.03 CONSTRUCTION REQUIREMENTS

A. NOTIFICATION: The CONSTRUCTION SUBCONTRACTOR shall be responsible for contacting the potentially affected utility agency(ies) in writing of the construction schedule, request their assistance in making accurate locations, and shall furnish a copy of the notice to ATLANTIC RICHFIELD COMPANY.

B. UNDERGROUND AND PRIVATE UTILITIES: The CONSTRUCTION SUBCONTRACTOR shall be responsible for completing ground disturbance permits, conducting blind sweeps, potholing, completing plot plans, and completing all other utility documentation to ensure that all underground and private utilities within the work area are properly documented and located; in accordance with ATLANTIC RICHFIELD COMPANY'S Remediation Management – Control of Work (CoW) Defined Practices. The CONSTRUCTION SUBCONTRACTOR shall furnish a copy of the documentation to the on-site ATLANTIC RICHFIELD COMPANY representative.

C. CONFLICT WITH EXISTING UTILITIES: Where existing utilities are damaged or must be relocated, removed, or temporarily supported to allow the performance of the Work, the CONSTRUCTION SUBCONTRACTOR shall contact the utility's owner and make all arrangements and pay all costs associated with repair, relocation, removal, or temporary support of the utility. The CONSTRUCTION SUBCONTRACTOR shall comply with all requirements of the utility's owner.

D. TEMPORARY SERVICE: Temporary service shall be provided by the CONSTRUCTION SUBCONTRACTOR during any period when utility lines are disturbed. Service of domestic water lines and sewer lines shall not be interrupted for a period of more than 6 hours, unless otherwise approved by ATLANTIC RICHFIELD COMPANY in writing. The CONSTRUCTION SUBCONTRACTOR shall be solely responsible for notification of those individuals affected by being out of service and for temporary connections, if needed, if the time for interruption exceeds 6 hours.

END OF SUBSECTION 160

SUBSECTION 201.00: CLEARING AND GRUBBING

201.01 GENERAL

A. DESCRIPTION: This work shall consist of clearing, grubbing, removing, and disposing of soil, vegetation (including existing sod) and debris that may be located within residential areas specified to receive remedial action. Prior to initiating the construction activities, the CONSTRUCTION SUBCONTRACTOR shall request that the LANDOWNER remove large debris that may interfere with the work. The LANDOWNER shall be responsible for removing debris that may interfere with the work. If the LANDOWNER is not physically capable of removing debris or otherwise does not comply with the CONSTRUCTION SUBCONTRACTOR'S request to remove large debris and/or debris piles, the CONSTRUCTION SUBCONTRACTOR shall remove debris as necessary to complete the specific work. Compensation for removal and replacement of debris will be per miscellaneous work as described in the Scope of Work.

Clearing and grubbing shall be limited to the areas designated on the ISWPs or designated in the field by the DESIGN ENGINEER or SUPERVISING CONTRACTOR. Large vegetation (i.e., trees, shrubs, hedges, etc.) and objects designated to remain shall be preserved free from injury and defacement. Soil around trees, shrubs, and hedges will be excavated to the design depth from the surrounding area to the plant drip line, and the excavation will be tapered to zero depth at the plant. Rooting areas will be hand excavated to protect the plant.

If any potential historical, cultural, or archeological objects or features are encountered during clearing and grubbing activities, the SUPERVISING CONTRACTOR and the CONSTRUCTION SUBCONTRACTOR will comply with the following procedures:

1. Work will be stopped, and ATLANTIC RICHFIELD COMPANY construction oversight personnel and the EPA FIELD OVERSIGHT REPRESENTATIVE will be immediately contacted by CONSTRUCTION SUBCONTRACTOR and/or SUPERVISING CONTRACTOR field personnel.

2. The SUPERVISING CONTRACTOR will immediately contact ATLANTIC RICHFIELD COMPANY'S PROJECT COORDINATOR and EPA'S PROJECT COORDINATOR. ATLANTIC RICHFIELD COMPANY'S PROJECT COORDINATOR shall contact the proper authorities for an assessment of the significance of the objects or features.

3. Remedial Action work activities in the immediate vicinity of the identified historical, cultural, or archeological objects or features will be halted. Construction elsewhere on the project may continue.

4. The historical, cultural, or archeological objects or features will be further evaluated by a qualified historian or archaeologist associated with the State Historic Preservation Office to determine if they meet historic preservation requirements. Following the evaluation, EPA'S PROJECT COORDINATOR will be involved in the process of determining the path forward. Remedial Action work will not resume until the historical, cultural, or archeological objects or features are fully evaluated, and the

archaeologist/historian gives clearance to resume work in the area. If clearance is not granted due to the finding of historical, cultural, or archeological resources, items, or objects, the area will be preserved, and Remedial Action will not resume until the discovery is adequately addressed.

The work shall be classified as follows:

1. Clearing: Clearing shall consist of removal and disposal of unwanted brush, logs, limbs, sticks, sawdust, rubbish, debris, vegetation (including existing sod), and other objectionable matter existing within the clearing limits that interfere with the excavation.

   Grubbing: Grubbing shall consist of the removal and disposal of stubs, rock, roots, debris, and other objectionable matter from the grubbing limits.

   Disposal: Disposal shall consist of removing and disposing of the refuse accumulations from clearing and grubbing operations as approved by the DESIGN ENGINEER. The refuse resulting from these operations shall be disposed of as described below:

   a. Burial or burning of materials on-site will not be allowed.

   b. Debris resulting from clearing and grubbing activities shall be disposed as specified in Subsection 220 – Residential Soil Disposal, of these Technical Specifications. Clearing and grubbing debris shall be disposed of at the appropriate Agency approved consolidation area.

   c. SALVAGING: Any materials denoted to be salvaged shall be carefully moved and stockpiled in the areas designated by the DESIGN ENGINEER or LANDOWNER. Salvaged materials are not to be used by the CONSTRUCTION SUBCONTRACTOR in the course of Remedial Action work. Salvaged materials or resources are not the property of the CONSTRUCTION SUBCONTRACTOR.

201.02 MATERIALS

Not applicable.

201.03 CONSTRUCTION REQUIREMENTS

A. GENERAL: Clearing and grubbing shall be done at times and in a manner that the surrounding vegetation, adjacent property, and anything designated to remain shall not be damaged. Dragging, piling, disposing of debris, and other work that may be injurious to existing vegetation shall be confined to areas that carry no vegetation or that will be covered or disturbed by excavations.

Vegetation adjacent to areas designated to be disturbed shall be preserved and protected from injury unless the vegetation conflicts with construction operations and is designated by the DESIGN ENGINEER or LANDOWNER to be removed. If any vegetation designated to be preserved becomes damaged or destroyed by the CONSTRUCTION SUBCONTRACTOR, it shall be replaced to the satisfaction of the DESIGN ENGINEER and LANDOWNER at no additional cost.

The DESIGN ENGINEER will designate trees, shrubs, plants, or other objects that are to remain. The CONSTRUCTION SUBCONTRACTOR shall preserve all objects so designated.

The CONSTRUCTION SUBCONTRACTOR shall not injure trees, shrubbery, vines, plants, grasses, and other vegetation growing outside of the limits of excavation and embankment. The CONSTRUCTION SUBCONTRACTOR shall paint all cut or scarred surfaces of trees or shrubs that are injured as a result of the CONSTRUCTION SUBCONTRACTOR'S activities. The paint shall be an approved asphaltum base paint prepared especially for tree surgery. Painting of injured trees or shrubs shall be considered incidental, no separate payment will be allowed.

B. CLEARING: All areas within the neat lines of cut or fill areas shall constitute the clearing limits.

Unless specifically designated to be saved, all trees, stumps, brush, logs, and other objectionable matter occurring within clearing limits shall be cut off and disposed of. All stumps within the clearing limits and all trees, the stumps of which are not to be grubbed, shall be cut at a height no greater than the diameter of the stump, and in any instance not more than 12 inches above the ground.

The refuse resulting from the clearing operation shall be removed and disposed as specified herein. In no case shall any unwanted material be left on the site, moved onto adjacent private properties, or be buried in embankments on the project.

C. GRUBBING: All areas within the neat lines of the disturbance limits shall also constitute the grubbing limits.

All stumps, roots, logs, or other timber more than 3 inches in diameter, and all brush, matted roots, rock, and other debris within the grubbing limits shall be pulled or otherwise removed.

All material resulting from the grubbing operations shall be disposed of as specified herein. All depressions below subgrade, or below the final surface of the ground resulting from the grubbing operations shall be backfilled with suitable material as specified in Subsection 202 – Residential Yard Excavation and Backfill. Filling of depressions below design subgrade shall be considered incidental, no separate payment will be allowed.

END OF SUBSECTION 201

SUBSECTION 202.00: RESIDENTIAL YARD EXCAVATION AND BACKFILL/ COVER

202.01 GENERAL

A. DESCRIPTION: All residential excavation and backfill work shall be in accordance with these Technical Specifications and in reasonably close conformity with the lines, grades, and depths shown on the Standard Drawings (RAWP/FDR Appendix G) or as established in the field by the DESIGN ENGINEER.

Excavation: This work shall consist of performing all operations necessary to excavate, grade, and satisfactorily remove for disposal all soil materials encountered during excavation of the residential areas designated on the Standard Drawings (Appendix G). The work, as designated on the Standard Drawings, shall include gravel driveway excavation, garden soil excavation, excavation of yard sod and yard soils, paddock areas, any general unclassified excavation, and all other excavation not covered under other subsections of these Technical Specifications.

Depth of excavation in yard/lawn areas shall be measured from below the existing sod cover, where applicable. Sod cover is typically in the range of 1 to 2 inches thick.

Depth of excavation in earthen driveway areas shall be measured from 1 inch below the existing ground surface to account for existing aggregate surfacing materials overlying contaminated soils. The earthen driveways involved contain variable sized aggregate surfacing materials installed at different depths; to make excavation of earthen driveways consistent, each earthen driveway shall be assumed to contain a 1-inch layer of surface aggregate, and the design excavation depth shall be measured from below this assumed layer of aggregate.

The maximum excavation depth shall not exceed 18-inches for any residential component (24 inches in vegetable gardens and flower gardens); excavation may be performed at a depth of 6 inches, 12 inches, 18 inches, or 24 inches in vegetable gardens and flower gardens, as specified. Acceptable tolerance for depth of all excavations shall be the specified depth (6, 12, 18, or 24 inches) +0.1 foot or -0.0 foot.

The CONSTRUCTION SUBCONTRACTOR shall strive to assure that any temporary stockpiles of excavated contaminated soils are not left on residential property overnight. In the event that contaminated soil stockpile(s) are left overnight, the CONSTRUCTION SUBCONTRACTOR shall not locate the stockpile on uncontaminated ground and shall cover the entire stockpile with a tarpaulin or other sheeting that is adequately secured with stakes or ballast (e.g., sandbags, clean soil, etc.) to eliminate displacement from wind, pets, children, etc.

If any potential historical, cultural, or archeological objects or features are encountered during residential excavation activities, the SUPERVISING CONTRACTOR and the CONSTRUCTION SUBCONTRACTOR will comply with the following procedures:

1. Work will be stopped, and ATLANTIC RICHFIELD COMPANY construction oversight personnel and the EPA FIELD OVERSIGHT REPRESENTATIVE will be immediately

contacted by CONSTRUCTION SUBCONTRACTOR and/or SUPERVISING CONTRACTOR field personnel.

2. The SUPERVISING CONTRACTOR will immediately contact ATLANTIC RICHFIELD COMPANY'S PROJECT COORDINATOR and EPA'S PROJECT COORDINATOR. ATLANTIC RICHFIELD COMPANY'S PROJECT COORDINATOR shall contact the proper authorities for an assessment of the significance of the objects or features.

3. Remedial Action work activities in the immediate vicinity of the identified historical, cultural, or archeological objects or features will be halted. Construction elsewhere on the project may continue.

4. The historical, cultural, or archeological objects or features will be further evaluated by a qualified historian or archaeologist associated with the State Historic Preservation Office to determine if they meet historic preservation requirements. Following the evaluation, EPA'S PROJECT COORDINATOR will be involved in the process of determining the path forward. Remedial Action work will not resume until the historical, cultural, or archeological objects or features are fully evaluated, and the archaeologist/historian gives clearance to resume work in the area. If clearance is not granted due to the finding of historical, cultural, or archeological resources, items, or objects, the area will be preserved, and Remedial Action will not resume until the discovery is adequately addressed.

Backfill/Cover: This work shall consist of all operations necessary to replace, grade and complete surface preparations in the areas excavated during residential soils removal. The work, as designated on the Individual Site Work Plans (RAWP/FDR Appendix E), shall include driveway backfill (excluding aggregate surface materials, which are discussed in Section 820 of these Technical Specifications), walkway backfill, garden backfill, backfilling yard and paddock excavations and all other backfilling, covering or embankment not covered under other subsections of these Technical Specifications. All excavations completed within residential areas shall be backfilled with replacement soil within 24 hours from the time when the excavation is finished.

202.02 MATERIALS

A. REPLACEMENT SOILS MATERIALS: Suitable materials for residential soils replacement shall be taken from ATLANTIC RICHFIELD COMPANY and AGENCY approved sources meeting the following specifications.

COVER SOIL SUITABILITY CRITERIA (TYPE A MATERIAL)

PARAMETERS	CRITERIA
Texture	(Cannot be sand, clay or loamy sand)
Rock Fragments	<45% by volume in the bank, 6-inch maximum rock diameter
Saturation Percentage	>25% and <85%
pH	>6.5 and <8.5 standard units
Electrical Conductivity	<4,000 umhos/cm with standard seed mix <6,000 umhos/cm for salt tolerant
Sodium Adsorption Ratio	<12 for root zone materials <20 for general fill
Total Elemental Concentration (Based on Average) Arsenic Cadmium Copper Lead Zinc	 <30 mg/kg <4 mg/kg <250 mg/kg <100 mg/kg <250 mg/kg
Organic Matter	Minimum 1.5% (existing or added as determined by Walkley Black)

umhos/cm = micromhos per centimeter
mg/kg = milligrams per kilogram

Soils from approved sources shall be installed in all yard/lawn areas specified to be covered with sod or seed as well as in all vegetable and flower garden areas. Soils from the Type B Soil stockpile shall be installed and compacted in earthen driveway, walkway, paddock and rock garden areas beneath specified aggregates or decorative materials. Stumps, roots, rubbish, vegetation, frozen lumps, or other unsuitable materials will not be accepted.

B. AGGREGATE SURFACING MATERIALS: Requirements for driveway, walkway, and paddock top surfacing materials are specified under Subsection 820 – Aggregate Surface Materials, of the Technical Specifications.

C. EXCAVATED SOIL MATERIAL: Soils that are removed from residential yards shall be hauled and disposed at the Agency approved consolidation area, shown on Figure 1 of the RAWP/FDR. Disposal shall consist of dumping only; the disposed materials are not subject to spreading or compaction specifications.

202.03 CONSTRUCTION REQUIREMENTS

A. GENERAL: All excavation shall be considered unclassified and shall consist of the removal and disposal of any and all material encountered regardless of type or nature obtained within the construction limits designated on the Individual Site Work Plans (RAWP/FDR Appendix E).

All materials removed from excavation areas shall be hauled and disposed at a designated consolidation area, as described above in Subsection 202.02.C.

B. SITE PREPARATION: All areas scheduled for excavation and embankment shall be photographed (by the DESIGN ENGINEER or other representative designated by ATLANTIC RICHFIELD COMPANY) to document initial site conditions. The CONSTRUCTION SUBCONTRACTOR shall not begin excavation work until receiving written verification from the DESIGN ENGINEER that a yard has been adequately photographed.

Prior to excavation, all buried utilities shall be located and marked, fences removed (as necessary), tree and shrub protection provided, structure and landscaping protection provided, and construction staking completed (establishment of residential occupation lines).

C. LINE AND GRADE CONTROL: Prior to excavation, backfill, covering, grading, and embankment operations, the CONSTRUCTION SUBCONTRACTOR shall verify that an adequate number of construction stakes (installed by others) are in place to define the construction limits. As shown on the Standard Drawings (Appendix G), occupation markers may be installed to establish the occupation perimeter associated with each residence. The location of each yard component associated with Remedial Action work can be determined using these occupation markers in conjunction with the Individual Site Work Plans (Appendix E).

All occupation markers (nails and flagging) shall be maintained, to the extent practical, for reference throughout the construction period.

Acceptable tolerance for depth of all excavations and depth of backfill/cover shall be specified depth (6, 12, 18, or 24 inches) +0.1 foot or -0.0 foot, measured from the datum described in Subsection 202.01, above. Excavation and cover depths will be verified, in the field, by ATLANTIC RICHFIELD COMPANY to assure that the specified limits are satisfied.

D. EXCAVATION:

1. General: The CONSTRUCTION SUBCONTRACTOR shall utilize excavating equipment appropriate for the work being performed. The method of excavation shall be the CONSTRUCTION SUBCONTRACTOR'S responsibility. All methods and equipment used shall result in finished work meeting the construction tolerances specified. No work shall be performed beyond the construction limits without prior written approval from the LANDOWNER and the DESIGN ENGINEER. **Any excavations in residential areas that are to remain open overnight shall be properly barricaded with temporary construction fence (or other means approved by ATLANTIC RICHFIELD COMPANY) to serve as a warning to landowners, pedestrians, etc.**

   Obstacles: In areas where excavation is required in the vicinity of large vegetation (e.g., trees, bushes, shrubs, hedges, etc.) specified to remain in-place, the excavation shall taper from the tree drip line to the design depth as shown on the Standard Drawings (Appendix G). To avoid damaging the root system of trees, bushes, and shrubs, areas beneath the canopy of the tree, bush, shrub, or hedge shall not be disturbed, as shown on the Standard Drawings (Appendix G).

In areas where excavation is required in the vicinity of existing obstacles (fences, foundations, sidewalks, driveways, etc.) the excavation shall taper from the obstacle to the design depth as shown on the Standard Drawings (Appendix G). The CONSTRUCTION SUBCONTRACTOR shall protect concrete or asphalt curbs, sidewalks, driveways, etc., from damage by his equipment throughout the course of the work.

In areas where underground sprinkler systems are encountered, all sprinkler heads and associated plumbing shall be removed, as necessary, to allow unencumbered excavation of the specified materials. All removed sprinkler heads shall be salvaged and protected for later replacement. Removal of existing underground sprinkler systems to gain access to the work area shall be considered incidental, no additional payment will be allowed for sprinkler system removal. Compensation for reconstruction of underground sprinkler systems shall be as described in the Scope of Work.

E. SOIL REPLACEMENT:

1. Obtaining Backfill/ Cover Soil: Backfill/Cover Soil shall be obtained from ATLANTIC RICHFIELD COMPANY and AGENCY approved sources meeting project specifications. Any residential replacement soil materials temporarily stockpiled by the CONSTRUCTION SUBCONTRACTOR shall be re-handled and placed without additional compensation. The sites of all temporary stockpiles and areas adjacent thereto which have been disturbed by the CONSTRUCTION SUBCONTRACTOR shall be graded, if required, and returned to an acceptable condition.

   Placing Backfill/Cover Soil: After excavation and depth verification has been completed, the replacement soils shall be deposited and evenly placed on the subgrade in lifts not to exceed 6 inches in depth, where compaction is required. Replacement backfill shall not be applied when the ground or replacement soil is frozen, excessively wet, or otherwise in a condition detrimental to the work. **All excavations completed within residential areas shall be backfilled with replacement soil within 24 hours from the time when the excavation is finished.**

   Minimal compaction will be performed using a cultipacker, hand roller or other proposed method(s) approved by the DESIGN ENGINEER. Any large, stiff clods and hard lumps of soil shall be broken with a pulverizer or other effective means, and all stones or rocks (2 inches or greater in diameter), roots, litter or foreign material shall be raked up and disposed of by the CONSTRUCTION SUBCONTRACTOR.

   Acceptable depth tolerance for backfill/cover soil materials shall be the specified depth (6, 12, 18, or 24 inches) +0.1 foot or -0.0 foot, measured after grading and compaction.

   Compaction: Yard/lawn areas excavated to a depth of 12, 18, or 24 inches, and specified to receive sod or seed, shall be backfilled with soils obtained from the Type A Soil stockpile in the following manner:

   - The bottom of the excavation shall be backfilled in lifts not to exceed 6 inches and compacted so that the depth of backfilled soil after compaction is 6 inches. The backfilled materials shall be moisture conditioned and compacted by making a minimum of three passes over the entire subgrade surface using compaction equipment having a minimum impact force of 3,000 pounds.

- An additional, minimally compacted lift of Type A soil shall then be applied over the compacted soil to a minimum depth of 6 inches (+0.1 foot or -0.0 foot tolerance), so that after sod is applied, it matches the surrounding ground surface elevation.

In backfill embankment areas specified to be overlain with Aggregate Mix No. 1, the replacement soils shall be obtained from the Type B Soil stockpile and evenly deposited on the subgrade in lifts not to exceed 6 inches in depth. The backfilled materials shall be compacted by making a minimum of three passes over the entire subgrade surface area with a vibratory compactor having a minimum centrifugal force of 25,000 pounds.

Compaction shall be performed in a manner that does not disturb adjacent structures (e.g., concrete sidewalks, foundations, buildings, trees, shrubs, hedges, etc.). Any damage to adjacent structures caused during compaction activities shall be repaired by the CONSTRUCTION SUBCONTRACTOR at their expense. Compaction specifications are further discussed in Subsection 820 – Aggregate Surfacing Materials of these Technical Specifications.

Finish Grading: Following backfill of the excavations with replacement soil (and compaction where specified), the backfill or soil cover shall be brought to the lines, grades, and cross-sections shown on the Standard Drawings (Appendix G) so that the final soil, sod, or aggregate surface matches the surrounding ground surface elevation and topography. Where specific grades have not been established, the areas shall be smooth graded and the surface left at the prescribed grades in an even and properly compacted condition to prevent, insofar as practical, the formation of low areas or pockets where water will stand and to facilitate positive drainage away from buildings.

F. SEEDING, SODDING, AND CLEANUP: After fine grading work is accepted, seeding or sodding preparations can be completed in accordance with the Technical Specifications, Subsection 320 – Fertilizing and Seeding and Subsection 323 – Sodding, respectively.

The CONSTRUCTION SUBCONTRACTOR shall remove all tools, equipment, excess materials, debris, etc. from the vicinity of the work. The CONSTRUCTION SUBCONTRACTOR shall be responsible for general care of the backfill material and sod until the work is approved by ATLANTIC RICHFIELD COMPANY and the CONSTRUCTION SUBCONTRACTOR departs the site.

END OF SUBSECTION 202

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SUBSECTION 203.00: PROVIDING AND/OR STOCKPILING BACKFILL AND COVER MATERIALS

203.01 GENERAL

A. DESCRIPTION: This work shall consist of furnishing, producing, and hauling backfill/cover soil materials including any specified additives in accordance with these Technical Specifications. Areas on site for stockpiling backfill material may be utilized, upon approval of the Agencies and the DESIGN ENGINEER. Backfill materials at the source of supply are subject to the DESIGN ENGINEER'S approval prior to delivery of the materials to the project.

203.02 MATERIALS

Backfill/cover soils materials shall be obtained from ATLANTIC RICHFIELD COMPANY and AGENCY approved borrow sources meeting the following specifications.

COVER SOIL SUITABILITY CRITERIA (TYPE A MATERIAL)

PARAMETERS	CRITERIA
Texture	(Cannot be sand, clay or loamy sand)
Rock Fragments	<45% by volume in the stockpile, 6-inch maximum rock diameter
Saturation Percentage	>25% and <85%
pH	>6.5 and <8.5 standard units
Electrical Conductivity	<4,000 umhos/cm with standard seed mix <6,000 umhos/cm for salt tolerant
Sodium Adsorption Ratio	<12 for root zone materials <20 for general fill
Total Elemental Concentration	
Arsenic	<100 mg/kg and approach 30 mg/kg
Cadmium	<4 mg/kg
Copper	<100 mg/kg
Lead	<100 mg/kg
Zinc	<250 mg/kg
Organic Matter	Minimum 1.5% (existing or added as determined by Walkley Black)

umhos/cm = micromhos per centimeter
mg/kg = milligrams per kilogram

Soils from approved sources shall be installed in all yard/lawn areas specified to be covered with sod or seed as well as in all flower and vegetable garden areas. Soils from the Type B Soil stockpile shall be installed and compacted in earthen driveway, walkway, paddock and rock

garden areas beneath specified aggregates or decorative materials. Stumps, roots, rubbish, vegetation, frozen lumps, or other unsuitable materials will not be accepted. Excavated areas (yard/lawn areas, gardens, earthen driveways, and rock gardens) shall be backfilled with appropriate combinations of borrow soil materials and/or aggregates as indicated on the Drawings.

Acceptable depth tolerance for backfill materials and depth of soil cover (where specified) shall be the specified depth (6, 12, 18, or 24 inches) +0.1 foot or -0.0 foot, measured from the datum described in Subsection 202.01 of these Technical Specifications. Excavation and cover depths will be verified, in the field, by ATLANTIC RICHFIELD COMPANY to assure that the specified tolerance limits are satisfied.

The CONSTRUCTION SUBCONTRACTOR shall provide all testing required, at no cost to the LANDOWNER, for approval of any materials source (other than the approved source) prior to delivery of the materials to the site. Such testing shall be done by an approved testing laboratory. At a minimum, arsenic analysis, gradation analysis and moisture-density relationships will be required for each proposed source. Additionally, soil texture shall be determined using the American Society of Agronomy Monograph No. 9 Method. Such tests shall be completed at the CONSTRUCTION SUBCONTRACTOR'S expense.

203.03 CONSTRUCTION REQUIREMENTS

The CONSTRUCTION SUBCONTRACTOR shall be responsible for obtaining all backfill materials from the stockpiles or source areas and hauling to the specified excavated areas. Backfilling excavated areas shall be completed in a manner to satisfy the cross-sections shown on the Standard Drawings (RAWP/FDR Appendix G).

Any temporary soil stockpile areas, proposed by the CONSTRUCTION SUBCONTRACTOR, shall be cleared of weeds, roots, stumps, rocks and other contaminating matter. The cleared matter shall be disposed of in accordance with Subsection 201 – Clearing and Grubbing, or as otherwise approved by the DESIGN ENGINEER. Any soil stockpile sites shall occupy a minimum area. Equipment or methods that cause segregation, degradation or contamination of the material shall not be used when delivering materials from the borrow source or storage area.

END OF SUBSECTION 203

SUBSECTION 206.00: HAUL

206.01 GENERAL

A. DESCRIPTION: This work shall consist of loading and hauling material excavated or removed from its original location and transporting it to its final specified location as stated in each Individual Site Work Plan (Appendix E). The work shall include dumping or unloading hauled material in a location that will facilitate placement as specified under other Subsections of these Technical Specifications, watering for dust control, and the installation and removal of temporary facilities such as fences. The work shall also include all signing and traffic control, including flagmen, if necessary. This work also applies to hauling of soil, aggregates, other miscellaneous excavated materials, and construction materials, where necessary.

206.02 MATERIALS

A. Materials for this item are covered under Construction Requirements, below.

206.03 CONSTRUCTION REQUIREMENTS

A. HAUL: All materials to be hauled shall be removed from their original location and placed in trucks or other suitable equipment capable of transporting the material without spillage. Haul routes shall be determined by the CONSTRUCTION SUBCONTRACTOR. During transport, soil materials shall be wetted, as necessary, to prevent airborne emissions.

END OF SUBSECTION 206

SUBSECTION 220.00: RESIDENTIAL SOIL DISPOSAL

220.01 GENERAL

A. DESCRIPTION: This work shall consist of loading, hauling, dumping, stockpiling, and disposing of the soils excavated from the residential sites at the designated disposal area. The work shall also include dust control and cleanup of any spillage.

B. EXCAVATED SOIL STOCKPILES: The CONSTRUCTION SUBCONTRACTOR shall strive to assure that any temporary stockpiles of excavated contaminated soils are not left on residential property overnight. In the event that contaminated soil stockpile(s) are left overnight, the CONSTRUCTION SUBCONTRACTOR shall cover the entire stockpile with a tarpaulin or other sheeting that is adequately secured with stakes or ballast (e.g., sandbags, clean soil, etc.) to eliminate displacement from wind, pets, children, etc.

220.02 MATERIALS

Materials for this item are covered under Construction Requirements, below.

220.03 CONSTRUCTION REQUIREMENTS

A. HAULING and STOCKPILING: Residential soils shall be hauled from the excavation areas and dumped in locations specified on Figure 1 of the RAWP/FDR or by the DESIGN ENGINEER. During transport, excavated residential soils shall be covered or adequately wetted in the haul vehicle to prevent airborne emissions. Traffic control shall be in accordance with Subsection 550 – Traffic Control. Streets, sidewalks, alleys, etc., shall be washed by the CONSTRUCTION SUBCONTRACTOR if soil is tracked due to spillage, etc.

Equipment that is used for hauling contaminated materials will be subject to proper decontamination procedures prior to using the same equipment for backhauling clean soil. The ATLANTIC RICHFIELD COMPANY or SUPERVISING CONTRACTOR representative shall inspect and approve decontaminated equipment prior to using equipment for backhauling clean soil. The CONSTRUCTION SUBCONTRACTOR may use separate/dedicated equipment for hauling contaminated materials vs. hauling clean soil to reduce the frequency of equipment decontamination.

B. DISPOSAL: Soils that are removed from residential yards shall be hauled and dumped at the Agency approved consolidation area, as shown on Figure 1 of the CSOU1 RAWP/FDR. The soil shall be dumped in stockpiles or windrows, spread, and consolidated within the designated area.

END OF SUBSECTION 220

SUBSECTION 222.00: NON-RESIDENTIAL EXCAVATION

222.01 GENERAL

A. DESCRIPTION: All non-residential excavation work shall be in accordance with these Technical Specifications and in reasonably close conformity with the lines, grades, and depths shown on the Standard Drawings (RAWP/FDR Appendix G) or as established in the field by the DESIGN ENGINEER.

Excavation: This work shall consist of performing all operations necessary to excavate, grade, and satisfactorily remove for disposal all soil materials encountered during excavation of the non-residential areas designated on the Individual Site Work Plans (RAWP/FDR Appendix E).

The maximum excavation depth shall not exceed 12 inches for any non-residential areas. Acceptable tolerance for depth of all excavations shall be the specified depth (6 or 12 inches) +0.1 foot or -0.0 foot.

The CONSTRUCTION SUBCONTRACTOR shall strive to assure that any temporary stockpiles of excavated contaminated soils are not left on the property overnight. In the event that contaminated soil stockpile(s) are left overnight, the CONSTRUCTION SUBCONTRACTOR shall not locate the stockpile on uncontaminated ground and shall cover the entire stockpile with a tarpaulin or other sheeting that is adequately secured with stakes or ballast (e.g., sandbags, clean soil, etc.) to mitigate displacement by wind.

If any potential historical, cultural, or archeological objects or features are encountered during non-residential excavation activities, the SUPERVISING CONTRACTOR and the CONSTRUCTION SUBCONTRACTOR will comply with the following procedures:

1. Work will be stopped, and ATLANTIC RICHFIELD COMPANY construction oversight personnel and the EPA FIELD OVERSIGHT REPRESENTATIVE will be immediately contacted by CONSTRUCTION SUBCONTRACTOR and/or SUPERVISING CONTRACTOR field personnel.

2. The SUPERVISING CONTRACTOR will immediately contact ATLANTIC RICHFIELD COMPANY'S PROJECT COORDINATOR and EPA'S PROJECT COORDINATOR. ATLANTIC RICHFIELD COMPANY'S PROJECT COORDINATOR shall contact the proper authorities for an assessment of the significance of the objects or features.

3. Remedial Action work activities in the immediate vicinity of the identified historical, cultural, or archeological objects or features will be halted. Construction elsewhere on the project may continue.

4. The historical, cultural, or archeological objects or features will be further evaluated by a qualified historian or archaeologist associated with the State Historic Preservation Office to determine if they meet historic preservation requirements. Following the evaluation, EPA'S PROJECT COORDINATOR will be

involved in the process of determining the path forward. Remedial Action work will not resume until the historical, cultural, or archeological objects or features are fully evaluated, and the archaeologist/historian gives clearance to resume work in the area. If clearance is not granted due to the finding of historical, cultural, or archeological resources, items, or objects, the area will be preserved, and Remedial Action will not resume until the discovery is adequately addressed.

Backfill/Cover: This work shall consist of all operations necessary to replace or grade and complete surface preparations in the areas excavated during non-residential soils removal, as designated on the Individual Site Work Plans (RAWP/FDR Appendix E). In some cases, non-residential properties may not require replacement of removed soils and instead excavation areas will be graded to blend in with existing contours before native seed is planted.

222.02 MATERIALS

A. REPLACEMENT SOILS MATERIALS: Suitable materials for non-residential soils replacement, if needed, shall be taken from ATLANTIC RICHFIELD COMPANY and AGENCY approved sources. For revegetation areas, the material shall meet the following specifications.

COVER SOIL SUITABILITY CRITERIA (TYPE A MATERIAL)

PARAMETERS	CRITERIA
Texture	(Cannot be sand, clay or loamy sand)
Rock Fragments	<45% by volume, 6-inch maximum rock diameter
Saturation Percentage	>25% and <85%
pH	>6.5 and <8.5 standard units
Electrical Conductivity	<4,000 umhos/cm with standard seed mix <6,000 umhos/cm for salt tolerant
Sodium Adsorption Ratio	<12 for root zone materials <20 for general fill
Total Elemental Concentration Arsenic Cadmium Copper Lead Zinc	 <30 mg/kg <4 mg/kg <250 mg/kg <100 mg/kg <250 mg/kg
Organic Matter	Minimum 1.5% (existing or added as determined by Walkley Black)

umhos/cm = micromhos per centimeter
mg/kg = milligrams per kilogram

Soils from approved sources shall be installed in areas specified to be covered, if any. Stumps, roots, rubbish, vegetation, frozen lumps, or other unsuitable materials will not be accepted as backfill/cover soil.

B. EXCAVATED SOIL MATERIAL: Soils that are removed from non-residential properties shall be hauled and disposed at the Agency approved consolidation area, shown on Figure 1 of the RAWP/FDR. Disposal shall consist of dumping only; the disposed materials are not subject to spreading or compaction specifications.

C. DEBRIS: Any wood, concrete, bricks, scrap iron, or any other debris encountered during Remedial Action work shall be removed and disposed of in designated consolidation areas as directed by the SUPERVISING CONTRACTOR. The CONSTRUCTION CONTRACTOR shall be responsible for proper removal and disposal of any debris encountered during Remedial Action work.

222.03 CONSTRUCTION REQUIREMENTS

A. GENERAL: All excavation shall be considered unclassified and shall consist of the removal and disposal of any and all material encountered regardless of type or nature obtained within the construction limits designated on the Individual Site Work Plans (RAWP/FDR Appendix E).

All materials removed from excavation areas shall be hauled and disposed at a designated consolidation area, as described above in Subsection 222.02.B.

B. SITE PREPARATION: All areas scheduled for excavation shall be photographed by the DESIGN ENGINEER or other representative designated by ATLANTIC RICHFIELD COMPANY to document initial site conditions. The CONSTRUCTION SUBCONTRACTOR shall not begin excavation work until receiving written verification from the DESIGN ENGINEER that a property has been adequately photographed.

Prior to excavation, all buried utilities shall be located and marked, fences removed (as necessary), tree and shrub protection provided, and construction staking completed.

C. LINE AND GRADE CONTROL: Excavation shall be performed to the lines, grades and elevations indicated on the Standard Drawings (RAWP/FDR Appendix G), the Individual Site Work Plans (RAWP/FDR Appendix E) and/or as directed by ATLANTIC RICHFIELD COMPANY. ATLANTIC RICHFIELD COMPANY reserves the right to make minor adjustments or revisions in lines or grades, if determined to be necessary as the work progresses to obtain satisfactory construction. The CONSTRUCTION CONTRACTOR is responsible for field staking the earthwork. No excavation shall be started until the staking is complete and approved. Should the CONSTRUCTION CONTRACTOR excavate below the designated limits through fault or negligence, the CONSTRUCTION CONTRACTOR shall replace such unauthorized over excavation with approved materials in an approved manner at his own expense.

All occupation markers (nails and flagging) shall be maintained, to the extent practical, for reference throughout the construction period.

Acceptable tolerance for depth of all excavations shall be the specified depth (6 or 12 inches) +0.1 foot or -0.0 foot, measured from the datum described in Subsection 222.01, above. Excavation depths will be verified in the field by ATLANTIC RICHFIELD COMPANY to assure that the specified limits are satisfied.

D. EXCAVATION: The CONSTRUCTION SUBCONTRACTOR shall utilize excavating equipment appropriate for the work being performed. The method of excavation shall be the CONSTRUCTION SUBCONTRACTOR'S responsibility. All methods and equipment used shall result in finished work meeting the construction tolerances specified. No work shall be performed beyond the construction limits without prior written approval from the LANDOWNER and the DESIGN ENGINEER.

E. SOIL REPLACEMENT: Backfill/Cover Soil, if needed, shall be obtained from ATLANTIC RICHFIELD COMPANY and AGENCY approved sources meeting project specifications. Any replacement soil materials temporarily stockpiled by the CONSTRUCTION SUBCONTRACTOR shall be re-handled and placed without additional compensation. The sites of all temporary stockpiles and areas adjacent thereto which have been disturbed by the CONSTRUCTION SUBCONTRACTOR shall be graded, if required, and returned to an acceptable condition.

   Placing Backfill/Cover Soil: After excavation and depth verification has been completed, the replacement soils shall be deposited and evenly placed on the subgrade. Replacement backfill shall not be applied when the ground or replacement soil is frozen, excessively wet, or otherwise in a condition detrimental to the work. Any large, stiff clods and hard lumps of soil shall be broken with a pulverizer or other effective means, and all stones or rocks (2 inches or greater in diameter), roots, litter or foreign material shall be raked up and disposed of by the CONSTRUCTION SUBCONTRACTOR.

   Acceptable depth tolerance for backfill/cover soil materials shall be the specified depth (6 or 12 inches) +0.1 foot or -0.0 foot, measured after grading and compaction.

F. GRADING: Following backfill of the excavations with replacement soil or following excavation of the areas with no backfill, the excavated soil or backfill soil shall be brought to the lines, grades, and cross-sections shown on the Standard Drawings (RAWP/FDR Appendix G) so that the final soil surface matches the surrounding ground surface elevation and topography. Where specific grades have not been established, the areas shall be smooth graded and the surface left at the prescribed grades in an even and properly compacted condition to prevent, insofar as practical, the formation of low areas or pockets where water will stand and to facilitate positive drainage away from buildings.

G. SEEDING: After fine grading work is accepted, seeding preparations can be completed in accordance with the Technical Specifications in Subsection 320 – Fertilizing and Seeding.

H. DRAINAGE AND SURFACE WATER CONTROL: During earthwork operations, the grade shall be maintained in such a condition that it will be well drained at all times. If necessary, temporary drains or diversion ditches shall be installed to intercept or divert surface water that could affect the work. Final surfaces of all work shall be graded to

drain as shown on the Standard Drawings (RAWP/FDR Appendix G) or as approved by ATLANTIC RICHFIELD COMPANY. Care shall be taken to prevent the entrance of the material into drainage structures, other waterway, or storm sewers during the construction period. Temporary construction best management practices (BMPs) will be implemented as needed.

I. CLEANUP: The CONSTRUCTION SUBCONTRACTOR shall remove all tools, equipment, excess materials, debris, etc. from the vicinity of the work. The CONSTRUCTION SUBCONTRACTOR shall be responsible for general care of the backfill material until the work is approved by ATLANTIC RICHFIELD COMPANY and the CONSTRUCTION SUBCONTRACTOR departs the site.

END OF SUBSECTION 222

Woodard & Curran

SUBSECTION 290.00: TILLAGE

290.01 GENERAL

A. DESCRIPTION: This specification addresses areas to be tilled for the following:

1. Dilution of arsenic and/or lead in soils; and
2. Incorporation of lime or other amendment if needed.

Information pertaining to amendment is only relevant in areas where amendment will be added.

The work described in this section includes materials, methods, equipment and procedures for tillage and amendment, as appropriate, in designated areas within the project area.

B. SUBMITTALS – APPLICABLE TO AREAS REQUIRING AMENDMENTS: ATLANTIC RICHFIELD COMPANY will provide quality test data for the soil amendment materials to the CONSTRUCTION SUBCONTRACTOR prior to application and incorporation.

C. ENVIRONMENTAL CONDITIONS – APPLICABLE TO AREAS REQUIRING AMENDMENT: Soil amendment materials shall not be applied in adverse weather conditions; when winds are sufficiently strong enough (greater than 10 miles per hour [mph]) to blow the amendment off the ground surface, or as determined by the SUPERVISING CONTRACTOR.

290.02 MATERIALS

A. LIME AMENDMENT – APPLICABLE TO AREAS REQUIRING LIME AMENDMENT: Lime for potential lime application will be obtained from stockpiled lime sources provided by ATLANTIC RICHFIELD COMPANY. Soil amendment application is identified in designated areas as shown on the Individual Site Work Plans (RAWP/FDR Appendix E).

1. Lime: Material shall pass a No. 60 sieve and be comprised of $CaCO_3$ or other suitable material, as approved by the OVERSIGHT CONTRACTOR.

B. EQUIPMENT: Standard conventional or non-conventional equipment shall perform spreading and, as necessary, lime incorporation in accordance with the requirements of these Technical Specifications.

290.03 CONSTRUCTION REQUIREMENTS

A. SOURCE OF MATERIAL – APPLICABLE TO AREAS REQUIRING LIME AMENDMENT: Suitable lime ($CaCO_3$) material is sugar beet waste from Western Sugar Cooperative, P3020 State Avenue, Billings, MT 59101. Alternative sources shall be approved by the SUPERVISING CONTRACTOR.

Other approved amendment materials may be used as directed by ATLANTIC RICHFIELD COMPANY. Unless otherwise directed, all materials for soil amendment shall be provided by ATLANTIC RICHFIELD COMPANY.

Soil amendment material shall be protected to the extent possible from precipitation, wind, and surface water run-on. The CONSTRUCTION SUBCONTRACTOR shall supply an Operations Plan for handling and protection of soil amendment material prior to commencement of amendment activities.

Soil lime amendment application rates (LR) shall be corrected for lime quality (e.g., % CCE, % moisture, etc.) and rock content of the soil by using the following equations:

1. Rock Content Factor: (1 – (Minimum % rock content / 100)). Minimum % rock content not to exceed 50%;
2. CCE Factor: (1 / (Average %CCE / 100));
3. Passing 60-Mesh Factor: (1 / (Average % passing 60-mesh / 100)); and
4. Moisture Content Factor: (1 / (1 – Average % moisture content / 100).

The adjusted application lime rate (ALR)is then calculated as follows:

ALR (tons/6-inch-acre slice) = LR x Rock Content Factor x CCE Factor x Passing 60-Mesh Factor x Moisture Content Factor

B. EXAMINATION: Tilling shall not be performed over frozen subgrade.

C. PREPARATION: Dead vegetation that could impede tilling operations (i.e., stumps) shall be cleared from all areas to be tilled. If substantial erosion rills and gullies are identified within the tillage area, the erosion rills and gullies shall be graded to facilitate amendment application and tillage. Areas requiring amendment application shall be tilled once prior to amendment application to allow for the uniform mixing of amendment unless otherwise approved. The CONSTRUCTION SUBCONTRACTOR shall coordinate requirements with the site grading operations, as delineated on the Individual Site Work Plans and as defined by these Technical Specifications. Application of soil amendment shall commence only after the designated area has been approved by the OVERSIGHT CONTRACTOR.

D. SOIL AMENDMENT APPLICATION – APPLICABLE TO AREAS REQUIRING AMENDMENT: The following tasks shall include hauling and stockpiling soil amendment material; and rehandling, spreading, and incorporating soil amendment material in accordance with the Individual Site Work Plans and Technical Specifications.

1. Soil Amendment Application: Soil amendment material shall be spread uniformly and incorporated at the specified rates (tons per 6-inch acre slice) as indicated on the Individual Site Work Plans.
    a. The CONSTRUCTION CONTRACTOR shall demonstrate the amendment spreader has been calibrated to achieve the desired amendment application rate as specified in the Construction Quality Assurance Plan/Construction Quality Control Plan (CQAP/CQCP; RAWP/FDR Appendix D) and in Section A of these Specifications. If necessary, multiple application passes may be necessary if amendment rates exceed the maximum application rate of the spreader.

b. The CONSTRUCTION CONTRACTOR shall apply the soil amendment material in a uniform layer across the soil surface using a single or multiple application passes to achieve the required/corrected application rate. Soil amendment material shall be incorporated as soon as possible after it is spread, and in no case later than the same day it is spread.

c. If winds exceed 10 mph or are sufficiently strong to move the soil amendment material off the project area during spreading, application shall cease until winds subside sufficiently to continue the work.

d. Amendment shall not be applied in areas of standing water. These areas shall be dewatered and inspected by the OVERSIGHT CONTRACTOR prior to performing soil amendment application in these areas.

e. Amendments shall not be applied on frozen ground.

f. Additional amendment may be required in areas that fail treatment verification testing. In this event, the amount of additional amendment that must be re-applied to the area will be provided by ATLANTIC RICHFIELD COMPANY.

The application rate for areas requiring amendment treatment (if any), tillage to the 6 inch depth and tillage to the 12 inch depth remedies have been calculated and are shown/specified on the Individual Site Work Plans (RAWP/FDR Appendix E). Amendment application rates for areas that are not shown/specified on the Individual Site Work Plans shall be established by ATLANTIC RICHFIELD COMPANY, by sampling the areas prior to application and calculating the amendment requirements.

E. TILLAGE: Tillage of soils and, as appropriate, incorporation of soil amendment material, shall be conducted in accordance with the Individual Site Work Plans (RAWP/FDR Appendix E) and these Technical Specifications. Tilling of soils shall be conducted in areas as specified. In areas requiring lime amendment, amendment will be applied after the first tillage pass unless specified otherwise. Tilling will be performed in the same manner using the procedures identified below regardless of whether lime amendment is added or not.

1. Tillage of Soils to the 6 inch Depth: Tillage of surface soils to a 6 inch depth shall be accomplished by use of agricultural implements or equivalent equipment. This remedy is applicable to dilution of thin (i.e., 0 to 2 inch) contamination or tillage of intact soil A horizons. Tilling shall be performed using a minimum of three (3) passes (1 pass before amendment application and 2 passes after, unless otherwise directed by the OVERSIGHT CONTRACTOR). Successive passes shall be performed by crossing the previous pass at a minimum angle of 30 degrees up to a maximum of 90 degrees. The final pass shall be on the contour to reduce surface erosion. Project areas receiving tillage to the 6 inch depth shall be designated as such on the Individual Site Work Plans.

2. Tillage of Soils to the 12 inch Depth: Tillage of surface soils to a 12-inch depth shall be accomplished by use of standard and modified agricultural implements or equivalent equipment. This remedy is applicable to moderate depths of soil

contamination to achieve remedial requirements for human health and/or vegetation establishment. Tilling shall be performed using a minimum of three (3) passes (1 pass before amendment application and 2 passes after, unless otherwise directed by the OVERSIGHT CONTRACTOR). Successive passes shall be performed by crossing the previous pass at a minimum angle of 30 degrees up to a maximum of 90 degrees. The final pass shall be on the contour to reduce surface erosion. Project areas receiving tillage to the 12 inch depth shall be designated as such on the Individual Site Work Plans.

3. Tillage of Soils to the 18 inch Depth: Tillage of surface soils to a 18-inch depth shall be accomplished by use of agricultural implements or equivalent equipment. This remedy is applicable to moderate depths of soil contamination to achieve remedial requirements for human health and/or vegetation establishment. Tilling shall be performed using a minimum of three (3) passes (1 pass prior to amendment application and 2 passes following, unless otherwise directed by the OVERSIGHT CONTRACTOR.). Successive passes shall be performed by crossing the previous pass at a minimum angle of 30 degrees up to a maximum of 90 degrees. The final pass shall be on the contour to reduce surface erosion. Project designated areas receiving tillage to the 18 inch depth are shown on the Individual Site Work Plans.

Tillage in areas requiring amendment shall be performed immediately after application and shall be completed the same day the amendment material is spread.

Surplus soil amendment material shall be removed from the site as per the direction of the SUPERVISING CONTRACTOR unless otherwise approved.

F. FIELD QUALITY CONTROL – APPLICABLE TO AREAS REQUIRING LIME AMENDMENT

Assessment of actual application rates will be conducted by the SUPERVISING CONTRACTOR.

All designated areas receiving soil amendment (lime) as shown on the Individual Site Work Plans (RAWP/FDR Appendix E) shall have quality assurance/quality control (QA/QC) checks performed to ensure soil amendment application is performed to the required depth as verified through comparison of pre- and post-tillage survey information.

Mixing and amendment application success to the required depth within lime treated areas shall be verified through visual confirmation and the use of a field pH meter to determine whether additional lime passes and/or additional lime amendment are required to achieve the pH≥6.5 criteria. Via soil test pits, the amended soil profile shall be visually assessed for evidence of inadequate mixing, such as large clumps of lime material or a continuous horizon of lime material stratified in the soil profile. If visual inspection yields adequate mixing, a soil sample shall be collected across the amended profile (i.e., 0-6 or 0-12 inches) shall be collected for pH determination using a 1:1 soil:water (mass basis) solution (ASA and SSSA 1982, Method 12-2.6.5). Testing of areas where lime treatment is implemented and in tillage areas where lime is not added to the soil profile is not required. Care must be taken to obtain equal amounts of soil over the entire tilled and amended profile. Key steps include attaining equal parts (mass or volume basis) water and 2 millimeter (mm) minus soil particles, allowing a 10-minute

equilibration period after stirring, and resuspension of the sediments immediately followed by the pH measurement with the electrode.

1. Test pits will be implemented at a 1 per 5-acre frequency. If the visual assessment of mixing fails or if pH test results reveal a pH<6.5 is present in a composite sample of the tilled interval, additional amendment application and/or tilling shall be performed. Laboratory pH testing is not required.
2. If a test pit fails to have a pH≥6.5, the size of the failed area may be estimated with additional pits. If the failure represents more than 1 acre within the 5-acre test area, a remedy must be instituted to attain a pH≥6.5.

G. FIELD QUALITY CONTROL – APPLICABLE TO AREAS REQUIRING TILLAGE VERIFICATION

A resource grade Global Positioning System (GPS) will be used to determine the depth of tillage, defined as the distance from original ground (untilled at a surveyed location) to the bottom of the tilled interval at the same surveyed location. Prior to tillage, QA test pit locations will be identified by the SUPERVISING CONTRACTOR. A resource grade GPS will be used to record the test pit location and existing ground elevation measurement within areas subject to remediation by tillage on a 1 per 5-acre frequency. Following the tillage pass or passes, the survey location is reestablished, a test pit is excavated at the survey location, and the actual penetration elevation pf the tillage equipment is recorded. The actual tillage depth is determined by subtracting the existing ground measurement from the tillage measurement. This depth shall consistently meet the minimum tillage depth specification within the tolerance of the resource grade GPS.

END OF SUBSECTION 290

SUBSECTION 310.00: FENCES

310.01 GENERAL

A. DESCRIPTION: To the extent practical, the CONSTRUCTION SUBCONTRACTOR shall not disturb existing fences. When fence removal is warranted, the work shall consist of temporarily removing (where necessary, to provide access to the work area) and either resetting or constructing new fences. The types of fences to be removed and replaced will vary. Any fences that are removed by the CONSTRUCTION SUBCONTRACTOR to gain access to the work area shall be replaced using salvaged materials from the original fence to the extent practical, or replaced using new materials that are the same type as those removed. All replaced fences shall be oriented along the original alignment. Unless otherwise directed by the LANDOWNER and ATLANTIC RICHFIELD COMPANY.

Existing fences in poor condition that are removed to gain access to the work area shall be replaced using salvaged materials from the original fence to the extent practical. In any case, the reconstructed fence shall incorporate new vertical posts, rails, and/or fabric, as necessary, to result in a structurally sound final product of comparable or better quality than the original fence.

Removal of existing fences to gain access to the work area shall be considered incidental, no additional payment will be allowed for fence removal.

Compensation for reconstruction of fences will be as described in the Scope of Work.

310.02 MATERIALS

Any new fencing materials shall be the same type as those temporarily removed, or as otherwise approved by the LANDOWNER and ATLANTIC RICHFIELD COMPANY. Any salvaged fencing materials shall be stored and maintained in good quality throughout re-installation. Any fencing materials designated to be salvaged, that are damaged as a result of the CONSTRUCTION SUBCONTRACTOR'S activities, shall be replaced at the CONSTRUCTION SUBCONTRACTOR'S expense.

310.03 CONSTRUCTION REQUIREMENTS

A. CLEARING AND LEVELING FENCE LINES: Irregularities in the ground line upon which the fence is to be constructed shall be leveled to the satisfaction of the DESIGN ENGINEER. All trees, shrubs, brush, rock, and other obstacles that interfere with proper construction of the fence shall be removed by the CONSTRUCTION SUBCONTRACTOR and disposed of in accordance with Subsection 201 – Clearing and Grubbing. In performing the operation of clearing and leveling, a minimum amount of terrain shall be disturbed.

B. TEMPORARY FENCE CONSTRUCTION: Erect temporary Construction Fence along removed fence alignments, and open excavations, as necessary, to keep pets, etc. enclosed in the residential yard area and to keep pedestrian and vehicular traffic out

of the work area. Temporary fences shall remain in place only until the work in a specific area is completed. Replace the salvaged fence materials or construct new fence as soon as practical after the necessary work is completed. Use an adequate number of braces, panels, deadmen, and other accessories, as necessary, to maintain the temporary fence in a functional manner.

Undamaged materials used in the temporary fence that meets specifications for the permanent fence may be used as the permanent fence. Materials not used in permanent fencing shall remain the CONSTRUCTION SUBCONTRACTOR'S property. Remove all temporary fences at the CONSTRUCTION SUBCONTRACTOR'S expense.

Installation of temporary construction fence along removed fence alignments and open excavations shall be considered incidental, no additional payment will be allowed.

C. REMOVE AND RESET FENCE: When removing and resetting a fence, furnish all new required materials, over and above the usable salvaged fence, that are necessary to construct the fence. Use, to the extent practical, materials of the same type and quality as those of the old fence that meet the Landowner's and ATLANTIC RICHFIELD COMPANY'S specifications.

Replace rotten, damaged, or broken posts and unusable panels with new materials. Do not use any galvanized materials with abraded or broken coatings. Carefully handle and store, at designated locations, all removed fence materials specified to be salvaged. Compensation for reconstruction of fences will be as described in the Scope of Work.

END OF SUBSECTION 310

SUBSECTION 315.00: CHAIN LINK FENCES AND GATES

315.01 GENERAL

A. DESCRIPTION: This work shall consist of constructing new 4-foot-tall chain link fences and gates along the same alignment as existing fences. New chain link fences and gates shall only be constructed when agreed to by the LANDOWNER and ATLANTIC RICHFIELD COMPANY when an existing fence is in poor condition, and it is not practical to be replaced using salvaged materials.

Removal of existing fences to gain access to the work area shall be considered incidental, no additional payment will be allowed for fence removal.

Compensation for construction of chain link fences and gates will be as described in the Scope of Work.

B. SUBMITTALS:

1. Submit in accordance with Section 130.00.

   Submit sufficient information to show conformance with the requirements of this specification and the Individual Site Work Plans (RAWP/FDR Appendix E). This information shall include, but not be limited to, the following:

   i. Dimensions and weights of all fence posts, gate posts, rails, truss rods, gate frame.

   ii. Dimensional cross sections of posts and rails.

   iii. Typical arrangement drawings showing fence and gate post lengths and post spacing.

   iv. Materials and coatings.

   v. Chain link fabric height and weight.

   vi. Applicable ASTM standards.

315.02 MATERIALS

A. CHAIN LINK FENCING: Chain link fence fabric shall be 4 feet high as indicated on the Standard Drawings (RAWP/FDR Appendix G). Use 11-gauge wire woven in a 2-inch mesh with an aluminum coating conforming to ASTM A491, or a 2.0 ounce per square foot galvanized coating conforming to ASTM A392, Class 2. Twist and barb top and bottom selvages. Use 9-gauge aluminum or 11-gauge galvanized steel tie wires at not more than 24-inch spacing.

B. LINE POSTS:

1. Use SS40 or standard weight galvanized steel pipe as follows:

   i. 4-foot Fence Height: 1.90 inches O.D. (2.72 pounds/foot).

2. Concrete foundations for fence posts shall be as detailed on the Standard Drawings (Appendix G) and as specified in Subsection 830 – Structural Concrete.

C. TOP AND BRACE RAIL:

1. Use SS40 or standard weight (2.27 pounds/foot) galvanized steel pipe 1.66 inches O.D. with a 10-foot span vertical bending strength of 202 pounds. Provide 6-inch-long top rail couplings spaced at not more than 21 feet. Attach fabric to top rail with 9 gauge aluminum or 11 gauge steel tie wires at intervals not exceeding 24 inches.

D. TERMINAL, CORNER, AND GATE POSTS:

1. For terminal and corner posts use SS40 or standard weight galvanized steel pipe as follows:

    i. 4-foot Fence Height: 2.375 inches O.D. (3.65 pounds/foot).

2. Gate posts for 4-foot fence heights:

    i. For gates less than 6-feet wide use SS40 or standard weight galvanized steel pipe 2.875 inches O.D.

    ii. For gates 6 to 13 feet wide use SS40 standard weight galvanized steel pipe 4.00 inches O.D.

3. Concrete foundations for fence posts shall be as detailed on the Standard Drawings (Appendix G) and as specified in Subsection 830 – Structural Concrete.

E. MISCELLANEOUS:

1. Tension wire: 7-gauge galvanized steel coiled spring tension wire.

    Tension bars: ¼-inch-thick steel, ¾-inch wide.

    Truss rods: ⅜-inch diameter rods with drop forged turnbuckles or other approved type of adjustment.

F. GATES:

1. General: Provide chain link gates as shown on the Standard Drawings (Appendix G). Gate shall be same height as adjacent fence. Gate shall be hinged to swing through 180 degrees from closed to open. Provide complete with latches, locks, stops, keepers, hinges, fabric, and braces. Keepers shall be manufacturer's standard, located on gate or ground.

    Frame: Construct of round zinc-coated steel members conforming to Federal Specification RR-F-191/2A. Provide intermediate members and diagonal truss rods or tubular members as necessary to provide rigid construction, free from sag or twist. Gates shall have a 1.66-inch O.D. horizontal interior bracing member. Joints between tubular members shall be made by welding or by means of heavy fittings. Connections shall be rigid and weathertight. Truss rods shall be 3/8-inch minimum diameter. The padlock shall be accessible from both sides of the gate.

    Fabric: Conform to the requirements for chain link fabric described in paragraph 315.02 A. herein. Attach to gate frame ends by use of bolt hooks, stretcher bar bands and stretcher bars, or by other methods standard with the manufacturer, except that welding the fabric to the gate frame will not be permitted. The top and bottom of fabric

shall be attached with specified wire ties at intervals not exceeding 14 inches on centers.

G. GALVANIZING:

1. Hot-dip galvanize all fittings and hardware per ASTM A 153. Hot-dip galvanize all frames, gates, and fabrications with a Class 2 (2.0 ounce per square foot) coating, per ASTM A 123. Galvanizing shall occur after fabrication.

315.03 CONSTRUCTION REQUIREMENTS

A. INSTALLATION OF CHAIN LINK FENCING:

General: Install fence as shown on the Standard Drawings (Appendix G) and in accordance with the manufacturer's recommendations. Chain link fabric shall be stretched with mechanical equipment.

The area to be fenced shall be uniformly and smoothly finish graded before beginning the fence installation. Except where crossing a drainage ditch, the finish grade shall not deviate from a straight line by more than 3 inches.

All posts shall be embedded into the ground in concrete footings as shown on the Standard Drawings (Appendix G). Allow concrete footings to cure for seven days before installing fence.

Fence fabric shall be continuous around the perimeter of the fenced area as shown on the Standard Drawings (Appendix G). Fence fabric shall be securely fastened to the outward side of the posts with the lower edge at the ground level. Fencing and gates shall be properly braced to prevent sagging.

Provide post braces for each gate, corner, pull and end post consisting of a brace rail and a diagonal truss rod with turnbuckle.

Post caps shall consist of ornamental caps. The cap shall be provided with a hole suitable for the through passage of the top rail.

Top rails shall be in lengths not less than 18 feet, and shall be fitted with couplings or swedged for connecting the lengths into a continuous run. Means shall be provided for attaching the top rail to each gate, corner, pull and end post.

Install gates in accordance with manufacturer's instructions. Demonstrate that all gates swing smoothly without binding or dragging, that all gates are lockable, and that all gate hardware operates properly.

Where crossing a drainage ditch, a line post shall be provided at the top of slope on each side of the ditch and the fabric shall follow a straight line between the posts. Where ditch crossings are wider than the standard line post spacing, maintain specified line post spacing by installing additional line posts as needed within the ditch section. Line posts within the ditch shall be additional height as needed to maintain straight fabric. Within the ditch, between the line posts, short post sections shall be embedded to a minimum depth of 4 feet at a maximum spacing of 12 inches on center across the ditch. Posts shall be long enough to overlap the fabric by 12 inches, and each post shall be fastened to the fabric by a minimum of 3 tie bands. Install posts within the ditch with care to prevent displacement of ditch lining materials.

END OF SUBSECTION 315

SUBSECTION 320.00: FERTILIZING AND SEEDING

320.01 GENERAL

A. DESCRIPTION: This work shall consist of ground surface preparation; furnishing, applying and incorporating fertilizer into the soil; furnishing and planting seed; tracking; and cleanup. The work includes temporary and permanent seeding.

B. CERTIFICATIONS:

1. Indigenous Seed: Defined by MCA 80-5-101(4):

"Indigenous seeds include the seeds of those plants that are naturally adapted to an area where the intended use is for revegetation of disturbed sites. These species include grasses, forbs, shrubs and legumes."

The CONSTRUCTION SUBCONTRACTOR shall supply the DESIGN ENGINEER with all seed bag tags and a certification from the supplier stating that the seed complies with the Federal Seed Act and the Montana Seed Laws (MCA 80-5-101 through 305).

Fertilizer: Fertilizer shall be delivered in standard size bags from the manufacturer showing weight analysis and manufacturer's name, or in bulk quantities accompanied with written certifications from the manufacturer stating that the fertilizer supplied complies with applicable specifications.

320.02 MATERIALS

A. INDIGENOUS SEED: All seed shall comply with and be labeled in accordance with the Montana Seed Law. MCA 80-5-104(2) states...

"indigenous seeds, as defined in 80-5-101, in amounts of 1 pound or more, whether in package or bulk, must be labeled with the following information"

a. . . . the statement "Labeled only for reclamation purposes;"

b. . . . lot number or other distinguishing mark;

c. . . . the common name, genus, species and subspecies, when applicable, including the name of each kind of seed present in excess of 5%. When two or more kinds of seed are named on the label, the label shall specify the percentage of each. When only one kind of seed is present in excess of 5% and no variety name or type designation is shown, the percentage must apply to seed of the kind named. If the name of the variety is given, the name may be associated with the name of the kind. The percentage in this case may be shown as "pure seed" and must apply only to seed of the variety named;

d. . . . state or county of origin;

e. . . . the approximate percentage of viable seed, together with the date of test. When labeling mixtures, the percentage viability of each kind shall be stated;

f. . . . the approximate percentage by weight of pure seed, meaning the freedom of seed from inert matter and from other seeds;

g. . . . the approximate percentage by weight of sand, dirt, broken seeds, sticks, chaff and other inert matter;

h. . . . the approximate total percentage by weight of other seeds;

i. . . . the name and approximate number of each kind of species of prohibited and restricted noxious weed seeds occurring per pound of seed;

j. . . . the full name and address of the person, firm or corporation selling the seed.

As listed in the Montana Seed Law, seed shall contain no "PROHIBITED" noxious weed seed. The seed shall contain no "RESTRICTED" noxious weed seed in excess of the maximum numbers per pound as specified by MCA 80-5-105 or as specified by the appropriate County Weed Board, whichever is more stringent.

The number of seed allowed per pound, for all other noxious weed seeds shown on the "restricted list" will be zero.

Seed shall be grown in the North American continent above 41 degrees north latitude. Known varieties whose origin is above the 41st parallel but grown below are acceptable. All seed shall be a standard grade adapted to Montana conditions. Seed which has become wet, moldy or otherwise damaged will not be accepted.

Calculations of "pure live seed" may be made on the basis of either a germination test or a tetrazolium test in addition to the purity analysis. Seed shall be applied on a "pure live seed" basis. The quantity of pure "live seed" in a 100 lb. container shall be determined by the formula: 100 multiplied by germination percentage and this product multiplied by the purity percentage (for example, if the seed is 85% pure and test 90% germination, then a 100 lb. container would contain 76.5 pounds (lbs.) of pure "live seed"). For residential lawn areas specified to be seeded instead of application of sod, the seed mix used shall be as follows:

SEED MIX FOR RESIDENTIAL LAWNS – MIX NO. 1

Grass Species	**Lbs. PLS/10,000 square feet[1,2]**
Kentucky Bluegrass	3.6
Perennial Ryegrass	1.5
Creeping Red Fescue	0.9
Total	**6.0**

[1] PLS = Pure Live Seed
[2] Reported rates are for drill seeding; rates shall be doubled for hydraulic seeding and broadcast seeding.

The residential lawn seed mix and rate specified above can be considered a guideline. The CONSTRUCTION SUBCONTRACTOR may propose a different seed mix, as suggested by the seed supplier; however, any proposed seed mix shall be subject to approval by the DESIGN ENGINEER prior to application. For residential lawn areas, the actual application rate shall be determined as follows:

1. Confirm the total specified surface area to be seeded (units of square feet), as indicated on the Individual Site Work Plan.

   Divide the total surface area (units of square feet) by 10,000. This will be the total weight of the seed required for the area involved.

   Use appropriate methods to evenly apply the total weight of seed required throughout the entire area involved.

For non-residential lawn areas specified to be seeded with the Uplands Seed Mix, as indicated on the Individual Site Work Plan, the seed mix used shall be as follows:

NATIVE SEED MIX FOR UPLANDS AREAS – MIX NO. 2

Common Name	Lbs. PLS/acre[1,2]
Basin wildrye	8.0
Mammoth wildrye	5.0
Canada bluegrass	0.5
Intermediate wheatgrass	1.0
Hard sheep fescue	1.0
Streambank wheatgrass	2.0
Birdsfoot trefoil	0.5
Annual Ryegrass	2.0
Total	**20.0**

[1] PLS = Pure Live Seed

[2] Reported rates are for drill seeding; rates shall be doubled for hydraulic seeding and broadcast seeding.

Areas prepared for seeding during the period of May 1 through October 14 shall be seeded with a temporary seed mix. The temporary seed mix used shall be as follows:

TEMPORARY SEED MIX FOR UPLANDS AREAS – MIX NO. 3

Common Name	Lbs. PLS/acre[1,2]
Annual Ryegrass	10.0
Total	**10.0**

[1] PLS = Pure Live Seed

[2] Reported rates are for drill seeding; rates shall be doubled for hydraulic seeding and broadcast seeding.

Permanent seeding of these areas shall then commence during the fall at a time approved by the DESIGN ENGINEER.

B. FERTILIZER: Fertilizer shall be a soluble commercial carrier of available plant food element or combination thereof. All specified areas shall be fertilized with an inorganic chemical fertilizer with the following nutrients and associated rates:

Nitrogen (Elemental)	60.0 ± 1.0 lbs./acre
Phosphorus ($P_2 0_5$)	80.0 ± 1.0 lbs./acre
Potassium ($K_2 0$)	150.0 ± 1.0 lbs./acre

The fertilizer shall be in uniform composition and in good condition for application by suitable equipment. It shall be labeled with the manufacturer's guaranteed analysis as governed by applicable fertilizer laws. Any fertilizer which becomes contaminated or damaged, making it unsuitable for use, will not be accepted.

320.03 CONSTRUCTION REQUIREMENTS

A. GENERAL: Areas to be seeded and fertilized shall be completed, in reasonable conformity, to specified lines and grades prior to seeding and fertilizing, and are subject to approval by the DESIGN ENGINEER.

Residential yards specified to be seeded with Seed Mix No. 1 can be seeded at any time. Areas specified to be seeded with the Native Uplands Seed Mix (Seed Mix No. 2) and finished during the period of October 15 through April 30 shall be permanently seeded within this time period. The CONSTRUCTION SUBCONTRACTOR must obtain the DESIGN ENGINEER'S permission to commence seeding operations. Areas finished during the period of May 1 through October 14 and subject to being seeded with the Native Upland Seed Mix (Seed Mix No. 2) shall be seeded with the Temporary Uplands Seed Mix (Seed Mix No. 3) during this time period. The permanent seeding of these areas shall then commence during the fall at a time approved by the DESIGN ENGINEER.

It is necessary, insofar as it is practicable and feasible, as determined by the DESIGN ENGINEER, that the seedbed surface, at the time of application of seeds, not be excessively wet, snow-covered, or frozen and be reasonably free of large lumps, clods, and impervious crusts of dirt; that there be no appreciable areas of loose soils which can feasibly be compacted; that the surface, to a depth of approximately 4-inches, not be so tightly compacted that seed cannot begin growth. The CONSTRUCTION SUBCONTRACTOR shall treat such areas, as required by the DESIGN ENGINEER, to attain, as nearly as practicable, the condition described.

Excessively tight or compacted soils shall be loosened to the minimum depth of 4 inches. Discing, harrowing, tilling, or hand raking of the soil shall be done at right angles to the natural flow of water on the slopes, unless otherwise approved by the DESIGN ENGINEER. Compaction of the soil when required shall be performed by equipment which will produce a uniform rough textured surface ready for seeding and mulching.

Existing structures and facilities shall be adequately protected, and any damage done by the CONSTRUCTION SUBCONTRACTOR shall be repaired or adjusted to the satisfaction of the DESIGN ENGINEER.

B. APPLICATION OF FERTILIZER: Fertilizer shall be applied to the accepted seedbed surface at the rate as specified in this Technical Specification. Mechanical or hydraulic methods of application are acceptable so long as a uniform application at the specified rate is accomplished. The fertilizer application method is subject to approval by the DESIGN ENGINEER.

The fertilizer shall be incorporated into the surface soil by discing, raking, or shallow plowing to a maximum depth of 2 inches. Exceptions will be made for seed drills that are capable of incorporating the fertilizer and seed directly into the seedbed. In no instance shall subsoil be incorporated into the seedbed as a result of this operation. Fertilizer shall be incorporated with equipment operated at right angles to the slope of the land.

If the CONSTRUCTION SUBCONTRACTOR is required to temporarily mulch the prepared area, fertilization will be completed at the time of permanent seeding. The application methods and methods for incorporating the fertilizer into the seedbed shall be as specified herein.

C. SEED DISTRIBUTION:

1. General: Seed shall be applied to the conditioned seedbed no longer than 48 hours after the seedbed has been conditioned.

   Broadcast or hydraulic seeding methods shall not be used during adverse weather conditions as determined by the Engineer.

   The applied seed, regardless of the method of application, shall not be covered by a soil thickness greater than ½ inch in depth.

   Seeding by Drill: Seeding equipment used for applying grass seed must be designed, modified or equipped to regulate the application rate and planting depth of grass seed. If equipment for sowing cover crop seed is not equipped with press wheels, the seed shall be compacted with a cultipacker immediately after the ground has been drilled. Seed must be uniformly distributed in the drill hopper during the drilling operation. Acceptable drills include: custom seeders, furrow drills, disc drills, no till drills or other drills approved by the DESIGN ENGINEER. All grass establishment equipment shall be operated normal to the slope drainage.

   Planting depth shall be regulated by depth bands or coulters. To provide for more even distribution of seed on sloping areas, the drill box shall be partitioned by dividers no more than 24 inches apart. A drill shall be no wider than the width of the area over which it is to operate.

   The rows of planted seed shall be a maximum of 8 inches apart and shall be at right angles to the natural slopes.

   Broadcast Seeding: Seeding by hand or mechanical broadcasting will be permitted on areas inaccessible to drills or impractical to seed by other prescribed methods. Broadcast seeding requires the approval of the DESIGN ENGINEER.

Hydraulic Seeding: Hydraulic seeding equipment may be used. Seed and mulch will be applied in separate and distinct operations except for the following:

When using the hydraulic seeding method, the CONSTRUCTION SUBCONTRACTOR must provide 1 pound of wood fiber or organic mulch per each 3 gallons of water in the hydraulic seeder as a cushion against seed damage. The mulch used as a cushion may be part of the total required mulch with the remainder applied after the seed is in place.

When hydraulically applying mulch in a separate operation, the CONSTRUCTION SUBCONTRACTOR may mix the seed with the fertilizer if his hydraulic seeding equipment is capable of uniformly mixing water, fertilizer, and seed - in that order - and power blowing or spraying the mixture uniformly over the seedbed. After blending, the slurry shall be applied to the seedbed within 45 minutes after the seed has been added to the water/fertilizer mixture. If the slurry cannot be applied within the specified 45 minutes, it shall be fortified, at no cost to the LANDOWNER, with the correct ratio of seed to the remaining slurry and a new 45-minute time frame established for applying the fortified mixture.

The CONSTRUCTION SUBCONTRACTOR may be required to use extension hoses to reach the extremities of slopes.

The CONSTRUCTION SUBCONTRACTOR shall remove any excessively rutted equipment tracks on the seedbed prior to final mulching, as required by the DESIGN ENGINEER. The CONSTRUCTION SUBCONTRACTOR shall use a rake, small harrow, or other acceptable means to remove the tracks.

D. TRACKING: All seeded and fertilized areas may or may not require tracking. Tracking shall be accomplished using a tracked vehicle equipped with grousers sufficient to groove the surface to at least ½-inch depth. The tracking vehicle shall be operated so as to completely cover the surface with grouser marks. All grouser marks shall run perpendicular to the natural slopes. The tracking vehicle shall be operated alternately between forward and reverse on each pass to eliminate damage to the seedbed resulting from 180-degree skid turns.

   If the area is seeded by hydraulic methods, tracking of the slopes shall be done at such time when the surface has had sufficient time to dry. The length of time established will be at the discretion of the DESIGN ENGINEER. Hand raking following application of seed may necessary, at the discretion of the DESIGN ENGINEER.

E. SEEDING DATES:

   1. Residential yards specified to be seeded with Seed Mix No. 1 can be seeded at any time.

      Permanent seeding of Uplands Areas (areas specified to receive Seed Mix No. 2) shall be permitted from October 15 through April 30.

Areas finished during the period of May 1 through October 14 and subject to being seeded with the Native Upland Seed Mix (Seed Mix No. 2) shall be seeded with the Temporary Upland Seed Mix (Seed Mix No. 3) during this time period. The permanent seeding of these areas shall then commence during the fall at a time approved by the DESIGN ENGINEER.

END OF SUBSECTION 320

SUBSECTION 323.00: SODDING

323.01 GENERAL

A. DESCRIPTION: This item shall consist of furnishing, hauling, and placing approved live sod on prepared areas in accordance with this specification at the locations shown on the Individual Site Work Plans (RAWP/FDR Appendix E) or as directed by the DESIGN ENGINEER.

323.02 MATERIALS

A. SOD: All sod installed under this project shall originate from planted grass species on cultivated agricultural land and grown specifically for "Cultivated Turfgrass Sod" purposes. It shall have been irrigated and mowed regularly and carefully and otherwise maintained from planting to harvest to assure reasonable quality and uniformity. All sod shall be 100% free of all noxious weeds.

1. Thickness of Cut: Sod shall be machine cut at uniform soil thickness of 0.60 inch (15 millimeter (mm)), plus or minus 0.25 inch (6 mm), at the time of cutting. Measurement for thickness shall exclude top growth and thatch.
2. Pad Size: Individual pieces of sod shall be cut to the supplier's standard width and length. Maximum allowable deviation from standard widths and lengths shall be plus or minus 0.5 inch (15 mm) on width and plus or minus five percent on length. Broken pads and torn or uneven ends will not be accepted.
3. Strength of Turf Sod Sections: Standard size sections of sod shall be strong enough that it can be picked up and handled without damage.
4. Moisture Content: Sod shall not be harvested or transplanted when its moisture content (excessively dry or wet) may adversely affect its survival.
5. Mowing Height: Before harvesting, the sod shall be mowed uniformly at a height of 1 to 2.5 inches (25 to 60 mm).
6. Thatch: Sod shall be relatively free of thatch, up to 0.5 inch (15 mm) allowable (uncompressed).
7. Diseases, Nematodes and Insects: Sod shall be reasonably free of diseases, nematodes and soil-borne insects.

B. SOIL FOR REPAIRS: The soil for fill and topsoiling of areas to be repaired shall conform to the specifications contained in Subsections 202 and 203 of these Technical Specifications.

323.03 CONSTRUCTION REQUIREMENTS

A. GENERAL: Areas to be sodded shall be where shown on the Individual Site Work Plans. Suitable equipment necessary for proper preparation of the ground surface and for the handling and placing of all required materials shall be on hand, in good working condition, and shall be approved by the DESIGN ENGINEER before the various operations are started. The CONSTRUCTION SUBCONTRACTOR shall demonstrate to the DESIGN ENGINEER before starting the various operations that the application of required materials will be made as specified.

B. GROUND SURFACE PREPARATION: After grading of areas has been completed, areas to be sodded shall be raked or otherwise cleared of stones larger than 1 inch in any diameter, sticks, stumps, and other debris which might interfere with sodding, growth of grasses, or subsequent maintenance of grass-covered areas. If any damage by erosion or other means occurs after grading of areas, the CONSTRUCTION SUBCONTRACTOR shall repair such damage, to the satisfaction of the DESIGN ENGINEER. This may include filling low areas, smoothing irregularities, and repairing other incidental damage. Soil surface preparation shall be performed using a cultipacker, hand roller or other proposed method(s) approved by the DESIGN ENGINEER.

C. OBTAINING AND DELIVERING SOD: Sod shall be installed within 48 hours from the time it is stripped by the supplier at the source unless circumstances beyond the CONSTRUCTION SUBCONTRACTOR'S control make storage necessary. In such cases, upon approval by the DESIGN ENGINEER, the sod shall be stacked, kept moist, and protected from exposure to the air and sun and shall be protected from freezing. Sod shall be cut and moved only when the soil moisture conditions are such that favorable results can be expected. Sod shall be placed as soon as practical after backfilling of the specified area occurs.

D. SOD PLACEMENT: Sod placement shall be performed only during the seasons when satisfactory results can be expected. Frozen sod shall not be used. All areas specified to receive sod shall be watered to moisten and lower the temperature of the prepared soil immediately prior to laying the sod. The quantity of water applied to the prepared soil shall be limited to a practical amount that does not cause excessively muddy conditions.

The sod shall be moist and shall be placed on a moist earth bed. Pitchforks shall not be used to handle sod and dumping sod from vehicles will not be permitted. The sod shall be carefully placed by hand, edge to edge and with staggered joints, in rows at right angles to the slopes, commencing at the base of the area to be sodded and working upward. The sod shall immediately be pressed firmly into contact with the sod bed by tamping or rolling with approved equipment to provide a true and even surface without displacement of the sod or deformation of the surfaces of sodded areas. Where the sod may be displaced during sodding operations, the workmen when replacing it, shall work from ladders or treaded planks to prevent further displacement. Soils of good quality shall be used to fill all cracks between individual sod pieces. The quantity of the fill soil shall not cause smothering of the grass.

Where the grades are such that the flow of water will be from paved or concrete surfaces across sodded areas, the surface of the soil underlying the sod shall be set approximately one inch below the pavement or concrete edge after compaction. Where the flow will be over the sodded areas and onto the paved or concrete surfaces, the surface of the soil underlying the sod shall be placed flush with pavement or concrete edge after compaction.

E. WATERING: Adequate water and watering equipment must be on hand before sodding begins, and sod shall be kept moist until installation is complete, and its continued growth assured. In all cases, watering shall be done in a manner that will avoid erosion from the application of excessive quantities of water and shall avoid damage to the finished surface.

F. ESTABLISHING TURF: The CONSTRUCTION SUBCONTRACTOR shall provide general care for the sodded areas as soon as the sod has been laid until the DESIGN ENGINEER has accepted the work and the CONSTRUCTION SUBCONTRACTOR has removed all his equipment from the site. After the sod installation has been approved by the DESIGN ENGINEER, care for the new sod becomes the responsibility of the LANDOWNER.

G. REPAIRS: When the surface has become gullied or otherwise damaged during installation, the affected areas shall be repaired to re-establish the grade and acceptable condition of the soil, as directed by the DESIGN ENGINEER, and shall then be resodded as specified in Subsection 323.03.

END OF SUBSECTION 323

SUBSECTION 330.00: MULCH

330.01 GENERAL

A. DESCRIPTION: This work shall consist of covering and processing specified seeded areas with mulch consisting of the specified materials.

B. SUBMITTALS: The following submittals are required in accordance with the Special Provisions:

- Manufacturer's specifications and material content for hydromulch products which may be used on the project.
- Manufacturer's recommended application methods and rate for hydromulch products which may be used on the project.
- "Weed Seed Free" certification for hay or straw mulch.

330.02 MATERIALS

A. GENERAL: Vegetative mulch or hydromulch may be used on the project as dictated by site-specific conditions.

B. VEGETATIVE MULCH: This type of mulch material shall be composed of grass hay, wheat straw, rye straw, or barley straw, in that order of preference.

1. Grass Hay: This type of mulch material shall be composed primarily of perennial grasses. The grass hay mulch shall contain greater than 70% grass by weight and shall not contain greater than 10% alfalfa, crested wheatgrass or yellow sweet clover. Grass hay is subject to the DESIGN ENGINEER'S approval and must be "Montana Noxious Weed Seed Free Hay" provided by a certified supplier.

   Straw: This type of mulch material shall be clean grain straw, shall be "Montana Noxious Weed Seed Free" straw and shall not contain greater than 5% cereal seed by weight, i.e., seed heads. Written confirmation from a certified supplier will be required.

Chopped or ground material is not acceptable. The mulch material is not acceptable if it is musty, moldy, or rotted, or if it contains seed bearing stalks of noxious weeds. It shall be free of stones, dirt, roots, stumps, or other foreign material.

C. TACKIFIER: Tackifier shall be a biodegradable organic formulation processed specifically for the adhesive binding of mulch. The tackifier shall uniformly disperse when mixed with water and shall not be detrimental to the homogeneous properties of the mulch slurry. Any tackifier which has been moisture damaged or damaged by other means will not be acceptable. Tackifier may be added either during the manufacturing of the mulch or incorporated during mulch application.

Organic soil and mulch tackifier for use in hydraulically planting of seeds shall consist of specifically blended compatible hydrocolloids. Starch-based tackifiers are unacceptable.

Soil and mulch tackifier shall be applied at a minimum rate of 40 pounds per acre on slopes 2:1 or flatter, or at 80 pounds per acre, or more on slopes steeper than 2:1, or at manufacturer's recommendations, as approved by the Engineer.

When applied, the organic soil and mulch tackifier shall form a loose chain- like protective film, but not a plant inhibiting membrane, which will allow moisture to percolate into the underlying soil, while helping "stick" seeds, fertilizer and other specified materials to the soil surface during germination and initial seedling growth, after which the organic soil and mulch tackifier shall breakdown by microbial action.

330.03 CONSTRUCTION REQUIREMENTS

A. GENERAL: Mulch, when required, must be applied to seeded areas not more than 24 hours after seeding regardless of the type used. If the CONSTRUCTION SUBCONTRACTOR does not mulch within 24 hours after seeding, the CONSTRUCTION SUBCONTRACTOR may be required to re- seed the project at no additional cost. Mulch shall not be applied in the presence of free surface water but may be applied upon damp ground. Mulch shall not be applied to snow-covered ground surfaces.

Mulch shall not be applied to areas having a substantial vegetative growth, such as grasses, weeds and grains. Areas not to be mulched shall be determined by the DESIGN ENGINEER. Mulching shall not be done during adverse weather conditions or when wind prevents uniform distribution. Application, if after seeding, shall be in a manner to not seriously disturb the seedbed surface.

B. APPLICATION OF VEGETATIVE MULCH: Vegetative mulch shall be applied after seeding and fertilizing is completed unless otherwise specified. The mulch shall be applied in a uniform manner by a mulch spreader or by hand at a rate of 3,000 pounds per acre. The mulch spreader shall be designed specifically for this type of work. The vegetative material shall be fed into the mechanical mulch spreader at an even, uniform rate.

Straw or native hay shall be uniformly spread at the rate specified. Unless otherwise specified by the DESIGN ENGINEER, straw or hay shall be anchored into the seedbed by using a mulch crimper. Straw or hay mulch shall be pliable. If straw breaks during crimping, it shall be sprinkled with water, not soaked, to facilitate placement.

The mulch crimper, specifically designed for this type of work, shall have round, flat (not angled), notched blades of these approximate dimensions: ¼ inch thick by 18 inches in diameter and spaced 8 to 9 inches apart. The crimper shall have sufficient weight to force the vegetative mulch a minimum of 3 inches into the soil and shall be equipped with disc scrapers. Mulch crimping shall be done on all slopes capable of being safely traversed by a tracked vehicle. All mulch crimping shall be done perpendicular to the flowline of the slope.

C. FINISHING: Prior to final acceptance of the project, the CONSTRUCTION SUBCONTRACTOR shall immediately re-mulch any area from which the original mulch may have been washed or blown. If the original seedbed and seeding is damaged due to the displacement of the mulching material, the seedbed shall be repaired and reseeded prior to re-mulching. The operations described in this paragraph shall be at the CONSTRUCTION SUBCONTRACTOR'S expense if the damage is due to his negligence.

END OF SUBSECTION 330

SUBSECTION 540.00: PROVIDE WATER

540.01 GENERAL

A. DESCRIPTION: This item shall consist of furnishing and applying water required in all compaction work, sod placement, and dust control all in accordance with the requirements of these Technical Specifications.

540.02 MATERIALS

Water shall be reasonably clean and free from acid, oil, alkali, or vegetable substances and shall not be brackish or salty. If the CONSTRUCTION SUBCONTRACTOR uses a source of water other than that provided by ATLANTIC RICHFIELD COMPANY, the CONSTRUCTION SUBCONTRACTOR shall be responsible for obtaining any necessary water rights, permits, and for payment of any royalty costs on the water provided. The source of water to be used shall be indicated to the DESIGN ENGINEER prior to its use.

540.03 CONSTRUCTION REQUIREMENTS

Water, when required, shall be applied at the locations and in the amounts required to properly complete the work. An adequate supply of water shall be provided by the CONSTRUCTION SUBCONTRACTOR to complete the project as specified. The equipment used for watering shall be of ample capacity (minimum capacity of 1,000 gallons) and of such design as to assure uniform application of water in the amount required.

In the watering of subgrades and embankments, the DESIGN ENGINEER may require the CONSTRUCTION SUBCONTRACTOR to apply water in such quantities that the subgrade and embankment shall be compacted to a moisture content in excess of "optimum moisture." When so required, the amount of water required in excess of "optimum moisture" will not be greater than 3%. The CONSTRUCTION SUBCONTRACTOR shall also apply water during the course of the work to control dust, maintaining all embankment and base courses in a damp condition.

The CONSTRUCTION SUBCONTRACTOR shall provide watering for dust control during construction and for maintenance of traffic on public roadways and other access roads as required by the DESIGN ENGINEER.

END OF SUBSECTION 540

SUBSECTION 550.00: TRAFFIC CONTROL

550.01 GENERAL

A. DESCRIPTION: Traffic control shall consist of furnishing, installing, maintaining, and relocating necessary traffic signs, barricades, lights, signals, pavement markings, and other traffic control devices necessary to ensure the safety of the general public and project personnel. This work shall include flagging for the guidance of traffic through the work zone(s) and the furnishing and application of water for dust control.

B. OPERATIONS: The CONSTRUCTION SUBCONTRACTOR shall conduct work operations so that there is a minimum interruption in the use of the roads and highways involved at all times.

The CONSTRUCTION SUBCONTRACTOR shall schedule work operations to keep all roads and streets open to a minimum of one-way traffic during normal working hours during construction. Two-way traffic shall be provided at all times during overnight and weekend periods.

All work shall be coordinated with Cascade County and shall be performed in accordance with the Contract Documents, the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) as published by the U.S. Department of Transportation, the Montana Department of Transportation (MDT) Standard Specifications for Road and Bridge Construction, the approved Traffic Control Plan, and as otherwise required by the Engineer.

C. SUBMITTALS:

1. Traffic Control Plan: The CONSTRUCTION SUBCONTRACTOR shall submit a traffic control plan for any work involving public roadways. All traffic control plans shall be submitted and accepted prior to construction and shall meet the requirements specified herein. The traffic control plan shall include the following as appropriate:

   - Itemization of signing, including: type, size, shape, color, location, and MUTCD reference.
   - Temporary pavement markings for traffic channelization (cones, barrels, barricades, etc.).
   - Flagging, including personnel numbers and location.
   - Road closures and time(s) of road closures.
   - Special traffic patterns (pilot cars, one-way traffic lanes, detours).
   - Signage during non-work hours.

   The Traffic Control Plan will be subject to review and approval by the MDT for roads under their jurisdiction, by the appropriate county for roads under county jurisdiction, and by any other public entity having jurisdiction over other public roadways (U.S. Forest Service, city, etc.). These approvals will be in addition to those provided by the DESIGN ENGINEER in accordance with the Submittals Section. No work shall commence until all approvals of the Traffic Control Plan have been secured.

550.02 MATERIALS

All traffic control devices and materials shall be in accordance with MDT Standard Specifications for Road and Bridge Construction, most current edition.

550.03 CONSTRUCTION REQUIREMENTS

All devices utilized for traffic control shall be in accordance with the requirements of the MUTCD for Streets and Highways, most current edition. **All high visibility cones, barrels, candles, etc. used by the CONSTRUCTION SUBCONTRACTOR for traffic control shall be 42 inches in height (minimum).**

Before placement of any traffic control for any stage of construction, the CONSTRUCTION SUBCONTRACTOR shall have on hand, at the project site, all necessary traffic control devices required for that construction stage. All traffic control devices necessary for construction shall be properly placed and in operation and approved before any construction is allowed to start. All devices shall be constructed and erected in a workmanlike manner and shall be properly maintained, cleaned, and operated during the entire time they are used. They shall remain in place only as long as they are needed and shall be removed immediately thereafter. Where operations are performed in stages, there shall be in place only those signs that apply to the present stage of construction. Signs that do not apply to the existing conditions shall be covered with opaque material, turned, or removed, so as not to be readable to oncoming traffic.

Construction equipment, vehicles, materials, and debris shall be stored or parked a minimum of 30 feet from the edge of the traveled way or behind guardrails, etc., as appropriate. When it is not feasible to park equipment or store materials a minimum of 30 feet from the edge of the traveled way or behind guardrails, adequate warning devices and protective measures shall be utilized.

All traffic control devices furnished by the CONSTRUCTION SUBCONTRACTOR shall remain the property of the CONSTRUCTION SUBCONTRACTOR and shall be removed from the project when their use is no longer required. All properly installed traffic control devices shall be replaced by the CONSTRUCTION SUBCONTRACTOR when destroyed by traffic. The CONSTRUCTION SUBCONTRACTOR shall schedule construction operations in a manner that will ensure: 1) the safety and convenience of motorists and pedestrians, and the safety of construction workers, are adequately met at all times; and 2) the project is completed in a manner most beneficial to the project as a whole. Traffic control shall be provided in full compliance with MUTCD during materials hauling and equipment operation or transport along public roadways.

END OF SUBSECTION 550

SUBSECTION 820.00: AGGREGATE SURFACING MATERIALS

820.01 GENERAL

A. DESCRIPTION: This work shall consist of furnishing and placing aggregate surfacing courses composed of crushed gravel, or stone, or other similar materials meeting the grade or maximum size specified in these Technical Specifications or as shown on the Individual Site Work Plan. Placement shall be in conformance with these specifications.

B. SUBMITTALS: The following submittals are required:

- Gradation(s) of all specified aggregate materials.

820.02 MATERIALS

A. SUBGRADE EMBANKMENT MATERIAL: Subgrade embankment material used to partially backfill 12, 18, and 24 inch deep excavations shall consist of material obtained from the Type B Soil stockpile. Type B Soil materials placed as embankment in driveway, walkway, paddock and rock garden areas shall be moisture conditioned and compacted (maximum 6 inch loose lifts) by making a minimum of three passes over the entire subgrade surface area with a vibratory compactor having a minimum centrifugal force of 25,000 pounds.

B. GENERAL CRUSHED TOP SURFACING MATERIALS: To be installed on aggregate driveways and aggregate walkways.

1. General: Materials specified to be applied as the top surface on aggregate driveways and aggregate walkways shall consist of both fine and coarse fragments of crushed stone or crushed gravel, and/or natural gravel, and when approved by the DESIGN ENGINEER, may be blended with sand, finely crushed stone, crusher screenings, or other similar materials. The completed mixture of aggregates shall be capable of being compacted into a dense and well- bonded base.

   The method used in production shall be such that the percentage of fractured particles occurring in the finished product shall be as nearly constant and uniform as practicable. The crushing shall result in a product that at least 20% of the material retained on a No. 4 mesh sieve will have at least one fractured face. If necessary to meet this requirement or to eliminate an excess of fines or uncrushed particles, gravel shall be screened before crushing.

   Gradation: As determined by "Montana Test Method MT-202", the general crushed top surfacing material shall meet the following gradation requirements:

TABLE OF GRADATION – GENERAL CRUSHED TOP SURFACING MATERIAL (AGGREGATE MIX No. 1)

Sieve Size	Percentage (by Weight) Passing Square Mesh Sieves
1″	100
3/4"	90-100
No. 4	40 - 70
No. 10	25 - 55
No. 200	2 - 10

a. General crushed top surfacing material shall be placed at a minimum depth of 6 inches (+0.1 foot and –0.0 foot tolerance). Backfilling and compaction shall be completed in such a manner that the top surface of the aggregate matches the surrounding ground elevation on all sides after compaction.

B. DECORATIVE TOP SURFACING MATERIALS: To be installed on rock gardens or other specified paddock areas.

1. General: Aggregate materials specified to be applied as the top surface on rock gardens or other specified paddock areas shall consist of reasonably rounded coarse river rock, as approved by the DESIGN ENGINEER. The standard sizes of aggregate described in this classification may be manufactured by means of any suitable process used to separate raw material into the desired size range. Standard sizes may also be produced by blending two or more different components.

   In rock garden and other paddock areas specified to receive decorative top surfacing materials, two layers of woven geotextile shall be cut to size and installed directly below the specified top surfacing materials as shown on the Standard Drawings (Appendix G). The purpose of the woven geotextile is to act as a vegetation/weed barrier. It shall meet the following specifications and be subject to approval by the DESIGN ENGINEER.

WOVEN GEOTEXTILE SPECIFICATIONS

Property	Test Method	English	Metric
Tensile Strength (Grab)	ASTM D-4632	370 x 220 lbs	1,646 x 979 N
Elongation	ASTM D-4632	20 x 15%	20 x 15%
CBR Puncture	ASTM D-6241	1,250 lbs	5,563 N
Trapezoidal Tear	ASTM D-4533	115 x 75 lbs	511 x 334 N
UC Resistance (% Retained at 500 Hrs)	ASTM D-4355	90%	90%
Apparent Opening Size (AOS)	ASTM D-4751	30 US Std. Sieve	0.600 mm
Percent Open Area	CW-02215 MOD	8%	8%
Permittivity	ASTM D-4491	1.50 sec^{-1}	1.50 sec^{-1}
Water Flow Rate	ASTM D-4491	115 gpm/ft^2	4,685.6 lpm/m^2

Installation of woven geotextile sheeting beneath the specified materials will be considered incidental to this work item, no additional payment will be allowed.

Gradation: As determined by ASTM C 136 (Method for Sieve Analysis of Fine and Coarse Aggregates) the decorative top surfacing material shall meet the following gradation requirements:

TABLE OF GRADATION – DECORATIVE TOP SURFACING MATERIALS (AGGREGATE MIX No. 2)

Sieve Size	Percentage (by Weight) Passing Square Mesh Sieves
2″	100
1½″	90 – 100
1″	50 – 70
3/4"	10 – 30
No. 4	0 – 5

a. Decorative top surfacing materials shall be placed at a minimum depth of 6 inches (+0.1 foot and –0.0 foot tolerance). Backfilling shall be completed in such a manner that the top surface of the decorative material matches the surrounding ground elevation on all sides.

C. OTHER DECORATIVE TOP SURFACING MATERIALS: Other materials (e.g., lava rock, colored rock, wood or bark chips, etc.) specified to be applied as the top surface on gardens or other specified paddock areas shall consist of the same, or reasonably similar material as that which was removed, as requested by the LANDOWNER. In these situations, the material proposed by the CONSTRUCTION SUBCONTRACTOR shall be approved by the DESIGN ENGINEER and the LANDOWNER prior to installation. Compensation for installation of other top surfacing material shall be on a Time and Materials basis.

Other top surfacing materials shall be placed at a minimum depth of 6 inches (+0.1 foot and –0.0 foot tolerance). Backfilling shall be completed in such a manner that the top surface of the decorative material matches the surrounding ground elevation on all sides.

820.03 CONSTRUCTION REQUIREMENTS

A. GENERAL: Immediately prior to placing the top surfacing course, the surface of the underlying embankment or subgrade shall be smooth and shaped to the cross section as shown on the Standard Drawings (Appendix G) before the top surfacing course is placed. No top surfacing course shall be placed upon wet or muddy materials.

Subgrade materials shall be placed in horizontal layers of not more than 6 inches loose thickness. Type B Soil material placed as embankment in driveway, walkway, paddock and rock garden areas shall be moisture conditioned and compacted by making a minimum of

three passes over the entire subgrade surface area with a vibratory compactor having a minimum centrifugal force of 25,000 pounds.

The depositing and spreading of the material on the prepared subgrade shall commence at the point farthest from the point of loading, unless otherwise instructed, and shall progress continuously without breaks. Hauling over the subgrade will not be permitted at such times and in such manner as to be detrimental to the subgrade. The material shall be deposited and spread in a uniform layer without segregation of size to such loose depth that when compacted, the layer will have the required thickness. Spreading shall be as necessary to distribute the material in a uniform layer.

Material placed shall be compacted to the full width by rolling with approved equipment. Any irregularities or depressions that develop under rolling shall be corrected by loosening the material in these places and adding or removing material, as the case may require, until the surface is smooth and uniform.

Spreading and compacting shall be performed alternately as required to maintain a smooth, even, uniformly compacted surface until the final inspection. Along structures and at all places not accessible to the roller, the surfacing course material shall be tamped thoroughly with approved mechanical tampers or hand tampers to obtain a density conforming to the compaction requirements.

B. COMPACTION REQUIREMENTS FOR TOP SURFACING COURSES: Aggregate Mix No. 1 placed as the top surfacing course in driveway, walkway, and paddock areas shall be moisture conditioned and compacted by making a minimum of three passes over the entire subgrade surface area with a vibratory compactor having a minimum centrifugal force of 25,000 pounds (this compaction specification is not applicable to rock garden or paddock areas specified to receive Aggregate Mix No. 2 or other decorative top surfacing materials).

END OF SUBSECTION 820

SUBSECTION 830.00: STRUCTURAL CONCRETE

830.01 GENERAL

A. DESCRIPTION: This work includes installation of structural concrete for construction of sidewalks, curbs, driveways, fence posts, etc. Protect existing sidewalks, curbs, driveways, fences, foundations, etc., from damage throughout the course of the work. Repair any damage to existing sidewalks, curbs, driveways, fences, foundations, etc., resulting from construction activities, at the CONSTRUCTION SUBCONTRACTOR'S expense.

When agreed to by the LANDOWNER and ATLANTIC RICHFIELD COMPANY, re-construct existing dilapidated sidewalks, curbs, driveways, etc. The CONSTRUCTION SUBCONTRACTOR will be compensated on a per square foot basis in these instances.

Supply sufficient concrete forms and concrete to complete the specified work. Furnish structural concrete meeting all specified requirements that is composed of Portland cement, aggregates, and water. Furnish ready-mixed concrete meeting ASTM C94.

830.02 MATERIALS

A. CLASSIFICATION: Concrete is classified below.

M-3000 is concrete with ¾-inch (19.05 millimeter (mm)) maximum aggregate and a 28-day strength of 3,000 pounds per square inch psi (20.7 Mpa).

C-3000 is concrete with 1 ½-inch (38.1 mm) maximum aggregate and a 28- day strength of 3,000 psi (20.7 Mpa).

If concrete strength or durability requirements established by design exceed the above strength classifications, the Engineer may specify additional concrete classifications to meet those requirements.

B. COMPOSITION OF CONCRETE MATERIALS: Upon receipt of the notice of award of the contract, furnish the DESIGN ENGINEER with names of suppliers and locations of sources of materials proposed for use.

1. Materials:

   i. Unless otherwise specified, assure cementitious material meets ASTM C150 Type II without adding cementitious or pozzolanic mineral admixtures.
   ii. Aggregates – Assure aggregates meet ASTM C33.
   iii. Water – Use concrete mixing water meeting the requirements of ASTM C94.
   iv. Admixtures – If required, use admixtures meeting the following requirements:

   Air entraining admixtures – ASTM C260
   Chemical admixtures – ASTM C494
   Chemical admixtures for use in producing flowing concrete – ASTM C1017
   Calcium Chloride – ASTM D98.

Use admixtures in the concrete that are the same as those used in the concrete represented by submitted field test data or in trial mixtures.

Performance and Design Requirements:

i. Cementitious material content – Assure the cementitious material content is adequate to meet the specified requirements for strength, water-cement ratio and finishing requirements. Assure the cement content is at least that indicated on Table B2a. Acceptance of a lower cement content is contingent upon verification that concrete mixtures with a lower cement content will meet the specified strength requirements and will produce concrete with equal finish quality, appearance, durability, and surface hardness.

Table B2a - MINIMUM CEMENT CONTENT REQUIREMENTS

Nominal Maximum size of aggregate, in(mm)	Minimum cement content lb/yd^3 (kg/m^3)
1-1/2 (38.1)	520 (163.0)
3/4 (19.05)	540 (187.3)

ii. Slump – For sidewalk, driveway, or fence post construction, furnish concrete at the point of delivery having a slump of 3 to 5 inches as determined by ASTM C143. For curb construction, furnish concrete at the point of delivery having a slump less than 3 inches as determined by ASTM C143.
iii. Size of coarse aggregate – Assure the nominal maximum size of coarse aggregate does not exceed three-fourths of the minimum clear spacing between reinforcing bars; one-fifth of the narrowest dimension between sides of forms; or one-third of the thickness of slabs or toppings.
iv. Air Content – Concrete must be air entrained. Assure air content at the point of delivery is between 5% and 7%.
v. Concrete Temperature – If freezing temperatures are anticipated, receive approval from ATLANTIC RICHFIELD COMPANY for special cold weather concrete mix, placement and curing. Deliver concrete that does not exceed 90ºF.

830.03 CONSTRUCTION REQUIREMENTS

A. CONSISTENCY: Use the minimum quantity of mixing water necessary to provide workability within the ranges of slump specified.

B. CONCRETE PLACEMENT:

1. Forms: Design and construct forms to produce concrete structures to the width, depth, thickness and shape necessary. Design forms, braces, crossties and wales to withhold pressures and forces based on a liquid having a density of 150 pounds per cubic foot and any anticipated construction loads or impacts. Construct grout tight forms in a manner that allows removal of the forms without damage to the concrete. Construct

forms of wood or steel, with countersunk bolts and/or crossties that results in flat, smooth surfaces for exposed surfaces. Exposed surfaces are those surfaces that will remain above finished ground level. Adequate wetting of the forms or the use of a release agent to facilitate removal of the forms without damaging the concrete is encouraged.

2. Placement: Accurately place and thoroughly compact concrete into its final position. Vibrate the concrete or use other methods to assure it is thoroughly consolidated around fittings and embedded items, contacts all form surfaces and minimizes voids. Assure all reinforcement and embedded items are accurately placed as shown on the plans and are clean and free from coatings of dried mortar, detrimental rust, scale, oil or foreign matter. Use pumps, troughs, chutes and/or pipes to place the concrete in a manner that will not displace the reinforcement or cause segregation of the concrete mix. Screed the top surfaces to the lines and grades shown on the plans.

3. Finishing: Finish all concrete surfaces not contained within forms or in contact with the soil by hand finishing using wood or magnesium floats or trowels. Trowel the surface at the appropriate time(s) to produce a smooth surface free of pits, scars or other deformations.

C. CURING CONCRETE: For concrete surfaces subject to premature drying, either cover as soon as possible with canvas, plastic sheets with sealed joints, burlap and sand or other satisfactory materials and keep concrete moist, or if the concrete surfaces are not covered, keep them moist by flushing or sprinkling. Continue curing for at least 7 days after placing the concrete. Concrete surfaces placed against forms may be cured by leaving the forms in place for at least 7 days, when approved.

Protect concrete against freezing or other conditions detrimental to strength development meeting the applicable requirements of this specification.

To aid finishing, side forms for curbs and sidewalks may be removed after 12 hours, not to exceed 48 hours, depending on weather conditions. Continue moist curing during the concrete finishing operation.

Untreated forms and existing concrete must be kept continuously wet for at least 1 hour before concrete is placed therein. Keep wet until covered with concrete.

D. WEATHER AND NIGHT LIMITATIONS:

1. General: Do not place concrete when darkness prevents obtaining the specified placing and finishing work. Night operations may be conducted with written approval and when approved artificial lighting is provided.

2. Protection of Concrete: During the curing period, if the air temperature is anticipated to fall below 32ºF (0ºC), provide an approved blanket type insulating material along the work for covering all concrete that has been in place for 7 days or less. If, at any time, the ambient temperature drops to 32ºF (0ºC) or less, protect the concrete using a method approved by the Engineer.

END OF SUBSECTION 830


Woodard
& Curran

APPENDIX I: HEALTH AND SAFETY PLAN

Health and Safety Plan (HASP)



Anaconda Copper Mining Company Smelter and Refinery Site

Woodard & Curran

COMMITMENT & INTEGRITY DRIVE RESULTS

601 River Drive South, Suite 2

PROJECTS #0231334, #0231335, #0231336

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OBJECTIVE

This *Health and Safety Plan* (HASP) has been prepared to provide general Health & Safety (H&S) information and establish the minimum H&S-related procedures and requirements to be followed while implementing investigation, remediation, monitoring, and construction-related activities for the Anaconda Copper Mining Company Smelter and Refinery (ACMS) Superfund Site (the Site) located near Black Eagle, Montana.

This HASP is intended to establish the minimum H&S requirements to be followed by Site personnel while engaged in activities at the Site on behalf of Atlantic Richfield (AR). Woodard & Curran (W&C) Contractors shall be required to develop a Site-Specific Health and Safety Plan (SSHASP) which shall incorporate the requirements contained in this HASP and project specifications as applicable and shall describe all actions to be taken to perform the work. The SSHASP and any modifications, once incorporated, shall be submitted to the Project Manager (PM) for review prior to implementation of the work. The PM's review of the SSHASP does not relieve the W&C Contractor of any obligation or liability. The PM's review shall not constitute an approval of the SSHASP and shall not relieve the W&C Contractor of full responsibility for the H&S of its personnel at the Site. These requirements shall not relieve any party from compliance with any applicable federal, state, local, or other health and/or safety requirements and safe construction practices. Appendix A contains the name, signature and date of personnel who have read and acknowledged this HASP.

The applicability of this HASP to each person or party is identified below. Discussion regarding the roles and responsibilities of each party is provided in Section 3.

1. EMERGENCY ACTION PLAN

All site injuries, incidents and near misses must be reported to W&C and AR personnel. The incident must be reported as soon as practical to the AR Liability Manager (LM) and/or Health, Safety, Security, and Environment (HSSE) Advisor. Upon request, copies of incident reports will be provided to AR. The person controlling work has responsibility and authority for coordinating all emergency response activities until proper authorities arrive and assume control. Prior to the start of a new major project, all appropriate emergency personnel (i.e., local fire department, police, hospital/ambulance personnel) will be notified. They will be provided with the location of site work, site contacts, and site access information. If the original information provided to the emergency personnel changes at any time during the project, then the emergency personnel will be updated accordingly.

Table 1: Emergency Contact

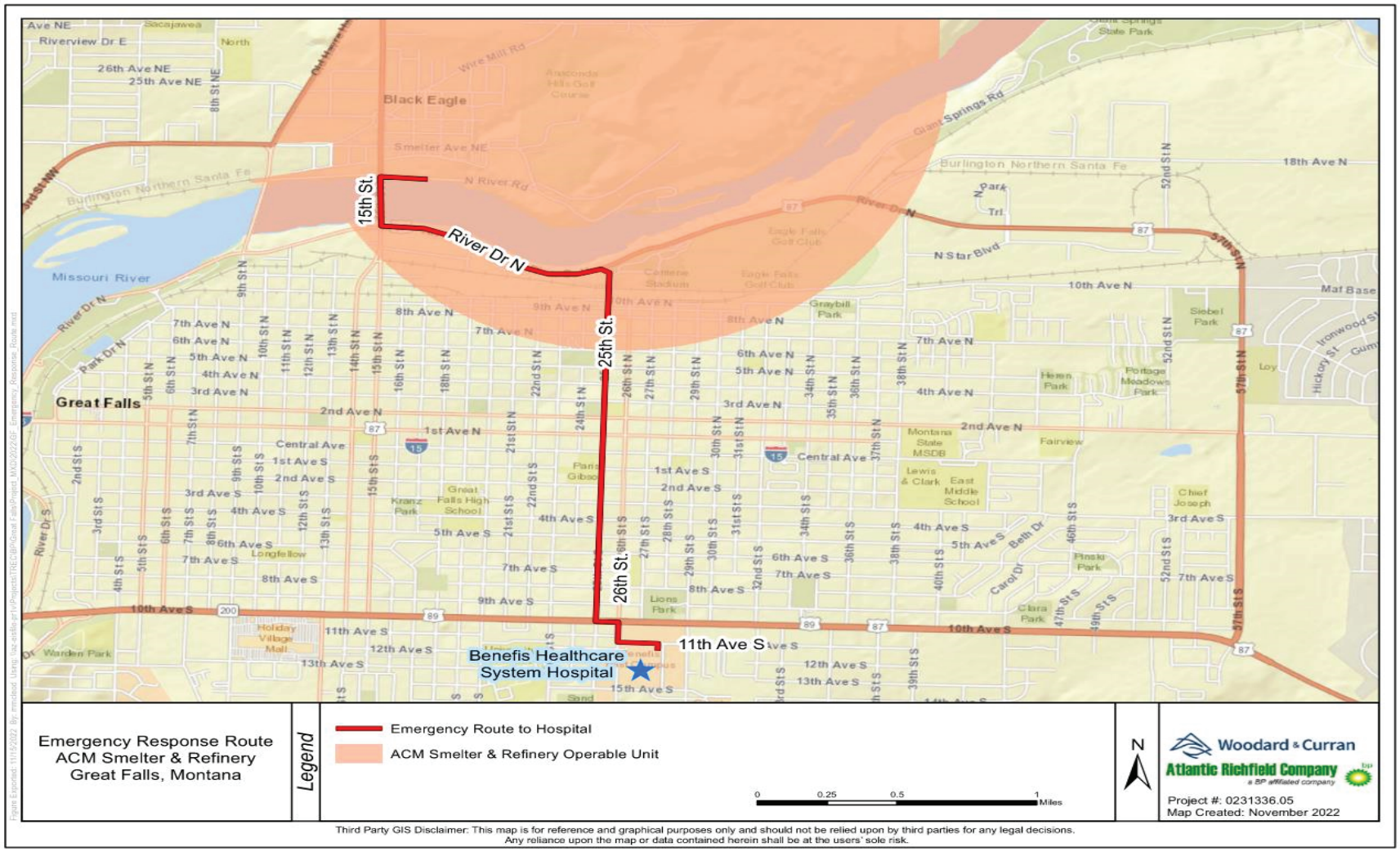
All Emergency Services – Dial 911	
Emergency/Medical Contacts	
Great Falls Police Department (non-emergency line)	406.727.7688
Great Falls Fire Department	406.727.8070
Great Falls Animal Control	406.455.8492
Hospital: Benefis Health System (Great Falls)	406.455.5000
Great Falls Clinic Medical Center	406.216.8000
Poison Control Center	800.222.1222
Nurse/Injury Triage Hotline (for W&C employee use if medical attention or medical advice is desired for a work-related, non-emergency injury or illness)	800.350.4511
Disaster and Emergency Services (DES)	406.454.6900
Montana Highway Patrol	406.494.3233
Montana Department of Highways	406.494.9600
Utilities	
Water Company (water/sewer)	406.727.8045
Power - Northwestern Energy - Electrical Emergency/Hydroelectric Dam (electrical)	888.467.2353
Energy West: Gas Emergency (gas)	406.791.7500
US West Communications/Century Link (communications)	800.954.1211
Montana 811 Underground Utilities	800.424.5555
W&C Project Contacts (See Section 3.7 for Project Roles and Responsibilities)	
Doug Spicuzza (Project Manager/Area Authority [AA])	412.860.7977
Caleb Lucy (Project Scientist)	406.325.7358
Charlie Rogers (Field Team Leader [FTL]/Site Safety Officer [SSO])	262.744.2397
Nicole Santifer (Program Safety Manager [PSM]/Issuing Authority [IA])	406.214.0512

All Emergency Services – Dial 911	
AR	
Luke Pokorny (Liability Manager)	406.498.4565
R.C. Strain (HSSE Advisor)	281.896.6470
Garrick Milkeris (HSSE Advisor)	331.239.9521
United States Environmental Protection Agency (USEPA)	
Charles Coleman	406.457.5038
Bryan Lobar	406.457.5040
Montana Department of Environmental Quality (DEQ)	
Richard Sloan	406.444.6442

1.1 EMERGENCY PROCEDURES

The hospital located nearest to the Site is Benefis Health System located at: 1101 26th St. S, Great Falls, MT 59405. A map showing the hospital location and navigation route is included on Figure 1 below.

Figure 1: Navigation Route to Benefis Healthcare System Hospital



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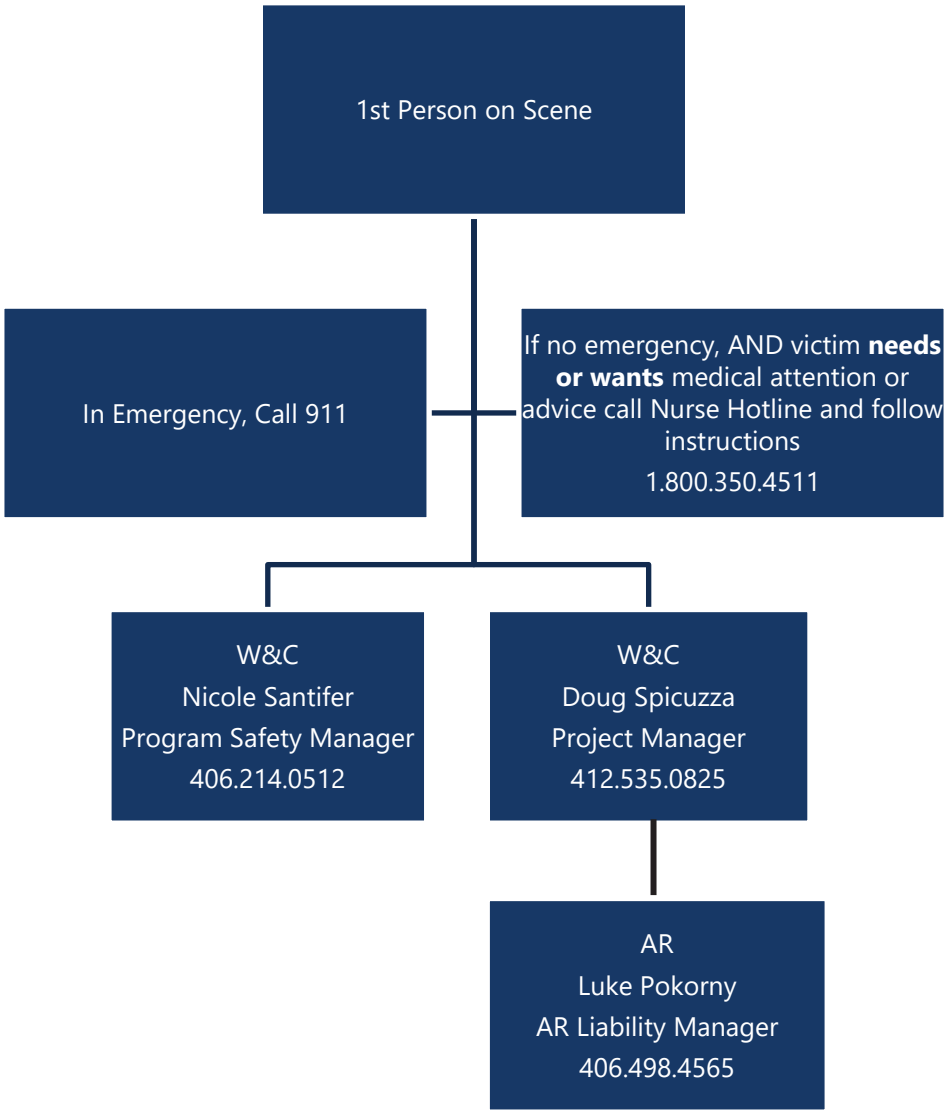
The designated signal for a site emergency is three sustained blasts from an air or car horn or very loud whistle. In the event of a site emergency, personnel shall evacuate to the assembly point. It is not always possible to identify a single muster point due to the large area of the Site and widespread work locations. The evacuation muster point locations will be identified and reviewed at each Daily Safety Briefing at the start of a day's work and documented on the Field Authorization Form (FAF). All personnel must be accounted for before leaving the assembly point, unless it is too dangerous to remain at the assembly point. At no time should anyone leave the muster point or go back into the affected area. For example, a cause for an evacuation during site work would be a range fire. The location of the assembly points is described on the daily FAF.

1.2 Initial Reporting

Injuries, illnesses, and close calls shall be immediately reported to the W&C PM or the PSM. Reporting shall follow the Incident Management Flowchart (Figure 2) below. The Organizational Chart for the Site is included in Section 3.7.

In any incident situation, a Stop Work shall be directed by the person controlling work until the incident can be adequately reviewed and the scene verified as safe. Depending on the incident severity, the decision to lift the Stop Work will be decided by the PSM, person controlling work, SSO, PM, and/or AR HSSE Advisor or the AR LM will be consulted.

Figure 2 : Incident Management Flowchart



NOTE: While attempting to notify above personnel, voicemails do not constitute notification. Keep trying until you make contact, or they have responded via email or text, acknowledging receipt of your message.

1.3 Initial Response and Notification

The first step in responding to an emergency is to recognize an emergency. The following is a list of situations when local emergency services should be called:

- Serious illness or injury (see Section 1.4.1 below),
- Uncontrolled hazardous material release to the environment,
- A serious security event, and
- Fire or explosion.

1.4 Medical Care

1.4.1 Life-Threatening Medical Care:

Incidents that threaten life and/or limb and/or loss of consciousness of any on-site personnel require emergency medical care. Emergency Medical Services (EMS) should be called if a victim becomes or is currently exhibiting any of the following symptoms:

- Unconsciousness,
- Trouble breathing or is breathing abnormally,
- Chest pain or pressure,
- Severe bleeding,
- Continuous abdominal pain or pressure,
- Vomiting or passing blood,
- Broken bone(s),
- Seizure,
- Severe headache,
- Slurred speech, and
- Any injuries to the head, neck, or back.

Emergency medical care will be provided by the Great Falls EMS or Ambulance (911), Fire Department (911), and/or Police Department (911). A full-service hospital with an emergency room has also been identified below, should the facility's medical services be required. If local EMS responds to a situation at the Site, the EMS personnel will decide where the patient will be transported to, based on the illness/injury and the capabilities of the facility.

In the event EMS needs to be contacted, site personnel shall be aware of and communicate their location and as appropriate, meet EMS personnel at the site entrance, if called to the Site.

1.4.2 Non-Life-Threatening Medical Care:

Typical incidents that require non-life-threatening care are superficial cuts, scrapes, and bruises that can be treated by the SSO or designee with first aid training. A Class A first aid kit is located in field vehicles maintained by the SSO or designee on the Site. For non-life-threatening incidents experienced by W&C employees that may require medical treatment or advice, notify the PM then call the Nurse Hotline (800-350-4511).

1.5 First Aid/CPR Trained Personnel

A minimum of one site personnel shall be trained in First Aid and cardio pulmonary resuscitation (CPR) during performance of field work. Training records shall be maintained by the W&C PSM.

Personnel should not exceed their limitations of training when rendering first aid, nor should they administer over the counter or prescription drugs. The following personnel are First Aid/CPR certified:

Table 2: First Aid/CPR Certified Personnel

Name	First Aid/CPR Trained	Phone Number
Charlie Rogers	X	262.744.2397
Nicole Santifer	X	406.214.0512
Nicholas Harrison	X	505.920.7033

1.6 Fire or Explosion

In the event of fire or explosion, the incident will be immediately reported to the SSO. The SSO or designee will immediately notify the Great Falls Fire Department (911).

Incipient Fire Response: An incipient stage fire is generally defined as a fire in its beginning stage that can be controlled with portable fire extinguishers. Fire extinguishers may then be used for incipient stage fires by **trained personnel only**. Otherwise, evacuate to the predetermined muster point!

1.7 Chemical Spills and Leaks

Personnel must report any chemical spills or leaks to the SSO. Should a spill or leak (e.g., gases, vapors, dusts, liquids, solids, radioactive materials, or any other hazardous materials) occur which is a threat to the environment or human health, the person observing the spill will perform the following:

- Evacuate or request evacuation of all people at risk or shelter-in-place (SIP), and
- Inform the SSO.

The decision as to whether to evacuate or SIP is important. Factors affecting the decision include the following (refer to the chemical safety data sheets (SDSs [Appendix C] for more detailed information):

- Hazardous material(s) released (degree of hazard, amount, containment/control, and rate of vapor movement);
- Population threatened (location, number of persons, available time, ability to control the process, building types and availability, and special institutions/populations [day cares, schools, hospitals, nursing homes, prisons, etc.]); and

- Weather conditions (effects on vapor and cloud movement, potential for change, and effect on the process).

The SSO or designee will contact the appropriate Federal, State, or Local agencies in the event of a chemical emergency. These typically include the following:

- Local police and fire departments,
- State Police,
- Sheriff,
- State DES,
- Local Health Department,
- National Response Center (if reportable above the reportable quantities [RQ]), and/or
- Others as applicable.

1.8 Emergency Equipment

The primary emergency response equipment to be readily available onsite include, at a minimum, the following:

- Class ABC fire extinguisher in each vehicle and in other on-site locations,
- First aid kit in each vehicle, and
- Cell phones and/or two-way radios.

1.8.1 Fire Extinguisher

Site personnel shall be trained in the use of a fire extinguisher. Personnel shall only attempt to suppress incipient-stage fires if it is safe to do so. Documented inspections shall be performed monthly by person assigned to each vehicle via the Vehicle Inspection Checklist (managed through the Fleetio app or website).

1.8.2 First Aid Kits

A Class A first aid kit (ANSI Z308.1) with basic supplies shall be kept in each vehicle. If cold tablets and other non-prescribed drugs are provided, they should only be self-administered.

1.8.3 Cell Phones and/or Two-Way Radios

In areas with cell phone service, the use of cell phones will be the primary mode of communication used between work groups and outside personnel.

In the event that cell phone service is limited, two-way radios will be used to communicate.

1.9 Hydroelectric Dam Safety

The Black Eagle Dam is a hydroelectric dam located on the Missouri River immediately upstream of the Site. While unlikely, dams have the potential to fail, and employees should be aware of signals/alarms issued by the dam operator (NorthWestern Energy) in response to rising water. Indicators of rising water/dam failure include:

- Warning strobe lights and/or sirens:
    - Eight siren blasts signal a dam failure,
- Increased water velocity and associated sounds,
- Rapid or unusual rise in the river water levels below the dam,
- Increased water turbidity, and
- Increased bird or other wildlife activity (NorthWestern Energy).

Note that sirens will also be audible when changes to the dam's gate configuration are made but will only be three, four, or five consecutive siren blasts.

2. INCIDENT REPORTING

All personnel on this Site must promptly report injuries and illnesses to the PM or PSM and AR LM. If the injury or illness is a result of, or could result in, a chemical exposure, the PSM will report it and take appropriate action to prevent further exposure. The Health and Safety Manager (HSM) must be contacted as soon as possible for any incident resulting in off-site medical treatment, hospitalization, or fatality.

Following an incident, an Incident Report will be completed and the HSM will be notified of the incident within 24 hours. Incidents are reported using W&C's electronic event reporting system, the H&S HUB (see Appendix D).

Close calls involving W&C personnel will be reported similarly to injuries and illnesses as described above using W&C's electronic event reporting system, the H&S HUB.

In the event of a hazardous material spill or chemical release above the RQ, the appropriate federal and state agencies will be notified by the PM, PSM, HSM or SSO.

The PM and the PSM shall investigate all incidents and prepare an incident report. Investigations shall occur as soon as possible, and any evidence shall be preserved, should it be needed for investigative purposes. The person controlling work and/or PSM shall also preserve the scene as applicable for subsequent review/investigation. The PSM will provide written notification to Integrated Risk Information System (IRIS), as required, and lead the incident evaluation with support from the Corporate HSM as appropriate.

3. SITE COMMUNICATION AND ORGANIZATIONAL STRUCTURE

3.1 General Health and Safety Requirements

All personnel that work at the Site and authorized site visitors will receive a Site Safety Briefing upon their first visit to the Site as described in Section 6.1. All personnel who enter the Site shall sign in on the FAF upon each entry to the Site and shall sign out prior to each departure from the Site.

The following safety rules will be strictly enforced to maximize the safety of people and communities:

- Work will not be conducted without a pre-job risk assessment and a safety discussion appropriate to the level of risk;
- All persons will be trained and competent in the work they conduct;
- Personal protective equipment (PPE) will be worn as per risk assessment and minimum site requirements;
- Emergency action plans, developed from a review of potential emergency scenarios, will be in place before commencement of work; and
- In accordance with W&C's Stop Work Policy, everyone has the right and the obligation to Stop Work that is unsafe.

Before conducting work that involves confined space entry, work on energy systems, ground disturbance in locations where buried hazards may exist, overhead utilities/guy wires, hot work in potentially explosive or flammable environments, or working at heights, a permit must be obtained that includes the following:

- Defines scope of work,
- Identifies hazards and assesses risk,
- Establishes control measures to eliminate or mitigate hazards,
- Links the work to other associated work permits or simultaneous operations,
- Is authorized by the responsible person(s),
- Communicates above information to all involved in the work, and
- Provides adequate control over the return to normal operations.

In the event of event of equipment breakdown, the ability to safely demobilize the equipment from the Site will be the primary option for repair. If equipment cannot be demobilized, W&C in coordination with the applicable W&C Contractor/third party vendor performing repairs, will establish an area around the equipment for the W&C Contractor to perform the necessary repairs. Prior to commencing with the repair, in lieu of full Control of Work (CoW) training, W&C Contractors/third party vendors performing repairs will receive a Site Safety Briefing including identification of muster points, Simultaneous Operations (SIMOPs),

points of contact, emergency procedures, and identification of the work tasks to be performed. A joint conversation discussing any high-risk hazard procedures (i.e., Lock Out Tag Out [LOTO], spill prevention, etc.) with the vendor will be conducted to ensure both parties (W&C and the vendor) are comfortable the work can be completed safely before starting work. The task may then be performed by the vendor in the established area only, and non-essential personnel will be restricted from the area. Prior to restarting the work, equipment shall be tested to confirm it is working properly, and other similar equipment will be inspected to verify that a similar malfunction will not occur.

3.2 Stop Work Authority & Communication

Site H&S conditions are affected by the actions of all personnel on the Site. All personnel shall have the authority and responsibility to Stop Work immediately in the event of unacceptable environmental and/or H&S conditions. Stop Work responsibility includes the assurance of no reprisal against the employee based on their decision to Stop Work due to the perceived unsafe situation.

If unsafe conditions or actions are observed, the person observing the unsafe condition or act shall immediately Stop Work. Work will not resume until the issue is resolved in a manner that satisfactorily addresses the risk, as confirmed by the person controlling the work or PSM or IA. Stop Work expectations are communicated in all phases of employee and W&C Contractor training and re-enforced during Daily Tool Box (DTB)/FAF meetings. Records of all Stop Works will be documented on a FAF and followed up by H&S HUB submittal, AR notification and IRIS reporting.

Any H&S concerns shall immediately be communicated by any person to the SSO, PSM or W&C PM as appropriate. The PSM and PM will make all necessary modifications to this HASP in consultation with the HSM if any site conditions change. Amendments to and reassessment of this HASP are to be conducted and recorded in Appendix B.

3.3 Routine Site Communication

Cellular telephone numbers to reach key project contacts are provided in Table 1 of this HASP. Cellular phone communication will be the primary form of communication in and out of the work site. Adequate cellular phone reception has been verified at the Site. Cellular telephone numbers for W&C Contractors, or visitors, will be provided to the SSO or designee at the Site Safety Briefing.

In addition, the following on-site communication system for all workers may also be used during work tasks and shall not be conflicting between this HASP and applicable SSHASP or other plans:

- Verbal communication,
- Radios/Walkie-Talkies (verify coordination of channels on-site), and

- Hand signals as follows:

Signal	***Definition***
Hands clutching the throat	Out of air/cannot breathe
Thumbs up	OK/I am all right/I understand
Thumbs down	No/Negative/I do not understand
Arms waving upright	Send backup support/need assistance
	Exit area immediately

3.4 Simultaneous Operations

SIMOPs include work performed by separate contractors at the same time with the potential to affect one another. The person controlling work and the Person in Charge (PIC) will attend W&C Contractor safety meetings and coordinate activities to either eliminate SIMOPs conditions or coordinate simultaneous activities to prevent conflicts. Without proper planning, communication, and coordination, these work-space conflicts can result in serious consequences. Elimination shall first be attempted by rescheduling project activities or moving to a different work location until SIMOPs conditions no longer exist. W&C employees should fall under W&C Contractors' SIMOPs plans or develop new SIMOPs plans, as necessary.

The public will not be covered by SIMOPs plans because it is difficult to predict and communicate with untrained persons, which increases the chance for potential incidents to occur. Conflicts with the public will be mitigated by establishing Job Zone Control and/or Traffic Control Plans, worksite monitoring, and avoidance through scheduling/postponement of work.

The person controlling work, PIC, PSM or IA will develop SIMOPs plans or coordinate SIMOPs with area contractors in control of the Site. SIMOPs plans shall include, but will not be limited to, the following key points:

- A description of the job, project, operation, or activity to be conducted, including the number of personnel involved, equipment involved, and site resources required,
- Contact details for the selected representatives of each stakeholder operation,
- Agreement on site access and egress,
- Expected duration of the work,
- Hazard analysis profile for the job and agreed mitigations,
- Work permit plan for the given job(s),
- Agreements for security arrangements, and
- Clear identification and communication of activities that cannot occur simultaneously or that require special controls if they are to take place simultaneously.

Completed SIMOPs plans shall be made available on Site and maintained in H&S files for one year. A SIMOPs plan template is provided in Appendix F.

3.5 Management of Change

There are three types of change: technical, administrative, and organizational. A Management of Change (MoC) shall be performed for any administrative, organizational, and technical change unless otherwise denoted. An MoC can be documented in field logs, project support records, MoC form or AR's electronic MoC (eMoC) system (for technical changes). Changes are classified as replacement-in-kind (RIK), permanent, temporary, or emergency modification. In situations where the change is minimal, the MoC can be addressed in the field by evaluating the change and performing a risk assessment, followed by a review of all affected personnel. If the change is significant, work will be stopped until the MoC has been adequately identified, reviewed, verified, approved, and implemented. Any condition that is new and unevaluated may warrant an eMoC, which must be reported to the PM for further evaluation. With any type of change in conditions or work scope, the most important step is remembering to Stop Work and contact appropriate personnel so that the change can be adequately reassessed for safety.

The roles needed to participate in and manage the proposed change shall be identified and individuals will be assigned to those roles. An MoC shall be performed for any of the following changes unless otherwise denoted:

- Administrative, for example: changes to, or deviations from, requirements in policies and procedures;
- Organizational, for example: permanent change in an organizational structure or change in key personnel or personnel involved with Safety and Operational Risk critical roles. Examples of key personnel include PMs, PSMs, Client Managers, etc.; or
- Technical, for example: physical change to an existing facility, operational process change, or deviation from documented design limits or requirements.

MoCs will be submitted electronically as described in Chapter 12- Management of Change of the BP HSSE Addendum.

3.6 Behavior Based Safety

W&C's Behavior Based Safety Program (BBSP) compares behaviors of people to specified safe behaviors and then addresses any gaps in a positive way. It can also be used to review processes and equipment performance. The effectiveness of the BBSP depends on the participation of all employees. The purpose is to encourage safe behaviors and discourage unsafe behaviors through peer observation, performance feedback, and participation incentives. The process demonstrates peer support and cultivates working relationships. Even though this BBSP is behavior driven, it is also used to identify quality issues, environmental issues, and the performance of processes and equipment.

The frequency of observations by employees working on AR sites is one per month. The H&S HUB (Appendix D) is used to record submitted observations. The H&S department tracks participation and sends reminders to ensure personnel keep up with their observation goal.

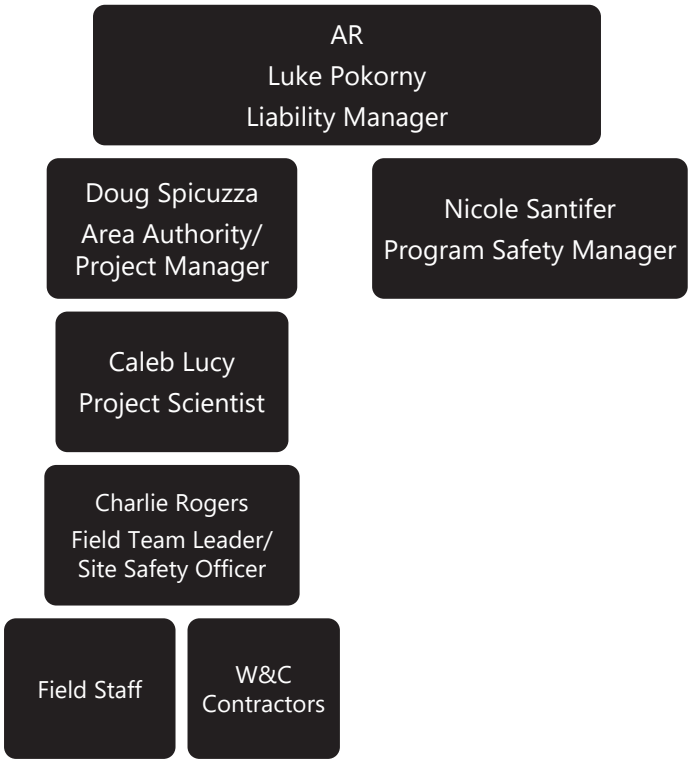
Awards will be presented throughout the year to the best observation based on the criteria below.

- Level of courage to correct an unsafe behavior or condition,
- Creativity to problem solve, and
- Lessons learned applicably.

3.7 Organizational Structure

A Project Organization Chart describing the organizational structure, responsibilities, and lines of communication for W&C personnel at the Site is provided on Figure 3 below. W&C Contractors must provide their own specific organizational structure, responsibilities, and lines of communication within their SSHASPs, which will be utilized in conjunction with this HASP. W&C Contractor's organizational structure, responsibilities, and lines of communication will be reviewed with the SSO or designee at the Site Safety Briefing.

Figure 3: Site Organization and Responsibilities



Key project personnel and their responsibilities with regards to site activities are discussed below.

3.7.1 AR Liability Manager: Luke Pokorny

3.7.1.1 RM Liability Manager Authority

The RM LM has authority to perform the following:

- Represents the AR and their interests as an owner of the ACMS Site and has overall authority.
- Stop Work - can suspend field activities if the H&S of personnel are endangered.

3.7.2 Area Authority (AA): Doug Spicuzza

3.7.2.1 AA Responsibilities

The AA is the individual responsible for verifying that during planning and completion of all assigned projects, all requirements of CoW and supporting procedures are met. The AA for each project assigned is responsible for the following:

- Understand the scope, performance standards, objectives, and applicable AR requirements for each Project.
- Ensure project staff are aware of the project scope, objectives, and associated performance standards and AR requirements. Where work is to be done by a W&C Contractor, this requirement may be satisfied by providing this information to the W&C Contractor, and this responsibility can be satisfied through delivering the information to the W&C Contractor and requiring the W&C Contractor to provide the needed information to their workforce, including their subcontractors.
- Authorize the start all work activities within the AA's designated area of responsibility.
- Assign or approve W&C Contractor's assignment of a competent IA, Performing Authority (PA), Project Oversight (PO), and PIC prior to project work commencing.
- Have knowledge of and participate, where necessary, in the development and verification of permits.
- Verify that all work activities for each project in the AA's portfolio are consistent with this and the supporting procedures.

3.7.2.2 AA Authority

The AA has authority to perform the following:

- Suspend field activities if the H&S of personnel are endangered, pending further consideration by the PSM or the PM.
- Suspend an individual field activity for infractions of this HASP, pending further consideration by the PSM or PM.

- Suspend field activities for infractions of Policies and Procedures in this HASP.

3.7.3 Project Manager (PM): Doug Spicuzza

3.7.3.1 PM Responsibilities

Doug Spicuzza is designated as the PM and is responsible for the following:

- Direct all W&C work operations.
- Technical progress of project task elements.
- Development of the overall H&S program for the Site.
- Approval of modifications/addenda to this HASP (in consultation with the PSM [see below for descriptions of roles]).

3.7.3.2 PM Authority

The PM has authority to perform the following:

- Suspend W&C employees and W&C Contractors from field activities/site access for violation of provisions of this HASP.
- Enforce disciplinary action with regard to W&C Contractors in consultation with the LM as required.
- Temporarily suspend field activities if the H&S of personnel are endangered, pending further consideration by the SSO.
- Temporarily suspend an individual field activity for infractions of applicable SSHASPs, pending further consideration by the SSO.

3.7.4 Program Safety Manager (PSM): Nicole Santifer or designee

3.7.4.1 PSM Responsibilities

Nicole Santifer is designated as the PSM and serves as the PM's designee for implementation, verification, and validation of the H&S program for the Site. The PSM is responsible for developing this HASP and required modifications to this HASP. The responsibilities of the PSM include, but are not limited to, the following H&S related items:

- Development of the overall H&S program for the Site with the PM and the HSM.
- Coordinating development of this HASP and required Addenda for new project tasks.
- Overseeing and monitoring the performance of the SSO and bears ultimate responsibility for the proper implementation of this HASP.
- Verification and validation that the requirements of this HASP are implemented and effective.

- Review of W&C Contractor SSHASPs for compliance with the requirements of this HASP.
- Ensuring provision of a copy of each W&C Contractor's SSHASP to the SSO or designee.
- Verifying the availability, through the SSO or designee, of emergency response personnel and medical support facilities.
- Maintaining overall responsibility for response and corrective actions in the event of an emergency, an incident, or identification of a potentially unsafe condition or act.

3.7.4.2 PSM Authority

The PSM has authority to perform the following:

- Temporarily suspend field activities if the H&S of personnel are endangered, pending further consideration by the PM.
- Provide recommendations to the PM regarding suspension of employee or W&C Contractor personnel from field activities/site access for violation of provisions of this HASP.
- Recommend disciplinary action with regard to W&C Contractors in consultation with the PM and LM, as required.

3.7.5 Site Safety Officer (SSO): Charlie Rogers or designee

3.7.5.1 SSO Responsibilities

Charlie Rogers is designated as the SSO and is directly involved with the day-to-day activities at the Site. The SSO works for and under the direction of the PM and is subject to the requirements of this HASP. The SSO's primary responsibility is to monitor personnel compliance with this HASP or the applicable SSHASP, as appropriate. The SSO or designee will assess the compliance of W&C Contractor operations with applicable H&S requirements. If deficiencies are observed and the W&C Contractor does not correct them, the SSO will notify the PSM, PM, and LM, as appropriate, for resolution. All deficiencies and corrective actions will be documented.

The SSO will make recommendations for modifications to the HASP should any site H&S conditions change. These changes will be made by the AA, PM or PSM. The SSO reserves the right to Stop Work if a W&C Contractor's practices are deemed dangerous to human health, public welfare, safety, or the environment.

The responsibilities of the SSO, as they pertain to work being performed by W&C, include the following:

- Coordination of W&C Contractor training and orientation.
- Coordination of emergency response personnel and medical support resources.
- Coordination of site control and security.
- Coordination of spill response measures.

- Initiation of corrective actions in the event of an emergency, an incident, or identification of a potentially unsafe condition or act.
- Implementation of corrective actions to control hazards that have been identified in the workplace.
- Periodic inspection of general work conditions and implemented hazard controls.
- Conduct or arrange for formal hazard assessments as necessary.
- Periodically assess the compliance of W&C Contractor operations with applicable H&S requirements.

3.7.5.2 SSO Authority

The SSO has authority to perform the following:

- Temporarily suspend field activities if the H&S of personnel are endangered, pending further consideration by the PSM and the PM.
- Provide recommendations to the PM regarding suspension of employee or W&C Contractor personnel from field activities/site access for violation of provisions of this HASP.
- Recommend disciplinary action with regard to W&C Contractors in consultation with the PSM, PM and LM, as required.

3.8 Field Team Leader (FTL) and Project Scientist: Charlie Rogers and Caleb Lucy

The FTL and Project Scientist are responsible for the following:

- Ensure the safe, responsible and reliable delivery of all work activities.
- Remain onsite as necessary and have working knowledge of all work activities being performed by members of the workforce.
- Primary contact for Environmental, Safety, and Health (ES&H) issues.
- Report and notify incidents to PM and/or HSM/IA.
- Assist in incident investigations.
- Review submitted Safety Observation and Conversation (SOC) cards, and communicate Lessons Learned.
- Observe and monitor personnel for heat/cold stress and fatigue.
- Enforce and uphold the requirements of this HASP and applicable portions of the bp HSSE Addendum.
- Perform IA duties as necessary and as permitted.
- Lead morning DTB meetings and complete FAFs.

3.8.1 W&C Field Personnel

W&C field personnel (including W&C Contractors) are responsible for their own individual safety and that of their coworkers, for complying with this HASP, using the proper PPE, reporting unsafe acts and conditions, and following the work, safety, and health instructions of the SSO.

3.8.2 Short-Service Employees

New employees are considered short-service employees. They will be supervised and mentored by an experienced employee(s) until they have been properly trained in the hazards and hazard mitigation of their job(s) and have demonstrated competency, as determined by the PSM or SSO. Until they have adequately demonstrated competency, short-service employees are required to wear orange hardhats so that they can be easily distinguished as inexperienced site field personnel among the workforce.

3.8.3 W&C Contractor(s)

W&C Contractor(s) are a separate individual, firm or firms, or corporation(s) that has/have entered into a contractual agreement with W&C or AR to perform work at the Site. W&C Contractors will be required to develop and operate under their own SSHASP or, at the discretion of W&C following appropriate training, they will operate under the requirements of this HASP. A site-specific orientation will be conducted by the PSM or SSO during the Site Safety Briefing prior to the onset of work.

W&C Contractors shall comply with all applicable laws and regulations and shall take all necessary precautions for the safety of persons or property, or the protection of persons or property from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. W&C Contractors shall provide competent persons as needed whose duties and responsibilities shall be maintaining and supervising of safety precautions over their specific scope of work. W&C Contractors must maintain documentation of employee training and participation in a medical surveillance program consistent with the requirements of their SSHASP or this HASP; copies of these documents must also be provided to the PSM for project files upon request. W&C Contractor personnel must participate in Daily Safety Briefings coordinated by the SSO or designee for their employees.

3.8.4 Visitors

All persons who arrive on Site that are not a part of the project team and/or have not received the site-specific safety orientation and reviewed all applicable Task Risk Assessments (TRAs) are considered visitors. All visitors must sign in and out of daily FAFs as visitors. All visitors must also receive approval from the SSO, PSM and/or PM prior to accessing work locations. Visitors may not move freely throughout any site area unescorted and shall stay out of active work areas. Visitors shall don required PPE and may not perform any physical work. If visitors intend to enter a designated exclusion zone, they must meet all the training and medical surveillance requirements and have the PPE required by this HASP according to their task and level of exposure for that work zone. Applicable documentation of visitor training and medical surveillance will be provided by the escort and maintained by the SSO or designee.

4. SITE DESCRIPTION AND SCOPE

This HASP describes the HSSE protocols developed for the Site. This HASP has been developed to assist field personnel in working safely by communicating known or suspected site hazards and the required procedures/standards to be implemented at the Site. The information herein is intended for use by field personnel and other persons that may be involved with the Site, such as W&C Contractors, AR personnel, visitors, governmental agencies, or the public.

As previously mentioned, it is important to continuously emphasize and enforce the following:

- Work will not be conducted without a pre-job TRA and a safety discussion appropriate to the level of risk.
- All persons will be trained and competent in the work they conduct.
- PPE will be worn according to the risk assessment and minimum site requirements which can be found in Table 6 below.
- Emergency action plans will be in place before commencement of work.
- Everyone has the responsibility and expectation to Stop Work that is unsafe or unassessed.

This document presents the site-specific H&S processes and requirements for activities that will be conducted at the Site. TRAs for anticipated work will be completed by field personnel prior to performance of the Work.

4.1 Site Background

Site Name: Anaconda Copper Mining Smelter Site (ACMS Site)

Site Location: The site area is divided into three operable units (OUs). OU1 encompasses the residential community of Black Eagle, commercial developments and farmed or fallow agricultural properties surrounding the former facility to the north and west. Work in OU1 includes residential yard and alley remediation, surface/storm water monitoring, and ecological sampling.

The Former Facility Area which comprises OU2 has been decommissioned and subsequently reclaimed. The majority of infrastructure has been demolished and most production, waste and demolition materials have been removed. Several basements remain that have been backfilled with demolition debris and some infrastructure utility chases remain below ground. There is an engineered storm water control system consisting of concrete- and grass-lined channels. Groundwater monitoring wells are also located on Site. Regular storm water and groundwater monitoring and site inspections occur. On-going site maintenance includes road maintenance, weed management, fencing repairs, and mowing for access to monitoring wells.

OU3 includes the Missouri River, which lies adjacent to the Site. Work associated with OU3 will address potential risks to surface water and aquatic resources in the Missouri River.

4.2 General Site Characteristics

Site personnel should be aware that the following physical, biological, or chemical characteristics may be present:

- Ponds
- Rivers
- Above and below ground private and public utilities (gas, electric, sewer, water, phone, septic)
- Varying concentrations of heavy metals
- Inactive railroad tracks
- Active and inactive bridges
- Public and private maintained roads
- Public and private non-maintained roads
- Single and double track trails
- Light to moderate private traffic (outside of OU2 fenced boundary only)
- Heavy mobile equipment travel
- Heavy construction areas
- Wildlife of varying species
- Domestic animals of varying species
- Flat and rolling terrain with areas of hummocky grasses
- Steep embankments
- Strong winds
- Sparse to dense stands of Yucca and Prickly Pear (cactus varieties)
- Varying degrees of weeds and grasses
- Biting insects, mostly in the form of ticks, ants, hornets, and spiders
- Poisonous and non-poisonous snakes

4.3 Site Meteorology

The average annual maximum temperature is 57.8 degrees Fahrenheit (ºF), and the annual average minimum temperature is 33.7ºF. The highest monthly average maximum temperature occurs in July with an average of 84.4ºF and the lowest monthly average minimum temperature has occurred in January with an average of 14ºF (Western Regional Climate Center [WRCC], 2020). The yearly rainfall is 14.69 inches, with the highest monthly average occurring in June at 3.10 inches and the lowest monthly average being February with 0.58 inch. The average yearly precipitation as snowfall is 43.6 inches (WRCC, 2020). The average wind speed in Great Falls is 12.1 miles per hour (mph) with peak daily gusts of at least 30 mph 169 days a year (Great Falls Tribune, 2019.) Wind gusts can reach 60 mph and although tornadoes may occur, they are very uncommon in the region. The average monthly relative humidity ranges from 37% to 63%, with an annual average of 50%.

4.4 Scope of Work

The scope of work for the ACMS Site includes, but is not limited to, the following:

- Storm water sampling/monitoring,
- Groundwater sampling/monitoring,
- Drilling of wells and piezometers,
- Conducting geophysical surveys,
- Biological/Ecological sampling,
- Ground disturbance (excavation/soil removal/backfill),
- Revegetation (seeding and fertilizing),
- Vegetation monitoring,
- Site surveying,
- Soil sampling,
- Overseeing W&C Contractors, and
- Communicating with the public.

5. MEDICAL SURVEILLANCE AND TRAINING REQUIREMENTS

5.1 Medical Surveillance

Medical surveillance for W&C employees is performed in adherence with the Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) medical surveillance regulations under 29 Code of Federal Regulations (CFR) 1910.120, and 29 CFR 1910.1020 covering access to employee exposure and medical records and W&C Corporate Policy. All W&C employees working in the field on sites governed by 29 CFR 1910.120 have had medical surveillance examinations. Medical surveillance clearance records are maintained at the W&C corporate office in Portland and are available upon request and authorization of the employee. W&C personnel are required to have had a physical examination within the last 12 or 24 months depending on field assignment and exposure potential.

Employees required to use respiratory protection receive medical monitoring per 29 CFR 1910.134.

Other personnel working at or visiting the Site who will work in contaminated or potentially contaminated areas or will come into contact with impacted or potentially impacted materials will also be required to comply with the training and medical surveillance requirements of OSHA regulation 29 CFR 1910.120.

5.2 Training Requirements and Documentation

Training required of all personnel working in or visiting the exclusion and contamination reduction zones (CRZs) includes the following:

- Initial HAZWOPER Training 24- or 40- hour as appropriate,
- Three days of supervised field experience after initial HAZWOPER training,
- Annual HAZWOPER refresher training, and
- Site Safety Briefing as described in Section 6.1.

Other H&S related training includes HAZWOPER 8-hour Supervisory Training for the PSM, SSO, PM, or anyone with on-site supervisory or management responsibility related to safety as specified in this HASP or a W&C Contractor SSHASPs.

Table 3 summarizes the training requirements for field personnel in addition to the training listed above.

Table 3: Training Requirements

Task/Position/Topic	Workforce
ACMS Site HASP	X
Short Service Employees (supervised, on-the-job training)	X
CPR/First Aid/Blood-Borne Pathogens	X
Hazard Communication	X
Fire Extinguisher	X
Smith System Defensive Driver	X
Hazard Identification Task Risk Assessment (HITRA)	X
CoW	X

[a] Level 1 Assessors and Level 2 Leaders only.

Documentation of training for sites regulated by 29 CFR 1910.120 is kept at the Site and maintained by the PSM or SSO.

5.3 Reassessment of HASP

When a significant change occurs, the hazards will be reassessed. Some indicators of the need for reassessment include the following:

- Activities or material discovered other than those previously identified; and/or
- A change in the scope of work that is not addressed by this HASP.

Review contacts and emergency information at least annually if the scope of work associated with this HASP extends beyond one year and none of the indicators listed above have triggered reassessment in the prior one-year period.

When changes to any aspect of this HASP occur, such changes will be written in the Amendments to Site Safety Plan, Appendix B to this HASP, and the amendments will be communicated to all site workers at the next Daily Safety Briefing unless deemed otherwise by the SSO.

6. SAFETY BRIEFINGS AND INSPECTIONS

6.1 Site Safety Briefing

The person controlling work, PSM, SSO, or designee will provide a Site Safety Briefing to all personnel that work at the Site and authorized site visitors. This training will be provided to each person upon their first visit to the Site, and should include the following topics as applicable:

- Names of personnel responsible for Site H&S,
- Safety, health, and other hazards at the Site,
- PPE to be used at the Site,
- Necessary training as applicable to tasks,
- Work practices to be used at the Site to reduce risks from identified hazards,
- Emergency procedures (e.g., evacuation, incident reporting, spill response),
- Decontamination procedures, and
- Review of TRAs as necessary and as applicable.

All personnel required to follow this HASP must sign and date the Review Acknowledgement Form in Appendix A prior to site work to indicate they are aware and familiar with the general requirements of the HASP presented during the Site Safety Briefing by the SSO or designee.

6.2 Daily Safety Briefings

The person controlling work, PSM or SSO will lead/facilitate the Daily Safety Briefing to discuss the following:

- SIMOPs applicability,
- Planned work for the day,
- Safety items from the previous day,
- Applicable TRA(s),
- Stop Work expectations,
- Standard Operating Procedures (SOPs),
- Required permit(s),
- Muster point(s),
- Submitted SOC cards, and
- Any safety topic(s) applicable for the day (weather, slips and falls, etc.).

All field team members will participate in the Daily Safety Briefing and sign the FAF as being fit for duty and sign out at the end of the day, indicating that they are leaving in the same condition as they arrived. Anyone not fit for duty shall notify the FTL, PSM, or SSO for further evaluation and case management. The person responsible for work that day will be identified on the FAF and sign out of the FAF at the end of each day, indicating approval of its content and closure. The person responsible for work will also be responsible for implementing the controls on all TRAs associated with tasks performed that day. A template FAF can be found in Appendix F and is available electronically via doForms.

6.3 Site/Equipment/Task Inspections

Site personnel will inspect their work areas and equipment at the start of each day and perform a 360° walk around of their vehicle each time before putting it into gear. Employees will then log any pertinent information on the TRA and/or FAF for that day. If there are any unsafe conditions, steps shall be immediately taken to correct the condition or isolate it to ensure there is no risk to project personnel, the public, or the environment.

No equipment will be allowed on Site that has fluid leaks or seeps. Once equipment arrives on Site, owners/operators will perform daily inspections to ensure equipment remains in safe condition. The equipment shall be removed from service for any deficiencies that could impact safety or cause equipment damage. Site equipment may include, but is not limited to, pickup trucks, heavy equipment (haul trucks, drilling equipment), air compressors, gas generators, and hand and power tools. Any repairs on mobile equipment requires that equipment be removed from the Site or taken to a designated on-site staging area until repairs are completed.

On-road, light duty vehicle operators shall complete defensive driver training within six months of being hired. W&C Contractors operating heavy mobile equipment shall submit proof of task training and shall demonstrate proficiency in inspection and operation of their assigned equipment.

Manager (PM and LM) field visits shall be conducted once per quarter when field work is occurring. Managers are to make quality and safety observations on Site and document their findings and discussions on the Manager Field Visit Form.

7. SITE CONTROL

7.1 Work Zones

Except within the fenced OU2 Former Facility Area, work zones shall be established to prevent entry by other working groups and/or the public. Forty-two-inch candles and vehicles with yellow strobe lights (Level 1) will be used as the primary means to prevent unauthorized personnel from entering active work areas, accessible by others. Vehicles equipped with yellow warning lights may be sufficient to prevent unauthorized persons from entering work areas that only involve the use of hand tools. Level 2 and Level 3 controls may be warranted for work areas involving the use of heavy equipment. When work is conducted near residential areas and public roads, written Traffic Control Plans will be prepared. Traffic Control Plans can be handwritten or more formally prepared. All controls and effectiveness will be continuously assessed by field staff throughout the day. Barrier tape and candles can be used to mark utilities (e.g., fire hydrant, telephone box, guy wires) and/or to encircle hazard locations (e.g., holes, shafts, grounds hazards) that personnel should be aware of. Red and yellow barrier tape will convey the following:

- Red barrier tape: DANGER - Do not enter, and
- Yellow barrier tape: CAUTION when entering zone.

Cones shall not be used, given their low profile. Barrier tape should be inspected daily to ensure it remains in place. When the hazard is eliminated, the barrier tape should only be removed by the person who installed it initially, or a designee.

7.1.1 Known/Suspected Hazardous Waste Contamination Work Zones

When work is being performed in areas which are known or suspected to have contamination beyond that which has been identified and controlled for general site work, contamination work zones will be established, as needed, for containment and decontamination.

***Exclusion Zone*:** The exclusion zone (sometimes also referred to as the "hot zone" or "dirty zone") at the Site will be designated by the PSM or designee and will generally consist of an area within 15 feet of the work area (but may vary widely depending on equipment operation radius needs, wind, weather, topography, buildings, chemicals, contamination, size and scope of project task, etc.). Proper decontamination procedures must be followed when exiting the exclusion zone. **Please note:** Only authorized personnel who meet the training and medical surveillance requirements may enter this zone.

Contamination Reduction Zone: The CRZ (sometimes also referred to as the "warm zone" or "decontamination" or "decon" zone) will be identified by the PSM or designee. The CRZ will be determined daily and be located between the exclusion and support zones. The access or "*contamination reduction corridor*" or *CRZ* (often also referred to as the "decon area") for the exclusion zone will be marked with traffic cones or yellow tape. The CRZ will be located upwind of the exclusion zone, which will be determined daily

and communicated at Daily Safety Briefings by the SSO or designee. Site workers must enter and leave the exclusion zone using this corridor. Workers will sign in and out of the Site. Logbooks will be kept at the site office or SSO or designee project vehicle for signing in and out. Section 12 of this HASP contains information about decontamination supplies and procedures.

***Support Zone*:** The support zone (sometimes also referred to as the "cold zone" or "clean zone") functions as the clean area and is the outermost zone beyond the CRZ. This is where support and administrative personnel remain. The support zone is also where the project vehicle, phone, meeting area, and command post are located. Normal work uniforms are appropriate clothing for this zone. The support zone will be located upwind of the high hazard areas (the exclusion zone) as appropriate.

There should be clear delineation of the three work zones to ensure unauthorized personnel do not inadvertently enter the exclusion zone and to ensure contaminated equipment or clothing does not enter the support zone without following adequate decontamination procedures.

7.2 Use of Buddy System

The buddy system ensures that no single person works in or visits an area with high-hazard conditions as established by the PSM. "High hazard conditions" could include temperature extremes, higher chemical concentrations, dangerous wildlife, dangerous topography or walking conditions, working in, on or around water, and severe weather. When working in a "buddy-system required" area, persons are paired and must always be in close proximity to each other. If one person must leave the high hazard work area for any reason, both persons must leave. The SSO or designee will coordinate the implementation of the buddy system at the Site. Tasks requiring the use of the buddy system are identified in the respective TRA.

7.3 General Site Security and Workplace Violence Prevention

The Site is in a combination of residential, public, private, and county-owned areas. Some areas that are city- or client-owned are fenced and have signs that state, "Authorized Personnel Only Do Not Enter without Authorization or Supervision."

Field personnel are expected to:

- Act in accordance with W&C's and AR's values and standards of conduct, including being sensitive to any situation that may develop into a risk of workplace threats or violence.
- Know the procedure for reporting any prohibited conduct and report any violation or suspected violation.
- Notify Human Resources upon application for or receipt of a protective order or a restraining order that would pertain to or include the workplace.
- Maintain awareness of their surroundings and all people in proximity to where they are working.

- Not enter any private property without first obtaining written landowner access agreements.
- When approached by parties not authorized in the work zone or by members of the public, if a clearly defined work zone is not present, then employees are to maintain a distance of four feet or more from that person unless impractical.
- If an employee feels threatened or uncomfortable with a person in proximity to them, the employee is to increase distance and, if possible, place a barrier between them and that person. If necessary, the employee is to leave the work area and not return until safe to do so.
- During field operations, employees are to notify a Manager and/or law enforcement as necessary upon encounter with person they feel is a risk to their safety.

HITRA shall be used at projects to systematically identify security hazards, assess risk, and implement security reduction measures, as necessary to manage identified risk. HITRA is the documented process to identify worksite security hazards/risks that may include the following:

- Criminal conduct,
- Intimidation,
- Violence,
- Sabotage, and/or
- Unauthorized access or damage to property.

The PSM, SSO and/or PMs are expected to:

- Take immediate action to address reported, observed, or suspected violations of this policy.
- In cases of imminent danger, notify local law enforcement.
- If not imminent danger, consult with Human Resources.
- Keep records of all reports made and actions taken.

8. HAZARDOUS MATERIALS / HAZARD COMMUNICATION

Contact with contaminated soil, dust, surface water, or groundwater represent the most likely exposure routes for the current scope of work at the Site. PPE and proper personal hygiene will mitigate that potential exposure. Should airborne dust or smoke levels exceed the action levels or applicable TRA, a Stop Work shall be initiated until particulates can be controlled and/or proper PPE is obtained. Decontamination will include removal of impervious gloves and hand washing before eating, drinking, or smoking. SDSs for chemicals used or stored for site work shall be maintained in field vehicles, on computers/tablets, in this HASP (Appendix C), and/or by the W&C Contractor.

8.1 Materials Expected to be Encountered

By wearing standard PPE and practicing good hygiene, personnel will greatly reduce their chance for exposure. More specifically, impervious gloves and required safety glasses are adequate protection against contact with constituents of concern (COCs). COCs may be encountered during activities at the Site within the following media:

- Soils/dust/water/sediment containing heavy metals,
- Airborne dusts containing silica or metals,
- Water preservatives (acids),
- Engine exhaust (carbon monoxide) from mobile equipment; and portable generators,
- Equipment fuels (gasoline and diesel),
- Hydraulic fluids from equipment,
- Herbicides and fertilizer, and
- Marking paint.

Of the listed COCs, field personnel primarily use water preservatives, gasoline and marking paint; however, personnel will work in areas providing exposure opportunities to the other COCs listed and will then have potential exposure if controls and practices are not followed. Hazards and mitigation are summarized below.

8.1.1 Heavy Metals

Exposure to heavy metals can occur when working with environmental media on Site. The heavy metals found on Site in various locations may include antimony, arsenic, cadmium, chromium, cobalt, copper, iron, lead, mercury, manganese, nickel, selenium, silver and zinc. The toxicity and concentrations of these substances varies. Personnel exposed to low levels (levels well below established exposure limits) over a prolonged period of time results in a chronic exposure. Acute exposure (exposure to levels exceeding the established exposure limits during a short duration) is not likely while working on Site. The long-term (chronic) signs and symptoms of exposure for heavy metals with serious effects on human physiology are listed below.

- Chronic exposure to organic ***arsenic*** compounds may result in dermatitis, anemia, leukocytopenia, or the effects associated with several forms of cancer.
- The most serious consequence of chronic ***cadmium*** poisoning is cancer (lung and prostate). The first observed chronic effect is generally kidney damage, manifested by excretion of excessive (low molecular weight) protein in the urine. Cadmium is also believed to cause pulmonary emphysema and bone disease (osteomalcia and osteoporosis).
- Chronic exposure to ***copper*** may cause sensitization.
- Chronic exposure to ***lead*** in humans can affect the blood. Lead also affects the nervous system. Other impacts from chronic lead exposure in humans include effects on blood pressure and kidney function, and interference with vitamin D metabolism.

Minimize exposure to heavy metals by practicing good hygiene (always wash hands before eating, smoking, or using the rest room; eat in designated areas only; avoid finger food when performing field work). Even though much of the facility area was capped with clean soil during initial remediation, there is a chance of exposure to heavy metals through dust. Consequently, ensure local weather conditions are monitored daily and stay upwind of generated dust. Exposure to heavy metals is minimized by always wearing impervious gloves and safety glasses.

8.1.2 Commonly used Chemicals

8.1.3 Acids

Nitric and sulfuric acids are used to preserve groundwater and surface water samples. Acid burns to the skin and/or eyes are potential hazards when working with acids. Impervious gloves and safety glasses with side shields should be worn at all times when using acids. In addition, stay up wind when pouring acids and if possible, add acids to water. The majority of sample bottles used at the ACMS Site are received pre-acidified; thus, water must be added to the acid. Use care doing so and avoid overfilling the bottles. Furthermore, in temperatures exceeding 50 ºF, empty pre-acidified sample bottles should be stored on ice when in the field. When opening pre-preserved sample bottles, always open the bottles with the mouth of the bottle facing away from all personnel. If skin or eye contact does occur, flush skin and/or eyes with copious amounts of water. Eye wash bottles must be carried with field gear.

8.1.4 pH Buffers

pH buffers (4.00, 7.00, and 10.00 standard units) are used when calibrating water quality meters. Skin and/or eye irritation are potential hazards when working with pH buffers. Impervious gloves and safety glasses with side shields should be worn at all times when working with pH buffers. It is normally possible, and far more practical, to use pH buffers in the office prior to entering the field. This practice should be maintained whenever possible.

8.1.5 Conductivity Standards

Conductivity standards are used when calibrating water quality meters. Slight skin and/or eye irritation are potential hazards when working with conductivity standards. Impervious gloves and safety glasses with side shields should be worn at all times when working with conductivity standards. It is normally possible, and far more practical, to use conductivity standards in the office prior to entering the field. This practice should be maintained whenever possible.

8.1.6 ORP Solutions (Zobell's Solution)

Oxidation reductional potential (ORP) solutions (approximately 270 millivolts) are used when calibrating water quality meters. Slight eye irritation is the potential hazard when working with ORP solution. Skin irritation is not anticipated; however, caution should be exercised to prevent skin contact. Impervious gloves and safety glasses with side shields should be worn at all times when working with ORP solutions. It is normally possible, and far more practical, to use ORP solutions in the office prior to entering the field. This practice should be maintained whenever possible.

8.2 Spray Paint

Personnel may be exposed to spray paint while surveying or marking areas prior to construction activities. Spray paint is a respiratory tract and eye irritant. Personnel should use spray paint in a well-ventilated area. Eye protection should be worn at all times. Cans should be treated as compressed gas. Closed containers may rupture due to pressure buildup from extreme temperatures. Keep cans away from heat and flame. Always spray paint from an upwind position to avoid unnecessary exposure. Safely store spray cans in vehicles, with their caps in place and away from the vehicle controls (gas and brake pedals).

8.3 Gasoline

Exposure to gasoline can occur while refueling equipment. Equipment should be shut off and allowed to cool before fueling or refueling. Minimize splash hazards so skin contact does not occur. If skin contact does occur, flush affected area with water. Approved safety cans or Department of Transportation approved containers must be used when handling and/or using 5 gallons or less. A safety can is defined as an approved closed container, of not more than 5 gallons capacity, having a flash arresting screen, a spring-closing lid and spout cover and is designed so it will safely relieve internal pressure when subjected to fire exposure. Approved is defined as equipment that has been listed or approved by a nationally recognized testing laboratory. Spill containment material should be readily available when using gasoline on Site.

8.4 Hydraulic Fluids and Fuels

Contact with pressurized hydraulic fluids and fuels can cause severe injury to eyes and skin. Hydraulic fluids and fuels can penetrate the skin and may require immediate medical attention. In the event of a hydraulic system failure or fuel line rupture, the operator is to shut down the equipment immediately and contain the

fluid or fuels using the spill cleanup materials (i.e., pads and/or loose sorbent) available at the Site. Prior to working on the system, the system must be depressurized.

8.5 Carbon Monoxide

Carbon monoxide (CO) is a colorless, tasteless, and odorless gas that mixes evenly with air. It is produced any time a carbon-based fuel such as gasoline, propane, or oil burns. CO can build up in enclosed and semi-enclosed enclosures. Heavy equipment, vehicles, and generators can produce CO. Make sure work areas are well ventilated when operating the above-mentioned equipment. Also, minimize sitting in idling vehicles. If you are in an idling vehicle, open a window to increase ventilation. Early signs and symptoms of exposure include irritated eyes, headache, nausea, weakness, and dizziness. If symptoms are experienced, move to fresh air and notify the appropriate emergency personnel.

8.6 Chemical Hazard Analysis

Table 4 below provides a summary of predominant COCs and other contaminants/air hazards and symptoms of overexposure with contaminant specific action levels that may be utilized by the SSO or designee if site monitoring results or observed work conditions suggest that a specific contaminant needs to be measured independently to quantify a specific exposure. Should this occur, a COC-specific monitoring protocol will be developed by the SSO and appended to this HASP. A summary of the Hazard Communication Plan for the Site is included in Appendix C.

Table 4: Chemical Contaminants of Concern

Contaminant	Exposure Limits	IDLH	Symptoms of Exposure	Ionization Potential	Contaminant Specific Action Level	Special Designations
Antimony	NIOSH REL 0.5 mg/m^3	50 mg/m^3	Irritation to eyes, skin, nose throat, mouth; cough; dizziness; headache; nausea, vomiting, diarrhea; stomach cramps; insomnia; anorexia; unable to smell properly: Eyes, skin, respiratory system, cardiovascular system.	N/A	0.025 mg/m^3	
	OSHA PEL 0.5 mg/m^3					
	ACGIH TLV 0.5 mg/m^3 (Respirable)					
Arsenic, inorganic	NIOSH REL 0.002 mg/m^3 ceiling 15 min	5 mg/m^3	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, respiratory irritation, hyperpigmentation of skin	N/A	0.005 mg/m^3 29 C.F.R. 1910.1018	Carcinogen
	OSHA PEL 0.010 mg/m^3					
	ACGIH TLV 0.01 mg/m^3					
Cadmium	OSHA PEL 0.005 mg/m^3	9 mg/m^3	Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, sub-sternal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia	N/A	0.0025 mg/m^3 29 C.F.R. 1910.1027	Carcinogen
	ACGIH TLV 0.01 mg/m^3 0.002 mg/m^3 (r)					
	NIOSH REL 35 ppm 200 ppm ceiling					

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Contaminant	Exposure Limits	IDLH	Symptoms of Exposure	Ionization Potential	Contaminant Specific Action Level	Special Designations
Carbon monoxide	OSHA PEL 50 ppm ACGIH TLV 25 ppm NOSH REL 35 ppm	1,200 ppm	Headache, tachypnea, nausea, lassitude (weakness, exhaustion), dizziness, confusion, hallucinations; cyanosis; depressed S-T segment of electrocardiogram, angina, syncope	14.01 eV	25 ppm	Potential Landfill Gases
Copper, Dusts and Mists, as Cu *Note: copper fume has lower exposure limits than those listed here*	OSHA PEL 1 mg/m^3 ACGIH TLV 1 mg/m^3 NIOSH REL 1 mg/m^3	100 mg/m^3	Irritation eyes, nose, pharynx; nasal septum perforation; metallic taste; dermatitis; In Animals: lung, liver, kidney damage; Anemia	N/A	0.5 mg/m^3	
Gasoline	OSHA PEL None NIOSH REL 10 ppm ceiling (10 min)	Ca [N.D.}	irritation eyes, skin, mucous membrane; dermatitis; headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis (aspiration liquid); possible liver, kidney damage; [potential occupational carcinogen]	NA	NA	
Hydrogen Sulfide	OSHA PEL 20 ppm ceiling 50 ppm 10 min once only if no other meas. exp. occurs ACGIH TLV 1 ppm 5 ppm STEL NIOSH REL 5 mg/m^3	100 ppm	Irritation to eyes and respiratory system, apnea, dizziness, headache, fatigue, eye pain, irritability	10.46 eV	5 ppm	Potential Landfill Gas
Iron	OSHA PEL	2500	Irritation eyes, skin, mucous	N/A	5 mg/m^3	

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Contaminant	Exposure Limits	IDLH	Symptoms of Exposure	Ionization Potential	Contaminant Specific Action Level	Special Designations
	10 mg/m^3 ACGIH TLV 5 mg/m^3 NIOSH REL 0.050 mg/m^3	mg/m^3	membrane; abdominal pain , diarrhea, vomiting: possible liver damage.			
Lead	OSHA PEL 0.05 mg/m^3 ACGIH TLV 0.05 mg/m^3 Methane can form an *explosive* mixture in air at levels as low as 5 percent.	100 mg/m^3	Lassitude (weakness, exhaustion), insomnia; facial pallor; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypertension	N/A	0.03 mg/m^3 29 C.F.R. 1910.1025	
Methane	NIOSH REL Hg Vapor: TWA 0.05 mg/m^3 [skin]	5,000 ppm	Methane is a "simple asphyxiant," so it can displace available oxygen. Immediately or shortly after exposure to oxygen levels of less than 15 percent in air, a person may feel tired, dizzy, and have a headache.	N/A	< 5% in air	Explosive
Mercury	ACGIH TLV TWA 0.025 mg/m^3 OSHA PEL TWA 0.1 mg/m^3 NIOSH REL 0.05 mg/m^3	10 mg/m^3 (as Hg)	irritation eyes, skin and stomach; cough, chest pain, dyspnea (breathing difficulty), insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); weight loss.		0.05 mg/m^3	

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Contaminant	Exposure Limits	IDLH	Symptoms of Exposure	Ionization Potential	Contaminant Specific Action Level	Special Designations
Manganese	OSHA PEL C 5 mg/m^3		Asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness, dyspnea (breathing difficulty, rales, flu-like fever; low back pain; vomiting; malaise (vague feeling of discomfort); lassitude (weakness, exhaustion); kidney damage	N/A	0.1 mg/m^3	
	ACGIH TLV 0.02 mg/m^3 (respirable particulate matter), 0.1 mg/m^3; (inhalable particulate matter)					
	NIOSH REL TWA 1 mg/m^3					
Nitric Acid	OSHA PEL TWA 2 ppm (5 mg/m^3)	25 ppm	irritation eyes, skin, mucous membrane; delayed pulmonary edema, pneumonitis, bronchitis; dental erosion	11.95 eV	1 mg/m^3	
	NIOSH REL 0.015 mg/m^3					

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Contaminant	Exposure Limits	IDLH	Symptoms of Exposure	Ionization Potential	Contaminant Specific Action Level	Special Designations
Nickel	OSHA PEL 1 mg/m³ AGIH TLV 1.5 mg/m³ NIOSH REL 0.2 mg/m³	10 mg/m³	Sensitization dermatitis, allergic asthma, and pneumonitis. Potential occupational carcinogen.	N/A	0.5 10 mg/m³	Carcinogen
Selenium	OSHA PEL 0.2 mg/m³ ACGIH TLV 0.2 mg/m³ NIOSH REL 0.05 mg/m³(r)	1 mg/m³	Irritation eyes, skin, nose, throat; visual disturbance; headache; chills, fever; dyspnea (breathing difficulty), bronchitis; metallic taste, garlic breath, gastrointestinal anemia; liver necrosis, cirrhosis; kidney, spleen damage: eyes, skin, respiratory system, liver, kidneys, blood, spleen.	N/A	0.1 mg/m³	
Silica, crystalline	OSHA PEL 0.05 mg/m³(r) ACGIH TLV 0.025 mg/m³ (respirable cristobalite, quartz) NIOSH REL TWA 0.05 mg/m³	25 mg/m³ (cristobalite, tridymite) 50 mg/m³ (quartz, tripoli)	Cough, dyspnea (breathing difficulty), wheezing; decreased pulmonary function, progressive respiratory symptoms (silicosis); irritation eyes	N/A	0.025 mg/m³	Carcinogen
Silver	OSHA PEL TWA 0.01 mg/m³ NIOSH REL TWA 1 mg/m³	10 mg/m³ (as Ag)	Blue-gray eyes, nasal septum, throat, skin; irritation, ulceration skin; gastrointestinal disturbance	NA	0.005 mg/m³	

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Contaminant	Exposure Limits	IDLH	Symptoms of Exposure	Ionization Potential	Contaminant Specific Action Level	Special Designations
Sulfuric Acid	OSHA PEL TWA 1 mg/m^3 NIOSH REL 5 mg/m^3	15 mg/m^3	irritation eyes, skin, nose, throat; pulmonary edema, bronchitis; emphysema; conjunctivitis; stomatitis; dental erosion; eye, skin burns; dermatitis	?	0.5 mg/m^3	
Zinc	OSHA PEL 5 mg/m^3 ACGIH TLV 2 mg/m^3	500 mg/m^3	Metal fume fever: chills, muscle ache, nausea, fever, dry throat, cough; lassitude (weakness, exhaustion); metallic taste; headache; blurred vision; low back pain; vomiting; malaise (vague feeling of discomfort); chest tightness; dyspnea (breathing difficulty), rales, decreased pulmonary function	N/A	2.5 mg/m^3	

REL: NIOSH Recommended Exposure Limit
PEL: OSHA Permissible Exposure Limit
STEL: Short Term Exposure Limit
TLV: ACGIH Threshold Limit Value
TWA: Time Weighted Average
LFC: Lowest Feasible Concentration
N/A: Not applicable
f/cc: fibers per cubic centimeter
ppm: parts per million
mg/m^3: milligrams per cubic meter
r: respirable fraction

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9. PHYSICAL HAZARD ANALYSIS

Precautions will be taken to abate physical hazards identified for this project as well as chemical hazards as described in Section 8.1. The following physical hazards have been identified and will be minimized through a TRA described in Section 9.1.

- Uneven Walking Surfaces/Terrain
- Heavy Equipment Operation
- Inclement Weather
- Heat Stress
- Power Tool Operation
- High Noise Environment
- Corrosives Handling/Exposure
- Underground Utilities
- Overhead Utilities
- Slips, Trips, Falls
- Lifting
- Unnatural Postures (twisting, static movement)
- Repetitive Motions
- Fauna & Flora Hazards
- Cold Stress
- Working on or Near Water
- Compressed Gases
- Driving
- Drilling
- Confined Space

9.1 Hazard Identification and Task Risk Assessment

9.1.1 Task Risk Assessment

TRAs will be conducted for all field tasks. Level 1 TRAs are qualitative assessments performed for low to moderate risk tasks, while Level 2 risk assessments are conducted for moderate to high-risk tasks, like permitted work or work around water. The AA, PM and/or PSM determine the TRA level, based on reviewing the TRA table. HITRA-trained personnel lead the TRAs, while anyone can participate in the reviews. The TRA review team shall include a representative from those performing the work, and the IA and PA for permitted work. The team can also include safety, engineering, geology, hydrology, industrial hygiene personnel, or other specialists, as warranted. TRAs for site work are provided electronically via the H&S HUB which can be accessed on tablets/phones or will be printed and kept at the job site or in the vehicle.

The hierarchy of controls shall be used to mitigate hazards and reduce risks to acceptable levels (low to moderate). Work will not be authorized to proceed with risks above moderate. Controls shall be evaluated starting with elimination and working down to PPE.

The hierarchy of controls listed from most effective to least are as follows:

1. Elimination
2. Substitution
3. Engineering
4. Isolation
5. Administrative
6. PPE

9.2 Working During Hunting Season

Hunting could occur on public or private land surrounding the Site and represents a potential hazard to employees working at the Site because of the potential for contact with hunters and the risk of being in the line of fire from stray or intentional projectiles, resulting in injury or death. To help limit employee exposure to hunting activities during hunting season, employees shall:

- Know when hunting seasons are. Visit the Montana Fish Wildlife & Parks website (https://fwp.mt.gov/hunt/seasons) for yearly hunting season dates.
- Wear orange high visibility vests or shirts to be viewable from all directions.
- Stop work if gunshots are heard or hunters are seen in the area by any member of the field team. Communicate that gunshots were heard to the FTL as soon as possible.
    - Workers will investigate and risk assess when/if it is safe to resume work.

10. AIR MONITORING PLAN

The air monitoring plan presented in this section of the HASP is a plan to be implemented during certain activities conducted by W&C or W&C Contractors to identify and quantify airborne contaminants such as dust, and combustible gas.

The types of real time field monitoring instrumentation to be used on the Site are summarized in Section 10.1. The air monitoring protocol to be implemented during this scope is summarized in Sections 10.2 and 10.3.

10.1 Monitoring Instrumentation

All instruments must be validated to calibration standards at least daily or more frequently if required by the manufacturer and must be in good working order. The following direct measurement field monitoring instruments may be utilized at the Site for continual and periodic monitoring:

- Multi-Gas Meter: Ventis MX4 Multigas Detector or equivalent for detection of oxygen and combustible gas to be used for continuous monitoring of potential gas intrusion during certain work activities.

10.2 Work Area Air Monitoring

Planned activities are not expected to cause off-site migration of contamination (via volatile or dust emissions, for example) or result in field personnel's exposure to significant concentrations of site contaminants. The most likely route of exposure to hazardous chemicals on this Site is direct contact or inhalation of contaminated dust. The USEPA has established a National Ambient Air Quality Standard for PM-10 (particles less than 10 micrometers in diameter) of 0.150 milligram per cubic meter (mg/m^3) over a 24-hour period. If dust generating activities are to occur in areas of known contaminant impacts, a more conservative action level will be established based on the OSHA Permissible Exposure Limit (PEL) or other established threshold limits (e.g. National Institute for Occupational Safety and Health [NIOSH] Recommended Exposure Limit (REL) or American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) for the primary COC within that area.

If continuous uncontrolled visible dust is observed being generated from work activities, affected site work should cease and engineering controls (e.g., dust suppression methods, ventilation for volatile organic compounds [VOCs], source removal, etc.) will be implemented.

Atmospheric monitoring for oxygen and combustible gas (lower explosive limit [LEL]) may be conducted during drilling and excavation (including test pitting) activities at the discretion of the SSO or as specified in a project work plan. Atmospheric monitoring will be conducted in accordance with OSHA standards for excavations.

10.3 Personal Air Monitoring

Based on the level of known contaminants likely to be encountered during activities included in this HASP, personal air monitoring is not expected to be required for the protection of W&C personnel. Task-specific personal air monitoring may be required if the hazard analysis or results of work zone air sampling indicate that contaminants may be present at concentrations approaching the PEL.

Table 5: Air Monitoring

Instrument	Frequency	Concentration Expected	COC & Action Level	Action
Multi-gas Meter (O_2, LEL)	As required by the project work plan or at a minimum of once every 30 minutes during direct push, drilling, test pitting, or excavation activities within known source areas or within the limits of the landfill area. An initial background reading will be recorded daily prior to starting the activity. Increase frequency of readings if levels above background are observed.	Background readings below action level	Oxygen < 19.5% - >23.5% LEL < 5 %	Stop work and back off to a safe upwind location. Do not commence work until atmospheric levels are controlled to within safe limits. Assess for implementation of controls (cover source, ventilate, remove source, etc.). If action levels cannot be met, cease work and notify the PSM and PM for direction.

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11. PERSONAL PROTECTIVE EQUIPMENT

While PPE can be vitally important and useful, it should ***not*** be the first form of hazard control implemented. Engineering and administrative controls should be implemented first. OSHA has several regulations on PPE (29 CFR 1910.132-139) that will be followed by personnel covered by this HASP. This section also doubles as the OSHA-required written certification of PPE hazard assessment. See the HASP approval page for required date and the name of certifier.

Table 6: PPE Requirements

PPE Required	Applicable Work Activities
Level D Work Uniform:	
• Long-sleeved shirts and long pants • Composite or steel-toed boots with socks • Hard hats • Safety glasses with side eye protection • Reflective safety/traffic vest and/or long sleeved-high visibility shirt • Protective gloves (blister-preventive, impervious, cut resistant, etc.)	All site work activities
Level D Modifications: will be identified and required per project-specific TRAs.	
Level C Protection is not anticipated for this scope of work, no Level C or higher protection level (A or B) work is NOT allowed without prior approval from the PSM, PM, and HSM.	

11.1 Personal Protective Equipment

The levels of PPE to be used for this Site are summarized in Table 6. The information in this table is based on the hazard analysis completed for the Site and summarized in Section 9. The specific job task will be evaluated by the PSM or designee, via a TRA, and the appropriate PPE level will be established. The use of respirators is not anticipated at this Site. If any respirator work is required, it will not be done without prior approval of the PSM and PM under an approved Respiratory Protection Plan. If Level C is determined to be required for work, a project-specific respiratory protection program will be drafted and appended to this HASP, and any respirator work will be completed in accordance with OSHA regulations 29 CFR 1910.134.

12. DECONTAMINATION PLAN

When necessary, CRZs for each work area throughout the Site will be established by the SSO or designee to limit the possibility of contamination outside the work area. If the work is mobile in nature, the decontamination zone will be determined and established by the SSO or designee at the beginning of each work day. The general establishment approach of work zones are described in Section 7.

A decontamination line for personnel and equipment shall be established if the work to be completed at the Site has the potential for contaminating equipment or clothing. The procedures outlined below describe the decontamination protocol.

12.1 Disposable PPE

Personnel wearing disposable PPE (e.g., outer cover boots, gloves, etc.) and disposable clothing will, following gross removal of visible contaminants, place the PPE in a receptacle established at the hot line before leaving the CRZ. Disposable PPE will be disposed in accordance with applicable state or federal regulations. Provisions for disposal of PPE are summarized in the Site Management Plan.

12.2 Decontamination of NON DISPOSABLE PPE

To decontaminate non-disposable PPE, visibly or suspect contaminated areas of the PPE shall be washed with a detergent (TSP, Alconox, or Liquinox) and water solution.

Any clothing to be laundered will be bagged in the CRZ and labeled as such. The laundry service must be informed of the potential contaminants. Other reusable protective wear (such as waders) will be cleaned and decontaminated with appropriate solutions such as those listed above.

12.3 Decontamination of Equipment

Excavating or Heavy Equipment:

Heavy equipment that has entered the exclusion zone will be appropriately decontaminated (e.g., steam-cleaned and washed with a water spray) prior to leaving the CRZ (most likely by the W&C Contractor operating the equipment). Tracks and wheels of equipment that have entered the exclusion zone will be washed (e.g., with a steam cleaner) in the CRZ prior to entering or crossing a public road. Decontamination of heavy equipment will be conducted in accordance with the project specifications for the remediation action. Decontamination materials and fluids will be disposed of in an approved location.

13. SPILL CONTAINMENT MEASURES

Although anticipated activities should not warrant spill containment measures, it is possible (though remote) that incidental "spillable" quantities of chemicals may be present. Spillable quantities of chemicals such as acids and solvents are not anticipated to be utilized during decontamination activities.

Gasoline, diesel fuel, hydraulic oils, and oil used in heavy equipment may constitute a "spillable" quantity. Spill containment equipment will be stored at the Site by the W&C Contractor in order to immediately respond to a spill and containment, and spill response measures will be outlined in W&C Contractor SSHASPs.

A minimum of spill containment equipment to be stored on Site will include the following:

- Absorbent material (such as speedy dry): 5-gallon bucket volume,
- Absorbent hazmat spill socks: 4 – 8 to 10-foot lengths,
- Non-absorbent booms (for use on water): 4 – 10-foot lengths,
- Absorbent pads: 1 standard bundle/package of hazmat spill pads,
- 1 – Long handled shovel, and
- 1 – 55-gallon drum (removable top) for collection of contaminated spill material – drums retained shall be compatible with the wastes it is intended for (i.e., plastic drums shall be available for corrosive wastes, etc.) and this will be evaluated by the PSM.

The following containment procedure should be followed by the party responsible for the equipment in the event of a gasoline and/or oil spill:

1. Carefully contain and stop the source of the spill, if safe to do so.
2. Protect nearby bodies of water and drains by diking, use of absorbents, or absorbent boom. Do not flush down sewer or drainage systems.
3. Prevent contact with ignition sources or areas/equipment that requires protection.
4. Apply sand or absorbent materials to the spill to prevent continued spread of the liquids.
5. Carefully shovel, scoop, or sweep into a compatible waste container for reclamation or disposal - caution, flammable vapors may accumulate in closed containers.
6. Ensure contaminated spill materials are properly disposed per state and federal requirements.

14. CONFINED SPACE ENTRY

Confined Space Entry (CSE) can be very hazardous work and it is W&C's policy that CSE work will be avoided whenever possible. Improper CSEs across the country have resulted in numerous deaths of both entrants and would-be rescuers. W&C's CSE Program complies with the OSHA standard 29 CFR Part 1910.146, Permit-Required Confined Spaces (PRCSs). Confined space work presents unique hazards to workers who enter such spaces, as well as to those on the outside. Proper preparation and attention to detail during entry operations is required to avoid the occurrence of serious or fatal incidents. W&C's CSE Program applies to any entry of a PRCS, whether it is for the purposes of on-going operations, maintenance, construction-related activities, and/or is made by an outside contractor.

A confined space is defined as a space that:

1. Is large enough and configured that an employee can bodily enter and perform assigned work.
2. Has limited or restricted means of entry or exit.
3. Is not designed for continuous employee occupancy.

A PRCS is defined as a confined space that has:

1. The potential for a hazardous atmosphere, or
2. The potential for an engulfment hazard, or
3. A tapered floor or inwardly converging walls, or
4. Any other serious health or safety hazard.

The federal OSHA standard 29 CFR Part 1910.146 is typically applicable to general industry and is more comprehensive than the construction standard 29 CFR 1926.21 (b) (6) (i) for confined space entry. In the event of an OSHA inspection, the regulatory agency can and has cited employers utilizing the general duty clause. W&C's CSE Program applies to any entry of a PRCS, whether it is for the purposes of on-going operations, maintenance, construction related activities, and/or is made by an outside contractor.

W&C has a CSE policy which can be found in W&C's H&S Manual at Section 12 and is incorporated into this section of the HASP. W&C's CSE policy and OSHA's PRCS regulation 29 CFR 1910.146 will both be followed.

CSE is not anticipated at this Site. W&C employees are trained to recognize and identify confined spaces but shall ***not*** enter or work in a confined space without additional proper training, backups, and requisite supplies and equipment. If confined space entry is determined to be required, modifications to this HASP will be made by the PSM and PM in consultation with the HSM prior to initiating entry.

Should a CSE be warranted for this project, the entry procedure will be coordinated between the SSO and the entry Contractor as procedures apply. A permit for entry of permit required confined spaces is provided in Appendix F. Completed permits shall be maintained in PSM project files for at least one year for review purposes.

15. HAZARD CONTROL INFORMATION

15.1 Warm and Cold Environments

Weather-related hazards anticipated during operations include cold and heat stress. Cold stress will most likely occur during colder temperatures in the winter or early fall (however, hypothermia has been known to occur in the summer), if personnel or clothing gets wet during wind chill conditions. Heat stress will most likely occur when wearing protective clothing that decreases natural body ventilation. Workers should be aware of signs of cold or heat stress in themselves and other workers as described below. Cold-related symptoms range from a "chill" and "trench foot" to more serious conditions such as frostbite or hypothermia. Heat-related symptoms range from heat rash and heat cramps to more serious conditions such as heat exhaustion and heat stroke.

Under extreme environmental conditions, workers will be required to use the "buddy system" to monitor for signs of chemical exposure, weather-related stress, and other H&S hazards. Personnel will work in pairs and will maintain constant line of sight with each other. If a "buddied" person must leave the work area, then his or her buddy must accompany them. First aid equipment and trained personnel will be available on Site.

15.1.1 Hot Environments

To reduce the risk of heat-related illness, the following measures will be taken when temperatures are at or above 80°F:

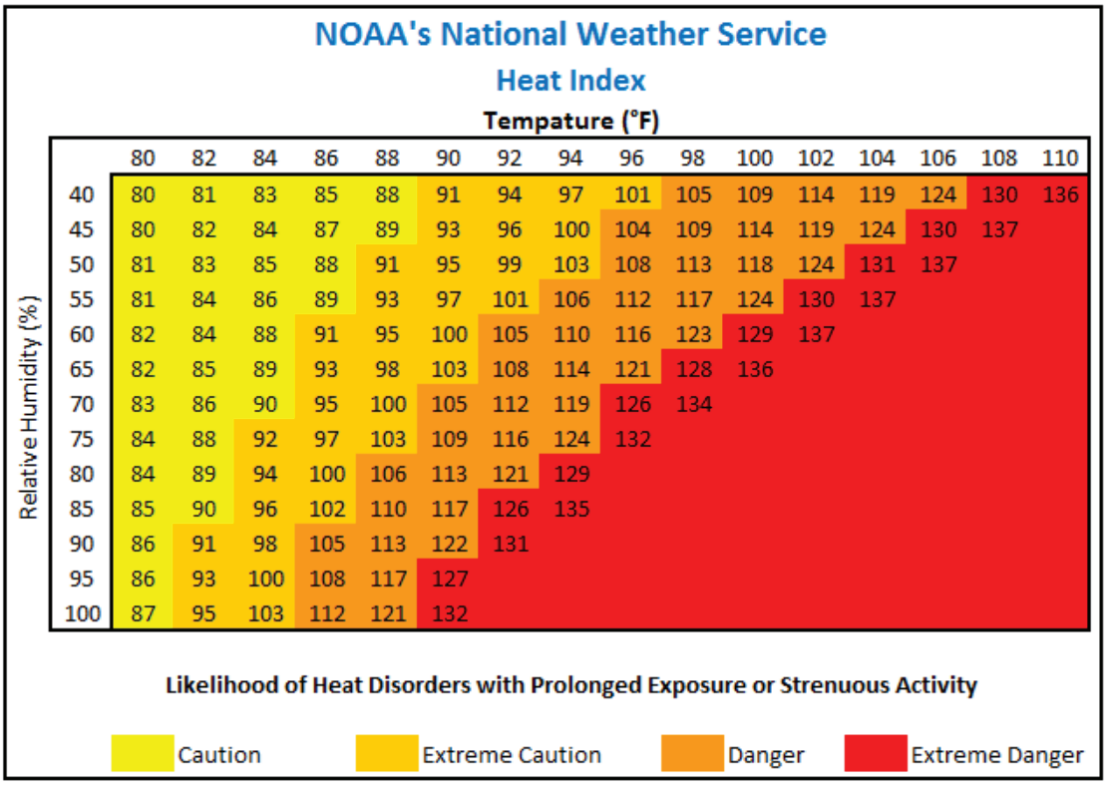
- Employees will be trained prior to working outdoors.
- Working hours will be modified to work during the cooler hours of the day, when possible. When a modified or shorter work-shift is not possible, more water and rest breaks in shade will be provided.
- Employees working in warm or hot temperatures will carry cell phones, or other means of communication, to ensure that emergency services can be called without delay.
- Employees will have access to air conditioning in a vehicle, nearby building, etc.
- The SSO will regularly remind employees about the importance of rest breaks in hot weather and will encourage employees to drink water throughout the day.
- When chemical resistant clothing is worn, body ventilation and evaporation are greatly reduced. Additional breaks will be scheduled for personnel wearing coveralls in hot weather.

In conditions where the temperature is at or exceeds 95°F, the following controls will be implemented:

- The PM considers if work can be rescheduled to a cooler day.
- Employees and their supervisors must maintain effective communication through voice, visual, or electronic means so that contact can be made if necessary.
- Observation/monitoring of employees for signs of heat illness by:
    - Use of a mandatory buddy system, or
    - Other productive observation means.
- Designate at least one employee on each worksite as authorized to call EMS.
- Consistent reminders throughout the shift for employees to drink water.
- Holding pre-shift meetings prior to work to discuss the high-heat procedures in place.
- Any new or returning employees shall be observed for the first 14 days of employment to ensure acclimatization to the high heat.

As a recommended practice, the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service Heat Index (Table 7) will be used as a screening tool on this project to evaluate if a heat stress situation may exist.

Table 7: NOAA's National Weather Service Heat Index



Personnel should be aware of the effects of extreme temperature environments, provided with adequate liquids, and instructed to observe each other for signs of heat or cold related stress. Medical conditions associated with heat include: heat stress, heat stroke, heat exhaustion, heat cramps, and heat rash. Table 8 describes heat-related illness symptoms and what to do if these medical conditions occur.

Table 8: Heat-Related Illness Symptoms and Controls

Heat Illness	Symptoms	What to Do
Heat stroke	• Red, hot, dry skin (no sweating) • Throbbing headache • Dizziness • Nausea • Confusion • Unconsciousness	1. Call 911 to get medical help immediately. 2. Get the victim to a cool, shady area. 3. Cool them off with a cool shower, garden hose, wet cloths, ice packs, etc. 4. Do not give the victim fluids to drink. 5. If EMS is delayed, call the hospital for further instructions.

Heat Illness	Symptoms	What to Do
Heat Exhaustion	• Heavy sweating • Pale, clammy skin • Tiredness • Weakness • Headache • Dizziness • Confusion • Nausea, vomiting • Fainting	1. Get the victim to a cool, shady area to rest. 2. Loosen and remove any heavy clothing. 3. Give them cool water to drink unless they are sick to the stomach. 4. Cool the body by spraying with cool water or apply a wet cloth to skin, preferably the back of the neck.
Heat Cramps	Muscle pains or spasms, usually in the abdomen, arms, or legs	1. Get the victim to a cool area and have them sit quietly. 2. Give them clear juice or a sports beverage. 3. Have them rest for a few hours. 4. Seek medical attention for heat cramps if they do not subside in 1 hour.
Heat Rash	Skin irritation looking like a red cluster of pimples or blisters	1. Move employee to a cool, less humid area. 2. Keep the affected area dry.

These signs can be distinguished from those associated with chemical hazards as chemical hazards usually do not cause changes in skin temperature and/or color, or the ability to sweat.

15.1.2 Cold Environments

Cold stress occurs when the ambient air temperatures drop below normal ranges and there is an increase in wind speed. For some locations where winter weather is not a common occurrence, cold stress can occur at near freezing temperatures (32ºF). Key factors that can bring about or aggravate cold stress are: age, body size, physical condition, length of exposure, wind, temperature, exhaustion, hunger, dehydration, alcohol intake, smoking, and improper clothing and equipment. Cold stress can lead to the development of hypothermia, frostbite, and trench foot.

The following are required controls for employees working in cold environments:

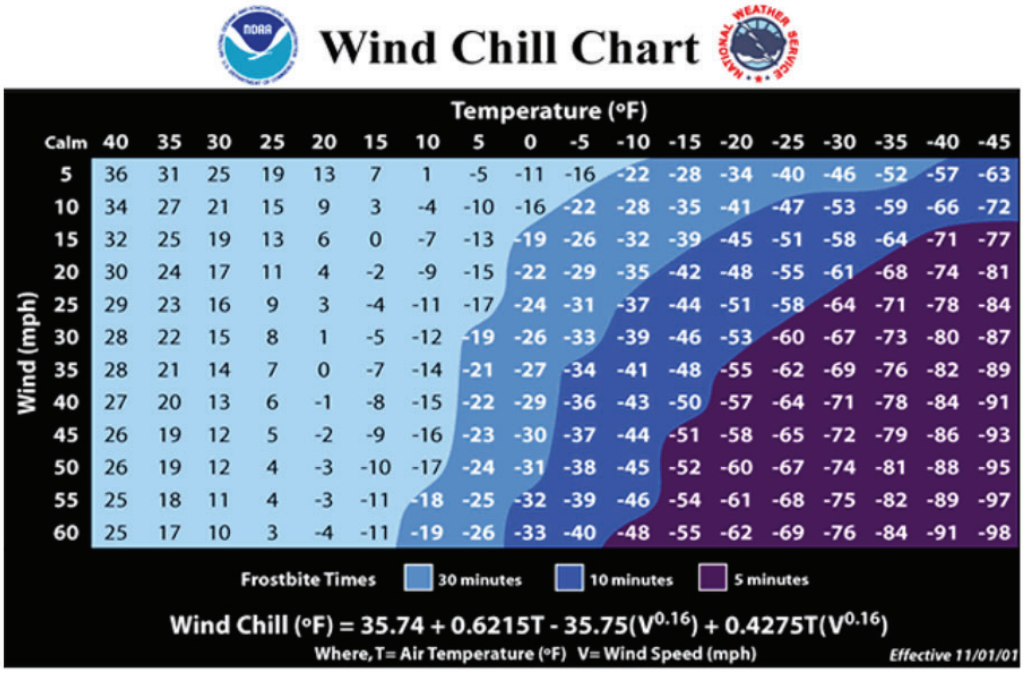
- The PM considers rescheduling work to a warmer day if severe cold temperatures are expected.
- Temperature and wind speed monitoring shall be conducted when air temperatures are below 30ºF (-1.1ºC). Field staff check temperature, wind speed, and worker conditions every hour to determine if conditions have changed that require additional or different controls.

- Dress for the weather, which includes at a minimum a warm jacket, hat or hood, insulated boots, warm socks, and gloves or mittens.
- Keep a change of dry clothing available in case work clothes become wet.
- Do not underestimate the wetting effects of perspiration. Oftentimes wicking and venting of the body's sweat and heat are more important than protecting from rain or snow.
- Take breaks in warm areas.
- In extremely cold conditions, where face protection is used, eye protection must be separated from the nose and mouth to prevent exhaled moisture from fogging and frosting eye shields or glasses.
- Clothing must be dry. Moisture should be kept off clothes by removing snow prior to entering heated shelters.
- If an employee experiences heavy shivering, frostbite, excessive fatigue, drowsiness, irritability, or euphoria, return to a heated shelter immediately.
- Consider the windchill chart (Table 9) when performing work activities in cold weather.

For work practices at or below 20°F (-7°C), the following shall apply:

- Continuous skin exposure shall not be permitted when the air speed and temperature results in an equivalent chill temperature of -25°F (-32°C). (Refer to Table 9 for equivalent chill temperatures).
- If work is performed continuously in cold weather with an equivalent chill temperature at or below 20°F (-7°C), warm shelters (e.g., tents, trailers, vehicles) shall be made available nearby. Workers shall use these shelters at regular intervals. The frequent use of shelters depends on the severity of the environmental exposure.
- Workers experiencing the onsets of heavy shivering, frostnip, the feeling of excessive fatigue, drowsiness, irritability, or euphoria shall immediately return to the shelter. When entering the heated shelter, the outer layer of clothing shall be removed, and the remainder of the clothing loosened to permit sweat evaporation. Field staff are encouraged to bring extra clothing in the event their clothing becomes wet.
- If workers are handling fluids (i.e., gasoline, alcohol, or cleaning fluids), precautions shall be taken to avoid soaking of the clothing and skin contact with the fluids.

Table 9: NOAA Wind Chill Chart



While working in cold environments, workers' best practices are eating and drinking properly, taking breaks in warm areas, using the buddy system, and always wearing a personal floatation device (PFD) if employees are on or within three feet of water.

Signs of **cold stress** are summarized as follows:

- Hypothermia: uncontrollable shivering, confusion, weakness or loss of coordination, pale or cold skin, drowsiness.
- Frostbite: progressive numbness or loss of sensitivity, tingling or burning feeling, color change (white or purple), most common in ears, nose, hands/fingers, and toes.
- Trench foot: red skin, inflammation, blisters, and extreme pain after warming.

Should signs of cold stress be detected, the following first aid measures will be taken to protect workers:

1. Get the victim out of the cold.
2. Loosen tight clothing.
3. Remove perspiration soaked or wet clothing.
4. Apply warm blankets to the skin.
5. If conscious, give the victim cool water to drink.
6. Seek medical attention and call 911.

15.2 Noise Exposure/Hearing Conservation

Hazardous noise levels are ubiquitous on construction sites. Noise sources typically include the engines and/or motors of the equipment, the operating parts of the equipment, compressed air, and others. Noise-induced hearing loss (NIHL) is insidious and often occurs before one can notice it. Hearing protection devices (HPDs) including ear plugs and/or muffs as appropriate will be provided to personnel and will be used in areas with noise levels perceived as loud at or above 85 decibels (dBA) by the SSO or designee. Such activities may include drilling, heavy equipment use during test pitting, and other activities observed to need HPDs for work at the Site. If necessary, a sound meter may be used by the SSO or designee to survey work area sound levels.

OSHA PEL for Noise	
Noise limit	**Time (hrs.)**
90 dBA	8 hours
95	4
100	2
105	1
110	½
115	¼

ACGIH ® TLV ® and NIOSH REL for Noise	
Noise limit	**Time (hrs.)**
85 dBA	8 hours
88	4
91	2
94	1
97	½
100	¼

Some examples of typical approximate sound levels include the following (also refer to Appendix J – "Noise Thermometer"):

Sound Pressure Level	**Activity/ies or Settings (varies depending on distance)**
180 decibels (dB)	Rocket launch from pad
170 dB	Shotgun blast
150 dB	Jet engine taking off, firecracker, artillery at 500 feet
140 dB	Pain threshold and jet engine at 25 meters distance
130 dB	Jackhammer, power drill, air raid, car race, symphony percussion
125 dB	Jet taking off at 100 meters distance, car stereo, chain saw
120 dB	Chain saw, hammering, siren, jet plane at ramp
110 dB	Pop/rock group/band, power saw, leaf blower
100 dB	Pneumatic chipper, factory machinery
90 dB	Heavy truck, tractor, blender, mixer
85 dB	Average street traffic, handsaw, noisy restaurant

Sources: Bruel & Kjar Instruments, Inc. and League for the Hard of Hearing.

Note that the dB scale is a logarithmic scale which measures noise based on the amplitude of sound waves. An adjusted decibel (dBA) scale was developed to account for the non-linearity of the human ear's response to sound waves of the same amplitude at different frequencies. Regulatory agencies use the dBA scale due

its better correlation to the relative risk of higher frequencies causing NIHL (OSHA Technical Manual, Section III: Chapter 5, 2022).

15.3 Permitted Activities

IA are trained and competent to open and close permits. Permits shall:

- Define the scope of work,
- Identify hazards and assesses risk,
- Establish control measures to eliminate or mitigate hazards,
- Link the work to other associated work permits or simultaneous operations,
- Be authorized by the responsible person(s), and
- Communicate the above information to all involved.

While additional permits could apply at the Site, the CoW permits that are likely to be required are outlined in subsequent sections below.

NOTE: Elimination of the hazard is our first hierarchy or control and should be seriously considered before issuing any permit.

15.3.1 Ground Disturbance

A Ground Disturbance permit will be issued for any manual digging exceeding 12 inches and any mechanical digging (unless grading) under 2 inches. Prior to performing any ground disturbance activities in which earth, rock, or other material in the ground is moved, removed, or otherwise displaced by means of use of any tools, equipment, or explosives, personnel shall submit a locate request (811). Where ground disturbance is within 2 feet of a known underground utility, the ground disturbance location shall be moved, or the dig area potholed and the utility exposed. Where soil samples are required from excavations deeper than 4 feet, persons should collect samples using a reach tool or from an excavator bucket.

Thorough site risk assessments, utility locates, blind sweeps, spotters, associated permitting, and competent personnel will provide adequate controls to ensure the safety of personnel and property. Employees shall review and be in compliance with the Ground Disturbance Section which can be found in Section 19 of the BP HSSE Addendum.

15.3.1.1 Excavation and Trenching

Excavation and trenching activities may occur on Site. All excavation and trenching activities shall be in compliance with the Excavation and Trenches Section which can be found in Section 19.3.4 of the BP HSSE Addendum. Personnel shall not enter excavations greater than 3 feet without the approval of the PSM or IA.

15.3.1.2 Environmental Drilling

Drilling to any depth requires potholing to 6.5 feet and 110% diameter of the borehole. A Ground Disturbance permit is also required. Drilling activities may occur for water well installation and development, using sonic, air or dual rotary, auger, and cable tool drilling techniques. There are serious inherent hazards when drilling if not adequately risk assessed. All drilling shall be in compliance with the Ground Disturbance Section which can be found in Section 19 of the BP HSSE Addendum, which outlines strict controls for the mitigation of associated hazards. Additionally, drillers and their helpers must be pre-qualified to ensure they are trained and competent. All equipment shall be pre-inspected prior to use. Any modifications to the drill rig shall be disclosed and approved for use.

15.3.2 Working at Heights

Personnel may find themselves at a location that presents a fall hazard due to steep banks, ladders, culverts etc. Any work within four feet of a ledge or drop off of four feet or more requires fall protection and work within six feet of a ledge or drop off of six feet or more requires a Working from Heights permit. Ask yourself if you need to be near the leading edge of a fall hazard. Where elimination is not possible, adequate controls shall be imposed and documented on the associated work permit. Controls will typically include fall arrest or restraint (harness/lanyard).

15.3.3 Overhead/Elevated Work

A four-foot fall protection rule will be in effect for all work activities. The walking/working surface on which personnel are to work must have the strength and structural integrity to safely support workers. Personnel are not permitted to work on those surfaces until it has been determined that the surfaces have the requisite strength and structural integrity to support the workers.

Where personnel are exposed to falling 4 feet or more from an unprotected side or edge, the employer must select a guard-rail system, safety net system, or personal fall arrest system to protect the worker.

A personal fall arrest system consists of an anchorage, connectors, body harness and may include a lanyard, a deceleration device, lifeline or a suitable combination of these. Each person in a hoist area must be protected from falling 4 feet or more by guardrail systems or personal fall arrest systems. If guardrail systems (or chain gate or guardrail) or portions thereof must be removed to facilitate hoisting operations, as during the landing of materials, and a worker must lean through the access opening or out over the edge of the access opening to receive or guide equipment and materials, that person must be protected by a personal fall arrest system.

Personal fall arrest systems, covers, or guardrail systems must be erected around holes (including skylights) that are more than 4 feet above lower levels.

Where walkways are provided to permit persons to cross over excavations, guardrails are required on the walkway if it is 4 feet or more above the excavation.

Each person using ramps, runways, and other walkways must be protected from falling 4 feet or more by guardrail systems.

15.3.4 Confined Space Entry

A confined space can be permit-required, based upon the hazards that exist and the tasks that will be performed as documented on the TRA. Employees are trained to recognize and identify confined spaces, but shall not enter or work in a confined space without proper training, permits, backups, and requisite supplies and equipment. Each confined space shall be evaluated to determine if it is permit-required using the confined space permit evaluation form and approved by W&C management. Culverts are examples of confined spaces found within the ACMS Site. See Section 14 for more information on CSE.

15.3.5 Underground and Aboveground Utilities

W&C's Electrical Safety Program for overhead electrical lines will be followed. Any time work is performed in the vicinity of overhead lines, a spotter will be assigned to help operators maneuver equipment in and around the wires. Table 10 shows the proper distances to be maintained around high-tension wires.

Table 10: Distances Around High-Tension Wires

Voltage Ranges (kV)	Minimal Clearance Distances (feet)
0-50	10
51-100	12
101-200	15
201-300	20
301-500	25
501-750	35
751-1000	45

Unintended equipment or vehicle contact with poles or guy wires may result in utility poles or power lines falling on personnel or equipment. Personnel should not park near or under powerlines, poles, and guy wires. To prevent damage, guy wires shall be visibly marked, and work barriers or spotters provided. Additionally, when working with heavy equipment and parking around guy wires, the minimum radial clearance distances for electrical power shall be observed.

Staging of mobile equipment, soil sampling using hand tools, and heavy equipment operations present the risk of contacting underground/aboveground utilities/utility components (guy wires, junction boxes, fire hydrants, phone boxes, etc.). Identified utilities present include: electrical, sewer, potable water, and

communications. Thorough site risk assessments, utility locates, blind sweeps, spotters, associated permitting, and competent personnel will provide adequate controls to ensure the safety of personnel and property. Adherence to the above radial clearances should also protect personnel from accidental contact during field work. Where ground disturbance is within two feet of a known underground utility, the sample location shall be moved, or the dig area pot holed and the utility exposed.

15.4 Control of Hazardous Energy

Control of hazardous energy or LOTO applies to all W&C employees who work on electrical circuits and equipment or conduct other servicing and maintenance tasks on equipment with hazardous sources of energy. These provisions apply not only to those who use locks and tags to safely perform their work, but also to those who work in areas where others may use locks and tags. The minimum procedural requirements for the LOTO are provided in Sections 15.4.1 and 15.4.2. Site personnel shall also comply with control of hazardous procedures at the Site as applicable. If LOTO is needed, employees refer to section 13 loto.doc of the Health and Safety Manual for detailed procedures on control of hazardous energy.

15.4.1 Requirements for Energy Control Devices

1. LOTO devices must be singularly identified and must only be used for controlling hazardous energy. They may not be used for other purposes and must meet the requirements in Section 13 loto.doc of the Health and Safety Manual.

15.4.2 Application of Energy Control Procedure

The Energy Control Procedure shall cover the following elements and shall be done in the following sequence:

1. Development of the procedure
2. Preparation for shutdown
3. Machine or equipment shutdown
4. Machine or equipment isolation
5. LOTO device application
6. Stored energy
7. Verification of isolation
8. Reenergization

15.5 Hot Work

On the ACMS Site, a Hot Work Permit may be required for hot work for primary sources of ignition (any work with equipment and tools that is likely to ignite a flammable or combustible atmosphere). Additional de

tails about safe work expectations for hot work and permit requirements including roles and responsibilities are covered in Section 22 of the BP HSSE Addendum.

15.6 Lifting Operations

Lifting operations may be considered a hazardous activity and a permit may be required. Employees shall review and follow Lifting procedures covered in Section 24 of the BP HSSE Addendum.

15.6.1 General Lifting Requirements

When using any type of lifting equipment, it is necessary to follow requirements for a successful lift. These requirements include:

- A TRA is conducted prior to any lift being conducted.
- Only competent operators, LLs and riggers shall perform and control lifting operations.
- A formal lift planning process, if required by lift category, shall include:
    - Assessment of the lifting task including rigging and handling, load maneuvering, load integrity and stability, and pick and set down,
    - Arrangements with SIMOPs.
    - Clear identification of roles and responsibilities,
    - Communication plan to allow the work to be completed in accordance with the plan,
    - Assessment of the overall lifting conditions including lift barrier/exclusion management and warning signage,
    - Verification that specified lifting equipment has been visually inspected and certified prior to lifting operations,
    - Verification that the safety and load limit devices are installed and operational,
    - Verification that the lifting load weight in the planned configuration and rigging are documented and do not exceed the planned crane lift load capacity, and
    - Verification of bearing capacity of the surface under lifting equipment.
- Records of lifting operations will be maintained.
- All personnel who are not involved with the lift shall be kept outside the safety zone as designated in the barrier/exclusion management plan.
- Employees shall not work or walk under a suspended load.
- Suspended loads shall be attended unless they are physically secured to prevent unintended movement.

- Any time a crane or lifting device is shock loaded, it shall be tagged and removed from service until an inspection and recertification by a qualified agency.

During lifting operations, anyone can give the 'Stop Work' command, which shall be obeyed by everyone, including the crane or hoist operator.

Additional details on the Lifting permit, critical lifts, incidental lifts and roles and responsibilities can be found Section 24 of the BP HSSE Addendum.

15.7 Electrical Hazards

The electrical safety program for W&C is detailed in Section 19 of the Company H&S Manual. Electrical hazards are one of four aspects of an OSHA "focused inspection" for construction and present obviously life-threatening hazards. Equipment capable of reaching the overhead power lines shall always maintain a safe clearance of at least 10 feet. Lines rated above 50 kilovolts (kV) will have safe clearance of 10 feet plus at least 0.4 inch per additional 1 kV. W&C will request that lines are de-energized prior to work in the area or adequately insulate the lines, if and as necessary.

W&C and other employers will comply with OSHA regulations 29 CFR Part 1926, Subpart K – Electrical 1926.400 – 1926.

15.8 Other Heavy Equipment

This project will have heavy equipment (such as excavators, backhoes, dozers, haul trucks, etc.) on Site presenting significant hazards to workers. Two areas of an OSHA "focused inspection" for construction include "struck by" and "caught in or between" hazards, accidents or injuries. Most incidents involving heavy equipment are due to a lack of awareness of the victim by the operator and/or of the impending motion by the victim.

Communication, eye contact, hand signals, and awareness of personnel locations and movements and equipment motions are critical to avoid incidents. Personnel will not "take breaks" under or behind heavy equipment (on average, 20 workers per year die when they are backed over while doing this). All heavy equipment will have back-up alarms. Personnel on the ground will not approach equipment (such as excavators or backhoes) from the operator's "blind side" (the side with the arm and bucket). A minimum safe distance of 25 feet will be maintained by personnel from moving heavy equipment. Personnel may only approach heavy equipment when the equipment is stopped, buckets or other hydraulic arms lowered to the ground and visual contact with the operator is maintained. If operations require personnel to be in closer vicinity of operating heavy equipment, then a spotter and job pre-briefing must be employed so that the team is aware of the operational hazards.

Site personnel will comply with OSHA regulations 29 CFR Part 1926, Subpart O – Motor Vehicles, Mechanized Equipment, and Marine Operations 1926.600 – 1926.606. Personnel will not repair, fix, service,

or maintain heavy equipment without first locking out and tagging out all hazardous energy sources that the worker(s) may be exposed to during the repair. This includes "blocking" sources of gravitational energy (e.g., a falling bucket).

15.9 Hazard Communication

All site personnel must comply with 29 CFR Part 1910.1200 – Hazard Communication. Employers will maintain copies of SDSs on Site for all chemicals on Site. Personnel will have appropriate hazard communication training and each employer will have a written Hazard Communication Program for any chemicals brought to and/or stored on the project Site. The W&C Hazard Communication Program is available for review in Appendix C.

15.10 Fire and Explosion

Fire and/or explosion may occur because of worker carelessness during refueling operations, if parking in long, dry vegetation, or if hot work is performed. The following precautions shall be adhered to:

- Smoking is not allowed during any sampling or refueling activities; smoking shall occur only in designated areas.
- Avoid parking in tall, dry vegetation. Where driving is necessary in dry vegetated areas, a fire watch shall be used, equipped with a fire extinguisher.
- Request a Hot Work permit for any primary sources of ignition (hot work).
- Flammable and combustible liquid storage shall be posted "No Smoking."
- Make good housekeeping a top priority.
- All mobile equipment shall be equipped with a fire extinguisher.
- Vehicles and equipment shall not be parked and left unattended in tall/dry vegetation.
- All mobile equipment shall be free of any fluid drips/leaks.

While not anticipated, fuel cans shall be OSHA-accepted, labeled safety cans and shall not be transported in vehicle passenger enclosures (cabs, trunks, etc.).

15.11 Wildfire Controls and Response

Wildfires are unplanned fires burning in a natural area that is caused by humans or lightning. Wildfires are common in the western United States during high heat and drought conditions.

15.11.1 Required Controls

1. Employees are not permitted to access any area that is actively on fire.

2. Employees pay attention to air quality alerts and their communities' alert system for wildfires in the area.
    a. If the US air quality index is listed to be greater than 150, then the air is classified as "unhealthy" and those exposed may begin to develop negative health effects.
    b. An updated air quality index can be referenced by visiting AirNow (preferred website) or Weather Underground website (acceptable if the Weather Underground weather station is closer to the work area than the AirNow weather station).
3. Return to the area only when authorities indicate it is safe.
4. If smoke from a wildfire impacts the Site, notify the PSM or SSO to determine if the distribution of N-95 or P-95 and/or more protective dust masks is appropriate for employee use when working in an outdoor location impacted by smoke from a wildfire.

15.11.2 Best Practices

1. Avoid hot work activities when working in areas of drought.
2. Avoid working outdoors when the air quality is "unhealthy" or "very unhealthy" according to AirNow (preferred website) or Weather Underground (acceptable if the Weather Underground weather station is closer to the work area than the AirNow weather station), when possible.
3. Use a N-95 or P-95 and greater dust mask certified by NIOSH to prevent exposure to particulate matter.

15.12 Hot Surfaces

Personnel shall use caution around any activities/equipment that generate heat. This primarily includes combustion engines and exhausts. Equipment maintenance shall not be performed on hot engines.

15.13 Site Illumination

Working in poorly illuminated environments is dangerous, and therefore, activities should only be performed during daylight hours. Any field activities performed in poorly illuminated environments, outside daylight hours, shall be properly risk assessed and approved by the HSM.

15.14 Motor Vehicles

Motor vehicles present hazards to both operators and personnel working in the immediate area. Personnel shall:

- Be appropriately licensed or certified and shall possess a valid driver's license from their jurisdiction of residence for the appropriate class of vehicle.
- Successfully completed a hands-on driving safety course.

- Perform daily inspections (360º walk around), and monthly formal documented inspections. Take out of service any vehicle with a deficiency which could affect the safe operation of a vehicle.
- Obey all posted speed limits and signs.
- Drive at speeds consistent with road conditions and visibility.
- Stay alert.
- Avoid all distractions:
    - Drivers are prohibited from using any two-way mobile communication device such as mobile or smart phones, smartwatches, tablets, laptops, two-way radios or pagers while driving the vehicle. **This includes using the devices in hands-free mode.**
- Wear seatbelts.

In addition, the workforce should avoid driving vehicles on the highway during nighttime hours, due to abundant wild and domestic animals in the area.

The task of backing a vehicle results in over 30% of all collisions. As such, site personnel should utilize the "first movement" policy. This policy can be summarized as follows:

- Avoid backing if possible (parallel park or pull through);
- Back-in to parking spots upon arrival, instead of departure;
- Limit backing distance if you must back;
- Back up slowly using mirrors and a back-up camera, if possible; and
- GOAL: Get Out And Look or use a spotter if you aren't sure what's behind you.

Some tasks may involve working around traffic. Traffic poses significant risk of injury or death to personnel and must be managed accordingly to keep workers safe. If employees will be working around traffic the task will be risk assessed and traffic control will be used.

15.15 Body Mechanics and Material Handling

Handling water and/or soil samples and tools and digging soil samples presents a significant risk of sprains and strains, and long-term illnesses like tendonitis if not mitigated. Blisters to the hands and general soreness are also inevitable if adequate controls are not followed. The following controls shall be used to prevent sprains, strains, and blisters:

- Gently stretch prior to any tasks which require lifting or repetitive motion.
- Always lift with the legs, keeping the back straight.
- When lifting objects, avoid twisting your back, take small steps, and pivot with your feet.

- Never lift an object that is too heavy (50-pound maximum) or awkward. Ask for help and use mechanical devices (carts, wagons, etc.) for heavy and awkward loads, and for long packing distances.
- Share work tasks and take rest breaks as necessary to lessen the chance of developing muscle fatigue or soreness in joints.
- Maintain as close to a neutral body posture as possible to prevent overuse of soft tissue such as muscle, tendons, and ligaments.
- Use a cart or wagon instead of backpacks for transporting samples, where possible.
- Dig at a natural pace and avoid over-exerting.
- Use gloves with adequate padding on the palms, and make sure they stay dry.
- Use "mole skin" directly to sensitive areas of the skin.
- Rotate diggers within each team, as necessary.

15.16 Hand and Power Tools

If the use of electrical hand tools is required, tools shall be double insulated or grounded. Additionally, a Ground Fault Circuit Interrupter shall be used if operated outdoors or near water. All cords shall be heavy duty and inspected daily for frays, cuts, and abrasions. Portable power tools pose a special danger to employees because they are deceptively small and light, yet they can do great bodily harm if improperly used or poorly maintained. Read and understand instruction manuals and use the tool only for the purpose for which it was intended.

15.17 Slips, Trips, and Falls

Slips, trips, and falls while walking on uneven terrain are a continuous concern. When combined with rain, snow, or ice, it yields a perfect recipe for a slip, trip or fall. Personnel shall always wear appropriate safety footwear and be aware of slick and uneven surfaces that contribute to unsure footing. W&C shall insist on maintaining walking surfaces free of snow, ice, and mud; as feasibly possible. Other precautions include:

- Walk, never run,
- Inspect and clear a walking path before carrying objects,
- Keep one hand free for balance,
- Take short steps in slick conditions,
- Always practice good housekeeping,
- Insure adequate lighting, and
- Backfill sample pits as soon as practical.

Additionally, personnel shall avoid steep slopes and stay at least six feet away from subsidence, steep banks, shafts, holes, etc. and stay the same height to distance ration away from highwalls.

15.18 Working On, Over or Near Water

Employees on the Site may be required to work in or around water during operations. In general, when employees are within six feet of water that is three feet deep or greater or the bottom is muddy and of sufficient thickness that it could create an entrapment hazard, employees shall ensure the following safety rules are followed:

15.18.1 General Requirements when working around water

- Wear Coast Guard approved PFD work vests. Do not use recreational boating PFDs such as ski jackets for work applications.
    - Additional PFD requirements can be found in Section 31 of the BP HSSE Addendum.
- Fall protection systems, such as guard rails between the work area and the water, may be used in place of PFD vests and others working around water controls.
- All personnel working around water should have appropriate training and be familiar with emergency response procedures and contacts.
- Continuous oversight and/or the buddy system shall be used when personnel are working around water.
- Throwing rings or throwing bags should generally be used before launching a rescue skiff.
- If the risk assessment requires the use of a rescue skiff, personnel shall update this policy with small vessel operation requirements.
    - Rescue skiffs should be used judiciously and may pose additional drowning risk for rescue personnel. When working around water, the applicable emergency gear identified in the risk assessment (i.e., throw rings, PFDs, skiffs) must be available on-site at all times.

15.19 Working Alone

Working alone or in isolation means working at a site where the worker cannot be seen or heard by another worker, does not expect regular contact and/or visits from another member of the project, and/or when assistance is not readily available in the event of an injury, illness, or emergency.

It is not working alone if the worker could get the attention of someone capable of providing helpful assistance when the worker requires it. For example, by maintaining visual contact, staying within hearing range of others, being continuously monitored by a remote surveillance camera, sounding an alarm, or making frequent contact with other workers.

15.19.1 RISK ASSESSMENTS

A TRA and/or SOP shall be completed, and associated controls implemented to eliminate or reduce the identified risks to workers working alone or in isolation prior to commencing work. The Working Alone Checklist (Appendix F) can be used to document check-ins with workers who are working alone. Refer to Section 30 of the BP HSSE addendum for the full Working Alone policy.

15.19.2 15.19.2 HIGH RISK WORK ACTIVITIES

Working alone or after hours is not allowed when any high-risk hazard exists such as the following:

- Working at heights.
- Energy isolation.
- CSE.
- Working in hazardous atmospheres where a safety stand-by or Self-contained Breathing Apparatus is required (e.g., H_2S).
- Working with electricity or other hazardous equipment (e.g., chainsaws).
- Working over or near water.
- Working in an area where there is an increased potential for violence.
- Working with other identified high or severe risks.

15.20 Weather-Related Hazards

In addition to heat and cold temperatures, weather-related hazards should be anticipated and appropriate protective measures taken. Given the multi-season work schedule and unpredictable weather, multiple seasonal adverse weather should be anticipated. ***Always check the weather forecast for the Site locale before heading out!*** The following are some possible weather-related hazards and protective measures:

- **Lightning**: Do not work during electrical storms. If you hear distant thunder, or see ominous clouds indicative of a storm approaching, the occurrence of lightning may be imminent. Employees must follow the 30/30 rule. Begin counting as soon as you see lightning. If you hear thunder before you reach 30, stop work and go indoors. If shelter inside a permanent building is not available, seek shelter in a fully enclosed vehicle with all windows and doors closed. Outdoor activities must be suspended for at least 30 minutes after the last sound of thunder and/or sight of lightning. If being outdoors during lightning is unavoidable:
    - Avoid open fields or hilltops as lightning typically strikes the tallest object in an area.
    - Stay clear of trees, scaffolding, rooftops, cell phone towers, and other tall isolated objects.

- Crouch close to the ground in a ball-like position with your head tucked and your feet and knees together. Keep minimal contact with the ground; do not lie flat on the ground.
- If in a group during a thunderstorm, separate from each other to reduce the number of injuries if lightning strikes the ground.
- Avoid metal objects, equipment, and surfaces than conduct electricity.
- Avoid water as lightning can electrify the water body. Any employee in open water during lightning or a thunderstorm must return to land immediately.

Discuss the lightning safety protocol before work begins, including how employees will be notified about lightning warnings, identify location(s) for safe shelter, discuss check-in procedures when safe shelter is reached, specify approaches for determining when to suspend outdoor activities and when to resume outdoor work activities.

- **Snow squalls, whiteouts, blizzards, northeasters, freezing rain, sleet, or ice**: Do not schedule work when weather reports indicate potential storm or snowstorm watches or warnings. Send personnel home early in advance of an approaching storm. Alternatively, shelter workers if conditions are too hazardous to risk travel.
- **Tornado**: Take appropriate shelter. Do not schedule work when weather reports indicate potential hurricane or tornado watches or warnings. Send personnel home early in advance of an approaching storm.
- **Hail**: Take appropriate shelter. Do not schedule work when weather reports indicate potential hail watches or warnings.
- **Flash flooding**: Take appropriate shelter. Do not schedule work when weather reports indicate potential flash flooding watches or warnings. Have workers vacate drainages and low-lying areas and seek high ground. Do not attempt to navigate across flooded areas or waterways.

15.21 Biological Hazards

Of possible concern are venomous spiders and snakes, poisonous/irritating plants (poison oak, poison ivy), and stinging insects, particularly those to which individuals may have developed allergies (i.e., bees, wasps). Individuals with allergies to insect stings (bees, wasps, etc.) are encouraged to notify the person controlling the work/PIC. DTB meetings should identify potential locations of poisonous plants and dense foliage where insects or snakes may be hidden. A first aid kit will be available in all vehicles to treat minor insect bites and stings. Adherence to safe work practices such as not reaching into dark places or picking up rocks and other objects, inspecting clothing and exposed skin for presence of ticks periodically during the day, and wearing steel-toed safety boots, long-sleeve shirts, and heavy leather work gloves when removing or contacting vegetation.

First aid procedures for minor insect bites and stings include: cold applications, use of soothing lotions (e.g., calamine). First aid procedures for a bee sting include: removal of the venom, stinger, and venom sac. If the

bite or sting is from a venomous spider or produces a severe reaction, implement the following procedures: keep calm and keep the victim from excessive movement, preferably in a prone position, and immediately transport to the nearest medical emergency facility. If the victim cannot be transported to a hospital and emergency assistance is not immediately available, the field team should immobilize the bitten extremity keeping it below the heart, and if necessary, provide artificial respiration and CPR. It is essential to get the victim to a hospital immediately.

15.21.1 Poison Ivy

Poison ivy is a plant that causes an itchy, blistery rash that forms on the skin. Urushiol is an oil found within the plant that is responsible for irritation of the skin. All parts of poisonous plants (leaves, stems, roots, berries, etc.) may contain urushiol oil, even when the plant is dead. If the blisters on the skin are opened, there is an increased risk of infection. Therefore, it is important not to scratch the rash or blisters that form.

Poison ivy is most commonly observed in the Eastern and Midwestern United States in lake and stream habitats. Eastern poison ivy has a hairy ropelike vine with three shiny green leaves in the summer or red leaves budding from a small stem in the autumn. Poison ivy may have small, yellow flowers. Example pictures of poison ivy are depicted on Figure 4.

Figure 4: Examples of Poison Ivy


Poison Ivy Vine


Eastern Poison Ivy


Eastern Poison Ivy (young leaves)


Poison ivy flowers

Wild parsnip is an invasive species found in all states except Alabama, Florida, Georgia, and Mississippi. It is commonly found in disturbed landscapes such as along roadways and fields. The plant has an array of small yellow flowers on at the end of hollow, grooved, hairless stems. The yellow-green, toothed leaves are arranged into a circular cluster (Figure 5).

Figure 5: Examples of Wild Parsnip


Wild Parsnip Flower Cluster


Wild Parsnip Stalk


Wild Parsnip Leaf

15.21.2 Poisonous Plant Controls

The best way to protect against rash associated with poisonous plants is to avoid these plants. The following control measures are required when poisonous plants are onsite but will be avoided:

- Wear long pants, shoes, and socks.
- Notify the PM and other site workers about the location of poisonous plants that are encountered.

Where poisonous plant exposure is likely, follow control measures outlined in Chapter 26 of the W&C H&S Manual.

15.21.3 Ticks

Ticks transmit bacteria that cause illnesses such as Lyme disease or Rocky Mountain spotted fever. Ticks wait for host from the tips of grasses and shrubs (not from trees). When brushed by a moving person, they quickly let go of the vegetation and climb onto the host. Ticks can only crawl; they cannot fly or jump. Tick season typically lasts from April through October; peak season is May through July; seasons can vary depending on climate. Ticks can be active on winter days when the ground temperatures are about 45°F.

The best prevention of tick-borne illnesses is to prevent the ticks from attaching to the body. W&C employees working in areas containing tick habitat are required to:

1. **Conduct regular spot checks to look for ticks on clothing.** This is best achieved through frequent visual inspections during the day including a more complete inspection (checking your body) at the end of the day.
2. **Wear light colored pants.** Tyvek pants are provided to all employees who request them to meet the requirement for wearing light colored pants.
3. **Tuck pant legs into socks or wear boot gaiters**. Tucking pants into socks is intended to keep the ticks on the outside of clothing where they can be spotted and removed during visual inspections.

If you are not wearing boot gaiters or Tyvek, your pants should be taped where they are tucked into your socks. Light-colored boot gaiters impregnated with Permethrin (or non-treated) are available to all W&C staff with work-related field needs upon request. Permethrin kills ticks on contact.

Several best practices are encouraged when employees are working in areas known or suspected of having ticks, including:

- For overgrown areas where employees must work or access, the PM requests the client mow or clear the area prior to our employees accessing the area, as appropriate.
- Employees are encouraged to Stop Work and reschedule work activities if the area is not adequately mowed/cleared or if there is a large presence of ticks.
- Stay on cleared, well-traveled trails.
- If you intend to go off trail or into overgrown areas, use insect repellent.
    - Permethrin: Permethrin is the preferred repellant for tick exposure and will both deter and kill ticks. However, use permethrin with caution. Do not apply Permethrin directly to skin, it is to be applied only to clothing and allowed to dry (minimum of four hours) prior to use for maximum efficiency. Permethrin impregnated/treated clothing will require re-treatment but typically remains effective on clothing for multiple wash cycles. Follow manufacturer's instructions for safe usage.
    - DEET: Insect repellant containing DEET (Diethyl-meta-toluamide) can be used on skin or clothing as a tick deterrent. DEET acts as a tick repellant but will not kill ticks.
- Keep work areas clear by removing brush or leaf litter.
- Avoid sitting directly on the ground or on stone walls (havens for ticks and their hosts).
- Be aware that ticks can also be above you on taller vegetation and branches (but they do not jump!).
- Keep long hair tied back.
- Wear easily-removable outer layers of clothing (e.g., jacket, long-sleeved shirt, Tyvek, etc.) when working in tick habitat. Remove outer layers of clothing and place them in a sealed plastic bag prior to entering company vehicles, if possible.
- Place clothing in dryer on high heat for 10 minutes. Ticks can survive the hot water wash cycle, but the dryer will kill them.
- Do a final, full-body tick-check at the end of the day. If possible, ask a spouse or significant other to assist.

Tick bites must be reported to your Manager. Monitor the site of the bite for the appearance of a rash or fever beginning 3 to 30 days after the bite. At the same time, learn about the other early symptoms of tick-bo

rne disease, including Lyme disease, and watch to see if they appear in about the same timeframe. If a rash appears or other early symptoms develop, call the Nurse Hotline for medical attention or advice. Call 911, or local EMS, if experiencing a life-threatening event.

15.21.4 Mosquitoes

Mosquitoes, carriers of the West Nile Virus, Eastern Equine Encephalitis, and other diseases, are indigenous to the area. Employees working in areas where mosquito-borne illness is prevalent are required to cover as much of their skin as possible by wearing long sleeved shirts, long pants, and socks.

Best practices for mosquito bite prevention include:

- Eliminate standing water where mosquitos can breed. Mosquitos can develop in a standing body of water that persists for more than 4 days.
- Disrupt areas that can act as breeding grounds: Inspect work areas and remove sources of stagnant or standing water, such as dumping out water pails or making sure spare tires have no water in them. If unable to remove the breeding grounds, avoid the area and consider staying indoors before dawn and after dusk when mosquitos are more active.
- Use insect repellent containing DEET, picaridin, or oil of lemon to exposed skin and clothing. Permethrin on clothing is also effective at repelling mosquitoes.
- Employees, including those who are pregnant or who plan (or whose partner plans) to become pregnant in the near future, may contact their Human Resources Talent Partner to request an accommodation.

15.21.5 Wasps and Bees

Wasps (hornets and yellow-jackets) and bees (honeybees and bumblebees) are common insects that may pose a potential hazard to the field team if work is performed during spring, summer or fall. Bees normally build their nests in the soil. However, they use other natural holes such as abandoned rodent nests, tree hollows or uncovered cable reels. Wasps make a football-shaped, paper-like nest either below or above the ground. Yellow-jackets tend to build their nests in the ground but hornets tend to build their nests in trees and shrubbery. Bees are generally more mild-mannered than wasps and are less likely to sting. Bees can only sting once while wasps sting multiple times because their stinger is barbless. Wasps sting when they feel threatened. By remaining calm and not annoying wasps by swatting, you lessen the chance of being stung. Wasps and bees inject a venomous fluid under the skin when they sting. The venom causes a painful swelling that may last for several days. If the stinger is still present, carefully remove it with tweezers or scraping a credit card or other blunt object against the sting site in the opposite direction in which the stinger is embedded.

Employees must take the following steps to prevent bee, hornet, yellow jacket, and wasp stings:

- Wear clothing to cover as much of the body as possible. Note that wearing additional clothing may contribute to heat stress in warmer months.
- If a nest is known to be in a work area and the work task cannot be relocated, the nest may be removed provided the Manufacturer's instructions for insecticide use is followed in accordance with local and state laws.

Some people may develop an allergic reaction (i.e., anaphylaxis) to a wasp or bee sting. If such a reaction develops, **seek medical attention at once**. Persons who are allergic to bee and wasp stings should carry an epinephrine pen (e.g., EpiPen®) with them that is prescribed by a doctor and used to help abate swelling that occurs due to their allergy. Even if a person utilizes their EpiPen®, they still need to seek medical attention for follow-up care and observation.

15.21.6 Spiders

Although most spiders are harmless, there are two types of spiders that pose a potential hazard at the Site, including the Hobo and the Black Widow. Spider bites are rarely fatal. However, a spider's venom could be extremely painful, and in some cases, fatal if not treated immediately. Most bites can easily be prevented by wearing work gloves, keeping your hands out of dark areas, and not attempting to handle any spiders. Symptoms may include severe pain around the bite, profuse sweating, nausea, abdominal cramps, and difficulty breathing and speaking. Field personnel are reminded to exercise extreme caution when opening well caps and other closures. Spiders often reside in the upper portions of well casings. Spiders of concern include:

- The Hobo spider (*Eratigena agrestis*) spider is a light to medium brown color with a dark stripe down the center to either side of lighter midline stripes. Legs are solid light brown with no bands. Hobo spiders' range in size from 1 to 1¾ inches in diameter. Personnel are instructed not to attempt to handle any spiders in order to identify them. Hobo Spider bites can be painful and cause the skin to turn red. It was long believed that Hobo Spider venom could cause tissue damage and necrosis. According to the Centers for Disease Control and Prevention the hobo spider venom is not considered toxic to humans. This is supported by studies where hobo spider venom was injected into animals and failed to show any reactions.



- The western Black Widow (Latrodectus hesperus) spider is usually identified by their shiny black color and large rounded abdomens. Female Black Widows are generally larger than the males ranging from one to two inches in diameter. The obvious sign of a female Black Widow is the large red hourglass shape on the spider's abdomen. Although the hourglass shape lies on the underside of the spider, personnel are instructed not to attempt to handle any spiders in order to identify them. Black Widow bites are known to be very painful up to 8 to 12 hours after the bite has taken place. A bite causes severe muscle spasms throughout the entire body and could be deadly, especially to a child.



15.21.7 Snakes

Spring and summer seasons bring out a type of venomous snake in Montana, the Prairie Rattlesnake (*Crotalus viridis)*. Snake bites are serious and should be treated as though from a venomous snake such as a rattlesnake (see Appendix G: Montana Snake Guide for pictures to help with identification of snakes). Seek medical attention immediately, transport the victim to the nearest hospital. Signs and symptoms of venomous poisoning include swelling, pain, and tingling at the bite site, tingling and a metallic taste in the mouth, fever, chills, blurred vision, and muscle tremors. Even if the bite is not from a venomous snake, there is a real possibility of tetanus. The following first aid steps should be followed while transporting the individual to the emergency room or waiting for medical assistance, if the victim cannot be moved:

- Calm the victim and keep hydrated and comfortable;
- Immobilize the affected area and keep at or below the level of the heart;
- Remove rings, watches, and other constrictive items before swelling starts; and
- Gently clean the wound with an antiseptic soap and apply sterile dressing, do not apply ice or attempt to cut the bite site and suck out the venom.

The immediate goal should be safe and rapid transport to the emergency room without undue anxiety or activity that may accelerate absorption of the venom. A short walk is acceptable if the patient feels up to it and if no other alternative is available.

Personnel should remember that snake bites are preventable events. Most individuals that are bitten see the snake, but then take actions that put them at risk. Give snakes a wide berth, move away and the snake will not chase you. Always look before you step over an object, and before you turn over a rock or log, or place your hand in a crevice. Complete outdoor tasks during daylight hours. Personnel should always wear protective clothing (heavy leather work gloves, thick leather safety boots, long-sleeve shirts, and gaiters) when working in areas with tall grass or potential snake habitat.

15.21.8 Other Wild and Domestic Animals

Other animal hazards that could be encountered include wild and domestic animals. Most wild animals will be frightened away, but the more domestic they are, the less likely they will run. The following guidelines are recommended to avoid animal attacks in the field:

- Stay clear of domestic and wild animals;
- Surprising animals and thereby provoking an attack can be avoided by making noise when entering wooded or brushy areas, or areas with tall grass;
- Make a wide detour around all animals that are observed; and
- If animals that pose a potential threat are present and cannot be scared away, leave the area, and in the case of aggressive domestic animals, notify the Cascade County Animal Control.

Rodent nests or rodent infestations could pose a potential health hazard (rodents may carry hantaviruses, the causative agent of hemorrhagic fever); inhalation or ingestion of urine, feces or saliva, even aerosols, from infected rodents could transmit the virus to workers. Do not disturb mice nests. If removal is necessary, complete a TRA and follow the instructions on Appendix H: How to Clean Up After Mice.

15.22 Worker Fatigue

Extended work shifts and workdays will result in worker fatigue at some point. An evaluation for fitness for task shall be completed prior to work assignments at active sites where the site and/or task are identified as having potential exposure to health hazards including, but not limited to chemicals, noise, biological agents, etc. exist or may require use of a respirator.

Employees performing or visiting active field sites, shall certify they are fit for duty by signing "in and fit" and "out and fit" on the FAF (Appendix F), as described in the HITRA section.

Supervisors or managers shall monitor workers daily and discuss fatigue and tiredness. In addition, the following restrictions shall be adhered to:

- Workdays shall not exceed 14 hours within a rolling 24-hour period, and employees shall not work more than 60 hours over a continuous 7-day period without the approval of the AA and PSM;
- Be aware of your limitations;
- Use careful judgment;
- Follow procedures carefully;
- Take breaks when possible;
- Never work under the influence of drugs or alcohol;
- Avoid late nights on work days;
- Worker fatigue should be realized, monitored, and addressed; before accidents happen; and
- Personnel safety shall not be compromised by project schedule and/or budget constraints.

15.23 Asbestos Containing Materials

If asbestos-containing materials (ACM) are identified within the existing Site structures or elsewhere on Site, as required by both Federal USEPA regulation and by various States' regulations, if present, friable ACM will be properly "abated" prior to demolition by a licensed asbestos abatement contractor. If suspected ACM is encountered during site activities, the materials will be tested to determine whether or not they are ACM prior to continuation of work activities.

15.24 Lead Hazards

Lead-based paint (LBP) or other lead-containing materials (LCM), such as lead roof flashing and piping, may be present in some building materials of various structures on Site. As required by both Federal OSHA and USEPA and HUD regulations, W&C will make this determination and if present, LBP or LCM will be safely removed prior to or during demolition by trained employees of said contractor who are monitored and enrolled in their company's medical surveillance plan for lead.

15.25 Silica Hazards

Respirable crystalline silica is a common mineral found in many naturally occurring materials, such as sand and stone. Silica is used in the manufacturing of building products such as concrete, brick, and mortar. Routine, long-term exposure and inhalation of respirable crystalline silica can lead to silicosis, chronic obstructive pulmonary disease, lung cancer, kidney disease, autoimmune disorders, and cardiovascular disease.

15.25.1 Tasks with Silica Exposure

The following materials may be cut, sanded, drilled, jackhammered, sawed, mixed, or otherwise disturbed and may generate respirable crystalline silica at this project:

- Asphalt,
- Concrete, and
- Cement.

15.25.2 Silica Controls

Employees and W&C Contractors generating respirable silica dust will follow all controls in OSHA Silica Table 1 (see Appendix E). If all controls in Table 1 cannot be followed, then an exposure determination will be performed to evaluate employee exposure. The exposure determination may be performed using personal air monitoring data, objective data, or both to evaluate if employee exposure is at or above the action level.

Areas where airborne exposure to respirable crystalline silica is above the PEL will be labeled as a "Regulated Area." These areas must be demarcated and signs must be posted at entrances to all regulated areas. Only those authorized people with appropriate respiratory protection will be allowed to enter regulated areas.

Proper housekeeping is important to reducing airborne silica dust. The following is a list of housekeeping measures to be instituted onsite.

- Maintain all surfaces as free as possible from silica dust.
- Dry sweeping of silica dust is prohibited. Instead, wet sweeping methods or high efficiency particulate air (HEPA) vacuums will be used to clean-up silica dust.

- Compressed air will NOT be used to remove silica from any surface unless it is used with a ventilation system designed to capture airborne dust created while using compressed air.
- Workers may not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas.

Respiratory protection will be selected based on Table 1 (Appendix E) or, if Table 1 controls cannot be followed, based on an assessment of the potential airborne respirable crystalline silica exposure. Any employee required to wear a respirator for protection against respirable crystalline silica inhalation must be medically cleared to wear a respirator, have a current fit test, and have respirator training. If employees are required to wear respiratory protection, a site-specific respiratory protection plan will be created and attached to this HASP.

15.26 Bloodborne Pathogens

15.26.1 Scope and Application

The intent of this section is to describe the some of the procedures used to protect employees from occupational exposure to bloodborne pathogens at the Site. The full BBP exposure control plan applies to all employees with occupational exposure to blood or other potentially infectious materials (OPIM) and can be found in Chapter 14 of Woodard & Curran Health & Safety Manual.

15.26.1.1 Employees with Occupational Exposure

- Conduct work activities involving potential exposure to blood or OPIM in accordance with the requirements of the OSHA standard and the W&C Exposure Control Plan.
- Immediately report all incidents involving potential exposure to blood and OPIM to your Manager.
- Participate in initial and annual refresher training.
- Receive the Hepatitis B vaccination series or sign the declination form. Notify your Manager if the vaccination was originally declined but is later desired.
- Provide feedback on opportunities for program improvement, including any known new technology. Participate in the annual program review upon request.

15.26.2 Exposure Determination

Individuals that are First Aid/CPR trained have occupational exposure to BPP. A list of First Aid/CPR trained personnel can be found in Section 1.5, Table 2.

15.26.3 Methods of Compliance

15.26.3.1 Universal Precautions

Universal precautions stress that all blood and certain body fluids should be assumed to be infectious for bloodborne pathogens regardless of the perceived status of the source individual. OPIM includes any body

fluid visibly contaminated with blood, as well as a number of body fluids (e.g., amniotic, pericardial, peritoneal, pleural, synovial, cerebrospinal).

In most occupational settings, universal precautions do not apply to fluids such as saliva, feces, vomit, urine, sweat, tears, and nasal secretions, unless these fluids are visibly contaminated by blood.

15.26.3.2 Engineering Controls

Engineering controls are used to eliminate or minimize the risk of employee exposure to BBP, and include methods that either remove the hazard or isolate the worker from the hazard.

Hand Washing

- Employees will wash their hands with a non-abrasive soap as soon as possible, if not immediately after, removing gloves or coming in contact with potentially contaminated objects.
- At field sites or other locations where non-abrasive soap and running water are not provided, alternate arrangements will be made to provide hand washing capabilities. This will include either an appropriate antiseptic hand cleanser in conjunction with clean cloth/paper towels or antiseptic towelettes. When antiseptic hand cleansers or towelettes are used, hands will be washed with soap and running water as soon as feasible afterwards.
- Eating, drinking, and smoking are prohibited in any area where contamination of blood or OPIM exist and prior to hand washing following a potential exposure.

15.26.4 Exposure Incident

An exposure incident is defined as a specific eye, mouth, mucous membrane, non-intact skin, or parenteral contact with blood or OPIM that results from the performance of an employee's duties. All W&C employees covered under this program will be provided with post-evaluation and follow-up treatment in the event of occupational exposure to blood or OPIM.

15.26.4.1 Initial Response

1. Provide immediate care to the exposure site:
2. Wash wounds and skin with non-abrasive soap and water.
3. Flush mucous membranes with water.
4. Report the incident to H&S using W&C's electronic event reporting tool (see Appendix D).
5. Contact the Nurse Hotline (800-350-4511) for post exposure evaluation direction.

15.26.4.2 Post-Exposure Evaluation and Treatment

1. The medical evaluation will be provided to the affected employee at no cost and at a reasonable time and place. Post-exposure evaluation and treatment will be coordinated though the Nurse Hotline (800-350-4511).
2. The post-exposure evaluation and treatment protocol is provided in Section 8.2 of the corporate program.

15.27 COVID-19 Controls

The following controls will be instituted on this project to reduce the spread of COVID-19.

1. Project staff and visitors self-screen before coming to work and do NOT come to work if they are sick or have reason to believe they have COVID-19. Staff and visitors are prohibited from working at the site if they:

    a. Have any symptoms of COVID-19;

    b. Are under evaluation for COVID-19 (e.g., waiting for test results or have been asked to quarantine in the last 14 days);

    c. Have been diagnosed with COVID-19 and are not yet cleared to continue isolation; or

    d. Someone in their household falls into any of the above categories.

2. Face coverings:

    a. Indoors: Employees check the COVID-19 Community Level for their work location. In areas where the COVID-19 Community Level is "high", W&C strongly recommends employees wear a face covering. (Note: CDC updates the COVID-19 Community Levels weekly).

    b. Outdoors: Employees do not need to mask or distance unless required by local law or client.

3. Wash your hands often with soap and water for at least 20 seconds especially after you have been in a public place, touched common objects, or after blowing your nose, coughing, or sneezing, and before eating or smoking.

4. If soap and water are not readily available, use a hand sanitizer that contains at least 60% alcohol. Cover all surfaces of your hands and rub them together until they feel dry.

5. Do not shake hands.

6. Hold DTB meetings outside, when possible.

7. Clean common areas and commonly touched objects (e.g., surfaces, door handles, restrooms, etc.) daily.

8. Disinfect areas and equipment used by a COVID-19 positive individual if it has been less than 24 hours since the COVID-19 positive case was in the area or used the equipment.

9. Stagger shift start times and break times, as needed, to reduce the number of people in one area at a time to allow for social distancing.

10. Clean up after yourself to avoid spreading germs.

11. Comply with all Owner's Safety and COVID-19 compliance requirements.

15.28 Oft-Forgotten Hazards

There are many not so obvious hazards that are often forgotten or overlooked. Here is a partial list that should be considered and controlled as applicable to the scope of work.

- Allergies or medical conditions,
- Lack of food and drink,
- Repetitive motion (e.g., musculoskeletal disorders, ergonomics, lifting),
- Sun blindness (sunset, water or building reflection, snow blindness, etc.),
- Thin ice conditions,
- Ultraviolet radiation (UV) – eyes and sunburns,
- Other vehicles (snowmobiles, ATVs, trucks, boats, etc.), and
- Lack of needed supplies – change of clothes, flashlights and batteries.

APPENDIX A: APPROVALS AND SIGNATURES

(Also serves as OSHA required PPE assessment Certification)

Program Safety Manager **Date**
Nicole Santifer

Project Manager **Date**
Doug Spicuzza

Woodard & Curran H&S Manager **Date**
Joanna K. Wallace

Note: HASP is <u>not</u> complete without the approvals!

REVIEW ACKNOWLEDGMENT FORM

I have read and understand the requirements of this HASP and have received safety orientation on the contents of this plan. I agree to abide by these safety rules and understand that any violation may result in my removal from the Site.

Name	Representing (Group/Company)	Date

APPENDIX B: AMENDMENTS TO SITE HEALTH AND SAFETY PLAN

Record of Review & Revision

HASP review and update is required annually for active projects or when: 1) a new work phase not previously identified for the project is identified; 2) new project hazards (including chemicals) are discovered; 3) a change in the scope of work affects the degree of safety exposure; 4) an administrative change occurs (e.g., contact information for site personnel changes); or 5 new technology to control project hazards is considered or implemented for project use (note: new technology includes products and equipment introduced by manufacturers to protect workers performing hazardous waste operations.)

Date	Description of Change	Name of Person Making Change	Reason for Change (check all that apply or specify)						
			Annual Review	New Work Phase	New Hazards	Scope of Work Change	Administrative Update	New Technology Considered	Other (specify)

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APPENDIX C: HAZARD COMMUNICATION PROGRAM

A searchable online SDS database can be accessed by any device with internet access (phone, tablet, computer, etc.). The database can be found at:

www.MSDSSource.com

Username: Treci

Password: MSDS data

Hard Copies to be Printed for Field Copy

APPENDIX D: H&S EVENT REPORTING

Report a workplace injury/illness, safe act, unsafe act, unsafe condition, vehicle damage, property damage, or suggestion here (or use the QR code below): Health & Safety HUB (sharepoint.com)



APPENDIX E: OSHA SILICA TABLE 1

Exposure Control Methods When Working with Materials Containing Crystalline Silica

(Information form Table 1 of OSHA 29 CFR 1926.1153)

Equipment/task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours/shift	> 4 hours/shift
Stationary masonry saws	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions	None	None
Handheld power saws (any blade diameter)	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions	• None (when used outdoors) • APF 10 (when indoors or in enclosed area)	APF 10 (indoors or outdoors)
Drivable saws	• For tasks performed outdoors only: Use saw equipped with integrated water delivery system that continuously feeds water to the blade • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions	None	None

Equipment/task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours/shift	> 4 hours/shift
Handheld power saws for cutting fiber-cement board (with blade diameter of 8 inches or less)	• For tasks performed outdoors, use saw equipped with commercially available dust collection system • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions • Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with ≤ 99% efficiency	None	None.
Walk-behind saws	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions	• None (when outdoors) • APF 10 (when indoors or in enclosed area)	• None (when outdoors) • APF 10 (when indoors or in enclosed area)
Rig-mounted core saws or drills	• Use tool equipped with integrated water delivery system that supplies water to cutting surface • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions	None	None
Handheld and stand-mounted drills (including impact and rotary hammer drills)	• Use drill equipped with commercially available shroud or cowling with dust collection system • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions • Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with ≤ 99% efficiency and a filter-cleaning mechanism	None	None

Equipment/task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours/shift	> 4 hours/shift
	• Use a HEPA-filtered vacuum when cleaning holes		
Dowel drilling rigs for concrete	• For tasks performed outdoors only: Use shroud around drill bit with a dust collection system. Dust collector must have a filter with ≤ 99% efficiency and a filter-cleaning mechanism • Use a HEPA-filtered vacuum when cleaning holes	APF 10	APF 10
Vehicle-mounted drilling rigs for rock and concrete	• Use dust collection system with close capture hood or shroud around drill bit with a low-flow water spray to wet the dust at the discharge point from the dust collector OR • Operate from within an enclosed cab and use water for dust suppression on drill bit	None	None
Jackhammers and handheld powered chipping tools	• Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact. OR • Use tool equipped with commercially available shroud and dust collection system • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions • Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with ≤ 99% efficiency and a filter-cleaning mechanism.	• None (when outdoors) • APF 10 (when indoors or in enclosed area)	APF 10 (when indoors or outdoors)

Equipment/task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours/shift	> 4 hours/shift
Handheld grinders for mortar removal (*i.e.,* tuckpointing)	• Use grinder equipped with commercially available shroud and dust collection system • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions • Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with ≤ 99% efficiency and a cyclonic pre-separator or filter-cleaning mechanism	APF 10	APF 25
Handheld grinders for uses other than mortar removal	• For tasks performed outdoors only: Use grinder equipped with integrated water delivery system that continuously feeds water to the grinding surface • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions OR	None	None
	• Use grinder equipped with commercially available shroud and dust collection system • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions • Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with ≤ 99% efficiency and a cyclonic pre-separator or filter-cleaning mechanism	None (when used indoors or outdoors)	• None (when used outdoors) • APF 10 (when used indoors or in an enclosed area)

Equipment/task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours/shift	> 4 hours/shift
Walk-behind milling machines and floor grinders	• Use machine equipped with integrated water delivery system that continuously feeds water to the cutting surface • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions OR • Use machine equipped with dust collection system recommended by the manufacturer • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions • Dust collector must provide the air flow recommended by the manufacturer, or greater, and have a filter with ≤ 99% efficiency and a filter-cleaning mechanism • When used indoors or in an enclosed area, use a HEPA-filtered vacuum to remove loose dust in between passes	None	None
Small drivable milling machines (less than half-lane)	• Use a machine equipped with supplemental water sprays designed to suppress dust. Water must be combined with a surfactant • Operate and maintain machine to minimize dust emissions	None	None.
Large drivable milling machines (half-lane and larger)	• For cuts of any depth on asphalt only: Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust • Operate and maintain machine to minimize dust emissions	None	None

Equipment/task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours/shift	> 4 hours/shift
	• For cuts of four inches in depth or less on any substrate: Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust • Operate and maintain machine to minimize dust emissions OR • Use a machine equipped with supplemental water spray designed to suppress dust. Water must be combined with a surfactant • Operate and maintain machine to minimize dust emissions		
Crushing machines	• Use equipment designed to deliver water spray or mist for dust suppression at crusher and other points where dust is generated (*e.g.,* hoppers, conveyers, sieves/sizing or vibrating components, and discharge points) • Operate and maintain machine in accordance with manufacturer's instructions to minimize dust emissions • Use a ventilated booth that provides fresh, climate-controlled air to the operator, or a remote control station	None	None
Heavy equipment and utility vehicles used to abrade or fracture silica-containing materials (*e.g.,* hoe-ramming, rock ripping) or during demolition	• Operate equipment from within an enclosed cab • When employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions	None	None.

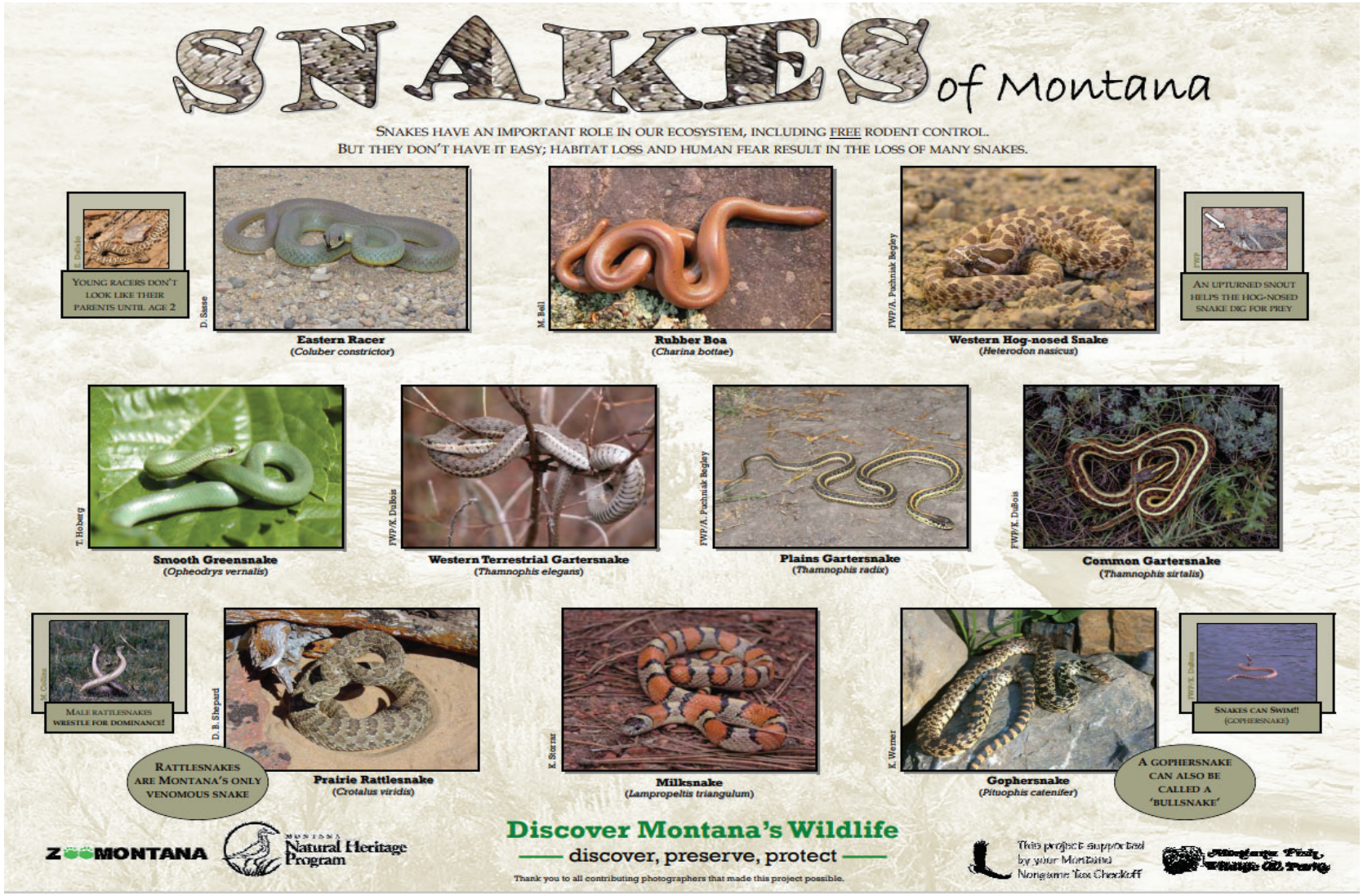
Equipment/task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours/shift	> 4 hours/shift
with silica-containing materials			
Heavy equipment / utility vehicles for tasks such as grading and excavating but not including: abrading, demolishing, or fracturing silica-containing materials	• Apply water and/or dust suppressants as necessary to minimize dust emissions OR • When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab	None	None

Notes:

1. When implementing the control measures specified in the table above, each employer must:
   a. For tasks performed indoors or in enclosed areas, provide a means of exhaust as needed to minimize the accumulation of visible airborne dust;
   b. For tasks performed using wet methods, apply water at flow rates sufficient to minimize release of visible dust;
   c. For measures implemented that include an enclosed cab or booth, ensure that the enclosed cab or booth:
      - Is maintained as free as practicable from settled dust;
      - Has door seals and closing mechanisms that work properly;
      - Has gaskets and seals that are in good condition and working properly;
      - Is under positive pressure maintained through continuous delivery of fresh air;
      - Has intake air that is filtered through a filter that is 95% efficient in the 0.3-10.0µm range (*e.g.,* MERV-16 or better); and
      - Has heating and cooling capabilities.
2. When an employee performs more than one task on the table above during the course of a shift, and the total duration of all tasks combined is more than four hours, the required respiratory protection for each task is the respiratory protection specified for more than four hours per shift. If the total duration of all tasks on the table above combined is less than four hours, the required respiratory protection for each task is the respiratory protection specified for less than four hours per shift.
3. For tasks not listed in the table, or where the employer does not fully and properly implement the engineering controls, work practices, and respiratory protection described in the table, the employer must ensure that no employee is exposed to respirable crystalline silica above 50 µg/m^3, calculated as an 8-hour TWA.

APPENDIX F: FORMS AND PERMITS

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APPENDIX G: MONTANA SNAKE GUIDE

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APPENDIX H: HOW TO CLEAN UP AFTER MICE

APPENDIX I: ACRONYM LIST

AA	Area Authority
ACGIH	Association Advancing Occupational and Environmental Health
ACM	Asbestos-Containing Material
ACMS	Anaconda Copper Mining Smelter
AR	Atlantic Richfield
BBSP	Behavior Based Safety Program
CFR	Code of Federal Regulations
CO	Carbon Monoxide
COC	Constituent of Concern
CoW	Control of Work
CPR	Cardio Pulmonary Resuscitation
CRZ	Contamination Reduction Zone
CSE	Confined Space Entry
dB	Decibel
dBA	Adjusted Decibel
DES	Disaster and Emergency Services
DTB	Daily Tool Box
EMS	Emergency Medical Services
ERP	Emergency Response Plan
ES&H	Environmental, Safety & Health
FAF	Field Authorization Form
FTL	Field Team Leader
H&S	Health and Safety
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HEPA	High Efficiency Particulate Air
HITRA	Hazard Identification Task Risk Assessment
HPD	Hearing Protection Devices
HSM	Health and Safety Manager
HSSE	Health, Safety, Security, and Environment
IA	Issuing Authority
IRIS	Integrated Risk Information System
kV	kilovolts
LBP	Lead-based Paint

LCM	Lead-containing Materials
LEL	Lower Explosive Limit
LM	Liability Manager
LOTO	Lock Out Tag Out
mg/m^3	milligram per cubic meter
MoC	Management of Change
mph	miles per hour
MSP	Medical Surveillance Program
NIHL	Noise-Induced Hearing Loss
NIOSH	National Institute for Occupational Safety and Health
NOAA	National Oceanic and Atmospheric Administration
OPIM	Other Potentially Infectious Material
ORP	Oxidation Reductional Potential
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PA	Performing Authority
PEL	Permissible Exposure Limit
PFD	Personal Floatation Device
PIC	Person in Charge
PM	Project Manager
PO	Project Oversight
PPE	Personal Protective Equipment
PRCS	Permit-Required Confined Space
PSM	Program Safety Manager
REL	Recommended Exposure Limit
RIK	Replacement in Kind
RM	Remediation Management
RQ	Reportable Quantity
SAP	Safety Action Plan
SDS	Safety Data Sheet
SIMOPs	Simultaneous Operations
SIP	Shelter-in-Place
Site	Anaconda Copper Mining Company Smelter and Refinery Superfund Site
SOC	Safety Observation and Conversation
SOP	Standard Operating Procedure
SSHASP	Site-Specific Health and Safety Plan
SSO	Site Safety Officer
TRA	Task Risk Assessment
TLV	Threshold Limit Value

USEPA	United States Environmental Protection Agency
W&C	Woodard & Curran
WRCC	Western Regional Climate Center

APPENDIX J: NOISE THERMOMETER

APPENDIX J: INSTITUTIONAL CONTROL IMPLEMENTATION AND ASSURANCE PLAN

ACM SMELTER & REFINERY SITE

OU1 COMMUNITY SOILS

Final Appendix J Institutional Controls Implementation and Assurance Plan

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TABLES

Table J-1: Properties Potentially Subject to Institutional Controls

FIGURES

Figure J-1: ACM Smelter and Refinery Site Location
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Figure J-3: Land Use and Zoning, Properties Subject to Potential Non-Residential Remedial Action
Figure J-4: Properties Subject to Potential Institutional Controls

Woodard & Curran

REVISION SUMMARY

Revision No.	Author	Version	Description	Date
Rev 0	Woodard & Curran	Draft Final	Issued for Agency Review	March 17, 2023
Rev 1	Woodard & Curran	Final	Issued for Agency Approval	June 6, 2023

LIST OF ACRONYMS

ACM	Anaconda Copper Mining Company
ARC	Atlantic Richfield Company
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CSAOI	Community Soils Area of Interest
CSOU1	OU1 Community Soils
ECDR	Electric City Dirt Riders
EPA	U.S. Environmental Protection Agency
FS	Feasibility Study
GIS	Geographic Information System
ICs	Institutional Controls
ICIAP	Institutional Control Implementation and Assurance Plan
ISWP	Individual Site Work Plan
MDEQ	Montana Department of Environmental Quality
mg/kg	milligrams per kilogram
NOA	Northern Outlying Area
NTE	Not to Exceed
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
OU1	Operable Unit 1
OU2	Operable Unit 2
RA	Remedial Action
RAO	Remedial Action Objective
RAWP/FDR	Remedial Action Work Plan/Final Design Report
RCOU1	Railroad Corridor (of OU1)
RD/RA	Remedial Design/Remedial Action
RI	Remedial Investigation
ROD	Record of Decision
SOA	Southern Outlying Area
SOW	Statement of Work

1. INTRODUCTION

1.1 ICIAP Overview

This Institutional Control Implementation and Assurance Plan (ICIAP) is designed to systematically: 1) identify the institutional controls (ICs) that have been or may in the future be utilized at the Community Soils Portion of Operable Unit 1 (OU1) (CSOU1) of the Anaconda Copper Mining Company (ACM) Smelter and Refinery Superfund Site (ACM Site) in and near Black Eagle, Cascade County, Montana; 2) establish and document the activities and responsibilities associated with the implementation, monitoring, and enforcement of each of the ICs; and 3) specify the entities that will or may be responsible for conducting those activities. This plan is Appendix J to the Remedial Action Work Plan/Final Design Report (RAWP/FDR) for CSOU1, developed by Atlantic Richfield Company (ARC) to describe the scope of the remedy, the basis of the design, and the technical approach for implementation of the Remedial Action (RA).

In 2021, the U.S. Environmental Protection Agency (EPA) in consultation with the Montana Department of Environmental Quality (MDEQ) (collectively, the Agencies) issued the OU1 Record of Decision (ROD) (EPA, 2021) which presents the selected remedy for the ACM Smelter and Refinery Community Soils Operable Unit National Priorities Site. ARC is conducting the Remedial Design/Remedial Action (RD/RA) work pursuant to and in accordance with the Consent Decree for the Community Soils Portion of OU1 of the ACM Smelter and Refinery Superfund Site and associated Statement of Work (SOW) (EPA, 2023). The RD/RA for CSOU1 addresses arsenic and lead in soils in residential and non-residential areas.

This ICIAP was developed in accordance with section 7.7(e) of the SOW (EPA, 2023), and is structured according to the *Institutional Controls: A Guide to Preparing Institutional Control Implementation and Assurance Plans at Contaminated Sites* (EPA, 2012).

1.2 ICIAP Objectives

This ICIAP describes the various institutional and legal controls that have been or may in the future be implemented at the CSOU1. The ICIAP is intended to function together with the RAWP/FDR (ARC, 2023) and the other management plans referenced in the RAWP/FDR to provide assurance that the remedy selected for the CSOU1 in the OU1 ROD (EPA, 2021) will be constructed and maintained and that RA will be implemented, if needed, when additional properties within the CSOU1 are developed. The ICIAP also describes the monitoring and management activities necessary to ensure that the selected ICs remain effective and continue to ensure the protectiveness of the remedies.

This ICIAP identifies and discusses the ICs for CSOU1 as well as when and by whom the ICs will be implemented, monitored, and enforced and how the effectiveness of those ICs will be reviewed. Generally, the implementation, monitoring, and enforcement of the ICs will be performed by ARC with oversight and support from EPA, in consultation with MDEQ.

2. BACKGROUND

The types of ICs selected and their roles in implementing and effectuating the remedies are dependent upon the land ownership, media of contamination, land use, and location. Thus, an overview of the location and history of the Site along with a description of the selected remedy is included in this Section.

2.1 Site Location and Description

The ACM Site is located near the City of Great Falls on the north bank of the Missouri River in Cascade County, Montana, adjacent to the Former Smelter and Refinery, the assessment and remediation of which is being addressed as a separate OU and is OU2. As depicted in Figure J-1, OU1 is subdivided into the following areas:

- Northern Outlying Area;
- Northern Community Soils Area of Interest;
- Southern Community Soils Area of Interest;
- Railroad Corridor (RCOU1); and
- Southern Outlying Area.

This ICIAP addresses Community Areas in both Community Soils Areas of Interest (CSAOIs) and the eastern portion of the Northern Outlying Area (NOA) east of Black Eagle Road together identified as CSOU1. As stated in the OU1 ROD, EPA determined that the western portion of the NOA west of Wire Mill Road/Black Eagle Road and the Southern Outlying Area are not areas of concern subject to RA. However, ARC has identified several current residential properties in the western portion of the NOA that will be addressed under the RAWP/FDR.

The CSAOIs are located on the north side of the Missouri River. The Southern CSAOI is located immediately west of the Former Smelter and Refinery, which is OU2 of the ACM Superfund Site (*see* Figure J-1). The Southern CSAOI is primarily residential and includes the eastern portion of the community of Black Eagle, which was built as a company town for the copper smelter starting in 1891 and includes approximately 500 houses. Houses in the older, central part of Black Eagle were generally constructed before 1920, and the majority of houses within OU1 were constructed before 1950. These homes are a mix of brick and wood-frame structures, typically set on 30-foot- by 150-foot lots along avenues and 40-foot by 150-foot lots on streets (URS, 2007). The Northern CSAOI is located on the north side of the Former Smelter and Refinery and is predominantly undeveloped land with some commercial and residential properties intermixed.

The NOA is located north of the Missouri River, outside of the Great Falls city limits. The NOA includes the unincorporated areas of Cascade County that surround the CSAOIs and the Former Smelter and Refinery area (*see* Figure J-1). The NOA includes commercial, industrial, agricultural, and recreational properties, as well as undeveloped land and a few residential use properties. The primary recreational property in the NOA is the Electric City Dirt Riders (ECDR) off-road racetrack.

2.2 Site History

The Great Falls Reduction Works operated as a copper smelter and refinery from approximately 1893 to 1917 and then primarily as a copper and zinc refinery until 1980. Specialty metals and copper and aluminum products were also produced. Emissions from the copper smelter were vented from a 186-foot-tall stack located on top of Indian Butte (ACM, 1943). In 1908, the original stack was replaced by a 506-foot-tall stack that was used from 1909 until the zinc plant closed in 1972. Demolition of the zinc plant facilities began in 1973. After the closure of the facility in 1980, large-scale building demolition, salvage, and reclamation activities were performed in the 1980s and 1990s (Anderson, 2010). Historically, air emissions from copper smelting and copper and zinc refining operations were deposited on soils within OU1.

2.3 Selected Remedy

Environmental data were collected in the CSAOIs and Outlying Areas as part of the OU1 Remedial Investigation (RI) (Formation, 2015). Residential soil investigation activities included collecting soil samples from various yard components (i.e., front yard, back yard, flower garden, rock garden, vegetable garden, earthen driveway, and play area) at residential properties from four depth intervals (0 to 2 inch, 2 to 6 inch, 6 to 12 inch, and 12 to 18 inch). Non-residential properties (e.g., commercial, agricultural, recreational, and vacant land) in the CSAOIs and Outlying Areas were sampled at the same four depth intervals. A baseline Human Health Risk Assessment was conducted to assess whether arsenic and lead in soil might be harmful to people living, working, and recreating within OU1, potential risk levels were estimated, and risk-based Preliminary Remediation Goals were calculated for each exposure scenario (Ramboll Environ, 2016). Areas of concern were identified as part of the OU1 Feasibility Study (FS) and remedial alternatives were developed and evaluated to address impacted soil in these areas (Pioneer and Formation, 2017).

As described in section 2 and section 3.2 of the RAWP/FDR, the selected remedy in the OU1 ROD for CSOU1 is Alternative 4 – Soil Removal and Replacement (Component-Specific Not to Exceed/Risk-based Remedial Approach) with some modification. This alternative addresses arsenic and lead contamination in soils in residential and non-residential areas on a property specific basis through development of Individual Site Work Plans (ISWP). Each ISWP will show the components or subareas and depths that require removal for that specific property.

Major components of the remedy to address current residential soils in the CSOU1 include:

- Step 1 – Remove soils in any yard component exceeding the Not to Exceed (NTE) action level of 250 milligrams per kilogram (mg/kg) arsenic and/or 400 mg/kg lead, to a maximum depth of 18 inches (maximum 24 inches in gardens).
- Step 2 – Calculate the residual risk that may be present after Step 1 and remove any additional soil to achieve a yard average concentration, in the top 6 inches, less than 54 mg/kg arsenic and 281 mg/kg lead.

Major components of the remedy for current non-residential soils in the CSOU1 include:

- Confirm that the property average soil concentration, in the top 6 inches, is below risk-based action levels for the current non-residential land use or remediate soils to achieve the risk-based action levels for current non-residential land use in the top 6 inches.
- To address a potential land use change to residential, one of the following must be completed for properties where such a change in use could be reasonably anticipated:
  - Confirm that the property-specific 0 to 12 inch depth-weighted-average soil concentration meets the RAOs for residential soils, or
  - Place Institutional Controls on the property, including, but not limited to, restricting future residential use or providing for additional remediation at the time of residential redevelopment, or
  - Remediate soils to further reduce soil concentrations to achieve a property average concentration in the top 12 inches that meets the RAOs for residential soils.

Excavated materials removed from residential and non-residential properties during RA will be consolidated with similar materials within OU2 (Figure J-1). The consolidated materials will be addressed in the OU2 remedy. If needed, clean cover materials, either soil or aggregate, will be used to backfill and regrade areas disturbed during RA activities and will be procured and then stockpiled within OU2. Materials (e.g., soil, aggregate, sod, etc.) will be sourced from local vendors when feasible.

3. IC REQUIREMENTS AND OBJECTIVES

Section CS 12.3 of the OU1 ROD identified the following requirements and objectives for CSOU1 ICs:

"ICs may be implemented to complement the engineering controls and to effectively manage residual Site risks associated with changes in current zoning and reasonably anticipated changes to future land use."

"ICs are included to improve the overall effectiveness of the remedy and to support a successful risk management for the site in the event of changes in current zoning"

"ICs for the Area of Concern may include:

- *Proprietary ICs which may include restrictive covenants, conservation easements or deed restrictions that prohibit or restrict future residential land use at non-residential properties where soil arsenic and/or lead concentrations would not achieve the [Remedial Action Objectives] RAOs.*
- *Deed Restriction to require the proper handling of soil excavated in the future from beneath the clean replacement soil (e.g., excavation of a foundation for a new home or garage)."*

4. IC DESIGN CONSIDERATIONS

This Section discusses the objectives, assumptions and other considerations related to the design and selection of ICs for CSOU1.

4.1 IC Design Objectives

The design objectives included the following:

1. The ICs must remain protective of EPA's selected remedy over time and through transfer of property;
2. The ICs should permit the existing use of property and must establish appropriate requirements for changes of use and new development; and
3. The ICs must ensure that landowners do not permanently impair RAs once in place.

4.2 IC Design Assumptions

The following assumptions were made:

1. Soil samples will be collected in residential yards and non-residential properties within CSOU1 where arsenic and lead soil data were not previously collected or where other data gaps exist to determine whether RA is needed.
2. At a minimum, each property either has been, or will be, remediated, if needed, to meet applicable cleanup levels for its current land use as part of the RA.
3. Properties may be developed consistent with the applicable OU1 ROD and ICs.

5. SITE ICS

ICs are administrative and legal controls that help to minimize the potential for exposure to contamination and/or protect the integrity of RAs. *Institutional Controls; A Guide to Planning, Implementing, Maintaining and Enforcing Institutional Controls at Contaminated Sites,* Office of Solid Waste and Emergency Response (OSWER) 9355.0-89, EPA-540-R-09-001 (EPA, 2012) has been utilized to develop this Section and the plan for implementation of ICs. ICs should be carefully evaluated, selected, and narrowly tailored to meet the cleanup objectives for the CSOU1 in a manner that does not unnecessarily restrict the reasonably anticipated future land use or resources.

ICs are generally divided into four categories: governmental controls, proprietary controls, informational devices, and enforcement and permit tools. Governmental controls impose restrictions on land or resource use pursuant to the authority of a governmental entity. Typical examples of governmental controls include zoning and groundwater use regulations.

Proprietary controls are controls on land use that are considered private in nature because they tend to affect a single parcel of property and are established by private agreement between the property owner and a second party who, in turn, can enforce the controls. Common examples of proprietary controls include restrictive covenants and easements that restrict use. Proprietary controls can serve to prohibit activities that might compromise the effectiveness of the RAs or restrict activities or future resource use that might result in unacceptable risk to human health or the environment.

Informational devices are tools that serve to provide information and educate the community about the presence of residual contamination that remains within the CSOU1 and the measures to reduce risk. Common examples of informational tools are educational advisories, recorded notices in property records and tracking systems.

The different categories of ICs are often more effective if they are layered. Layering entails the use of more than one IC at the same time, all with the same goal. For example, proprietary controls in the form of restrictive covenants, governmental controls in the form of land use regulations, and informational devices all may relate to the same property and address the same residual contamination. The layering of ICs, however, should be commensurate with the amount, concentrations, toxicity, and other characteristics of residual contamination.

The ICs selected for the CSOU1 include various combinations of governmental controls, proprietary controls, and informational devices, appropriately layered to address differing characteristics of residual contamination at different portions of the CSOU1.

5.1 Governmental Controls

Governmental controls impose restrictions on land or resource use using the authority of a governmental entity (EPA, 2012). Under Montana law, local governments have the authority to regulate land use through zoning or other forms of land use regulation for the purpose of protecting the health, safety and general welfare of the people.

The primary governmental control at the CSOU1 is zoning restrictions enacted by Cascade County under their growth policy and zoning ordinances. Consistent with the provisions of Montana enabling legislation (M.C.A. §§ 76-2-101 to 76-2-228), Cascade County adopted an updated Growth Policy in 2014 and revised

zoning regulations/maps in 2021. Specific to Superfund, the relevance of this IC is that it helps to protect human health and the environment by setting and enforcing zoning requirements that limit allowable land use and types of development. Therefore, understanding Cascade County zoning requirements allows property specific evaluation to verify current and reasonably anticipated land use is consistent and compatible with the remedy or, if not, what additional ICs or remediation may be needed.

Currently the Northern and Southern CSAOIs are zoned "mixed use" while the NOA is zoned "industrial". Figure J-2 provides the zoning within CSOU1. Residential use is permitted in mixed use zoned areas. Residential use is not permitted in industrial areas with the exception, upon issuance of a special permit, of one single family dwelling that is required by, and incidental to, the operation of an industrial enterprise.

Current zoning provides an effective IC in controlling/preventing residential development in the NOA allowing the remedy in these areas to focus on achieving the applicable non-residential use risk-based action levels. However, current zoning doesn't prevent residential development of vacant properties in the mixed use zoned areas of the CSAOIs or address the potential for a future change in zoning in the northern outlying area to one that allows residential development. A future change in zoning is considered unlikely for areas that are currently zoned industrial or commercial and have already been developed for that use. However, future changes in zoning to allow residential use in certain currently undeveloped parcels in the NOA could occur. Therefore, consistent with the remedy description for current non-residential soils identified in Sections 2.3 and 3.0, these areas would be further protected by either:

1) Confirming that the property-specific 0 to 12 inch depth-weighted average soil concentration meets the RAOs for residential soils,

2) Remediating the property to meet the residential soil RAO, or

3) Placing a proprietary IC on the property restricting future residential use or providing for additional remediation at the time of residential redevelopment.

Section 3.2.2, Figure 5 and Table 2 of the RAWP/FDR present an evaluation of current non-residential use parcels to determine which properties require: no RA; RA for the top six inches to address non-residential risk for current use; RA or ICs to address exceedances of residential RAOs in the top 12 inches for potential future conversion to residential or to restrict or prohibit that conversion for properties where such a change in use could be reasonably anticipated; or if the property requires additional soil analytical data or other property information to make a determination.

Figure J-3 illustrates the properties identified in Table 2 along with the associated zoning and current land use identified by Cascade Country zoning and cadastral data. The results of the RAWP/FDR Table 2 evaluation were used to develop the attached Table J-1 and Figure J-4 which identify the specific properties that may potentially require additional ICs (beyond Cascade County zoning) to manage residual risks associated with changes in current zoning and reasonably anticipated changes to future land use. These properties include those that are not commercially developed and either need more data or exceed residential RAOs.

The final determination for additional RA versus application of ICs will depend on agreements with the landowner(s). Additional ICs include proprietary controls and informational devices (such as property tracking) are described below in Sections 5.2 and 5.3, respectively.

5.2 Proprietary Controls

Proprietary controls are controls on land use that are considered private in nature because they tend to affect a single parcel of property and are established by private agreement between the property owner and a second party who, in turn, can enforce the controls. Proprietary controls can serve to prohibit activities that might compromise the effectiveness of the RAs or restrict activities or future resource use that might result in unacceptable risk to human health or the environment (EPA, 2012).

Common examples of proprietary controls include restrictive covenants and easements that restrict land use. Restrictive covenants are those written restrictions or requirements placed on the title to real property that pass with the property and bind both current and future owners of the property. In order to be effective, restrictive covenants must be made to run with the land so that they are binding upon subsequent owners.

A typical restrictive covenant to prohibit or restrict future residential development could include language similar to the following:

- The Property may be used only for “Recreational,” “Park/Open Space,” and “Commercial” purposes. “Residential” development shall be prohibited.

5.3 Informational Devices

Informational devices are tools that serve to provide information and educate the community about the presence of residual contamination that remains within the CSOU1 and the measures to reduce risk. Common examples of informational tools are educational advisories, recorded notices in property records and tracking systems (EPA, 2012).

Informational devices proposed for CSOU1 include providing educational information to the local community describing potential risks and recommendations to reduce exposure to remaining contaminated soils. Educational materials will be distributed via community outreach and will discuss the potential risks associated with exposure to elevated arsenic and lead levels in the environment and suggest methods for reducing exposure.

As part of the ICs program, information regarding arsenic and lead levels, clean-up status, and future requirements will be maintained on a Geographical Informational System (GIS), which will display information for specific locations. GIS is a computer-based tool that incorporates both geographic information functionality and institutional controls management functionality. The geographic information functionality will use spatial data for mapping, analyzing, and storing information and data for properties within the CSOU1 (e.g., aerial photographs and information regarding property ownership, access rights, restrictive covenants, remedial actions, environmental sampling data, and "as built" details).

As part of the RI data collection and analysis, ARC developed a GIS for CSOU1 to store existing data and run applications pertinent to designing the RA and implementing ICs. ARC or its contractor will continue to operate the GIS tool (with updated software and hardware) and provide GIS and other data management services as follows:

- Soil analytical data and other information obtained in connection with RA performed within the CSOU1;

- Data and other information in connection with CSOU1 property investigations, including along with tracking: 1) properties for which access has been obtained, properties sampled, and cleanup completed (where required) to residential land use criteria; 2) properties where access has been denied or the property is otherwise not assessed/adequately sampled; and 3) properties for which access has been obtained, the property has been adequately sampled, and cleanup completed (where required) to current land use but not to residential land use criteria; and
- Data and information relating to applicable real property use restrictions, covenants, and obligations.

6. MONITORING OF ICS

6.1 Governmental Controls

Cascade County, as part of its routine government functions to oversee building permits, will be primarily responsible for monitoring compliance with the zoning governmental controls described in Section 5.1. If a potential change in use or development inconsistent with existing zoning is observed or identified by Cascade County (i.e., through monitoring of "811 call before you dig" calls or observing a new foundation excavation proceeding without a required development permit), it is expected that Cascade County will take appropriate steps to compel compliance through informal communications and, when necessary, through enforcement action.

6.2 Proprietary Controls

ARC will be primarily responsible for monitoring compliance with the proprietary controls described in Section **Error! Reference source not found.**. Monitoring will occur as part of ARC's routine inspection and maintenance activities associated with the remedy. Monitoring will also occur through periodic coordination between ARC and Cascade County with respect to permit applications received by the county for developments within the CSOU1. If non-compliant activities are observed or identified (i.e., activities or proposed uses that are inconsistent with the applicable restrictive covenants), ARC will take appropriate steps to obtain compliance through communications with the developer/landowner and, when necessary, through enforcement actions.

6.3 Informational Devices

The informational devices and related components described in Section 5.3 do not require any direct monitoring.

7. MODIFICATION/TERMINATION OF ICS

7.1 Governmental Controls

The governmental controls described in Section 5.1**Error! Reference source not found.** are subject to modification by Cascade County. ARC, in consultation with EPA, will maintain communication with Cascade County to stay informed on any changes to zoning within the CSOU1 and to work with the county to mitigate any changes inconsistent with maintaining the protectiveness of the OU1 ROD remedy. As part of this communication, ARC will request that Cascade County provide ARC, EPA, and MDEQ with a copy of all proposed amendments to relevant governmental controls and an opportunity to review and comment on all such amendments prior to their adoption.

7.2 Proprietary Controls

The restrictive covenants described in Section 5.2 are covenants running with the land but are subject to modification and termination in accordance with their terms. The typical modification/termination provision set forth in the Covenant Instruments requires that: any modification be approved by ARC, in writing; the owner of the parcel is burdened by the restrictive covenant to modify and record the change in the Cascade County real property records.

7.3 Informational Devices

The Educational Outreach and GIS Programs described in Section 5.3 may be modified or terminated based on information obtained through the implementation process. Additionally, these programs will be reviewed annually and during each Five-Year Review for the Site. Based on the results of the reviews, components may be modified or terminated. Any proposed modification or termination of any component of these programs will be described in the annual reports required pursuant to Section 9 of this ICIAP.

8. ENFORCEMENT OF ICS

8.1 Governmental Controls

Enforcement of the governmental controls identified in Section 5.1 is Cascade County's responsibility and obligation. Enforcement includes, but is not limited to, ensuring land use development is consistent with current land use classification and, where applicable, issuing non-compliance orders for not obtaining a building or other permit or not complying with permit conditions. A person or entity that violates or fails to comply with the governmental controls may also be subject to appropriate enforcement actions by EPA under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

8.2 Proprietary Controls

The restrictive covenants set forth in the Covenant Instruments may be enforced by ARC as the beneficiary of the covenants in accordance with Montana law.

8.3 Informational Devices

The educational components and GIS programs are informational tools and do not create any rights or obligations directly enforceable against specific persons or properties.

9. REPORTING FOR ICS

ARC shall prepare and provide an annual report to EPA and MDEQ summarizing the activities undertaken during the prior year to implement, monitor and enforce the ICs for CSOU1.

10. IC REVIEWS

In order to ensure that ICs remain in place and continue to be effective, the IC records of ARC and ARC's contractors will be available for periodic inspection and review by EPA and MDEQ upon request. Periodic monitoring of the effectiveness and protectiveness of ICs will also be accomplished through the Five-Year Review process mandated by CERCLA Section 121, 42 U.S.C. § 9621.

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TABLES

Table J-1: Properties Potentially Subject to Institutional Controls

Map Reference Number	Category	Property identifier/ Geocode	Sample Identifier	Commercially Developed?	Notes:
1	Data Needed	02313932202010000	OA-1005	NO	House on property
4	Data Needed	02313932101020000	OA-1006	UNKNOWN	
5	Residential Remedial Action or ICs to meet Residential RAOs	02313932202010000	OA-1007	NO	Power Lines
7	Data Needed	02313932101060000	OA-1003	UNKNOWN	
12	Data Needed	02313931321120000	BE-1034	YES/Moose Lodge	Parts of property previously developed as residential
15	Data Needed	02313932301020000	OA-1002	Recreation Development	
16	Data Needed	0231392910103001, and several small parcels inside: 02313929101070000, 02313929101060000, 02313929101050000	OA-1004	UNKNOWN	
17	Data Needed	02313932202210000	No sample data	UNKNOWN	
18	Data Needed	02313931128010000	No sample data	UNKNOWN	
20	Data Needed	02313931128070000	No sample data	UNKNOWN	

Map Reference Number	Category	Property identifier/ Geocode	Sample Identifier	Commercially Developed?	Notes:
23	Data Needed	02313931128030000	No sample data	UNKNOWN	
39	Data Needed	02301606212040000	No sample data	UNKNOWN	
40	Data Needed	02301606212070000	No sample data	UNKNOWN	

Notes: "Data Needed" indicates that additional arsenic or lead data or other information (development status) about the property is required to determine the need for RA or ICs.

Map reference numbers are included on Figure J-3 and J-4 and are consistent with those from Table 2 of the RAWP/FDR.

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FIGURES

Figure J-1: ACM Smelter and Refinery Site Location

Figure J-2: Community Soils Operable Unit 1 Zoning

Figure J-3: Land Use and Zoning, Properties Subject to Potential Non-Residential Remedial Action

Figure J-4: Properties Subject to Potential Institutional Controls

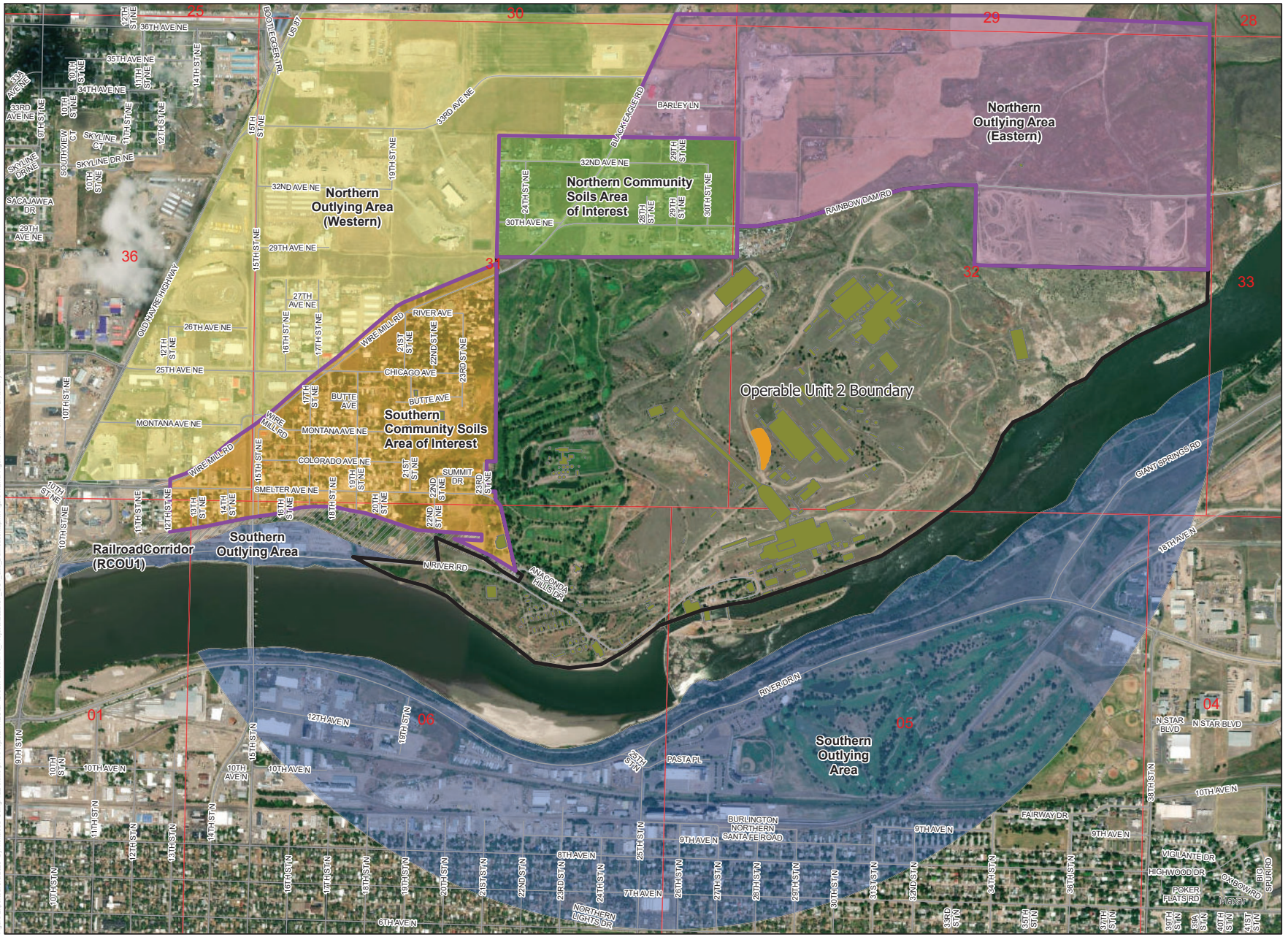


Figure J-1

ACM Smelter & Refinery Site Location
Community Soils Operable Unit
Black Eagle and Great Falls, Montana

- Cummunity Soils Operable Unit 1
- Operable Unit 2 Former Facility Area
- Proposed Consolidation Area
- Former Facilities

Unit

- Northern Community Soils Area of Interest
- Northern Outlying Area (Western)
- Northern Outlying Area (Eastern)
- Railroad Corridor
- Southern Community Soils Area of Interest
- Southern Outlying Area

N

0 1000 Feet

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Atlantic Richfield Company

Project #: 0231336.05
Map Created: March 2023

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources:**

Case 4:23-cv-00050-BMM Document 21-3 Filed 11/20/23 Page 889 of 917

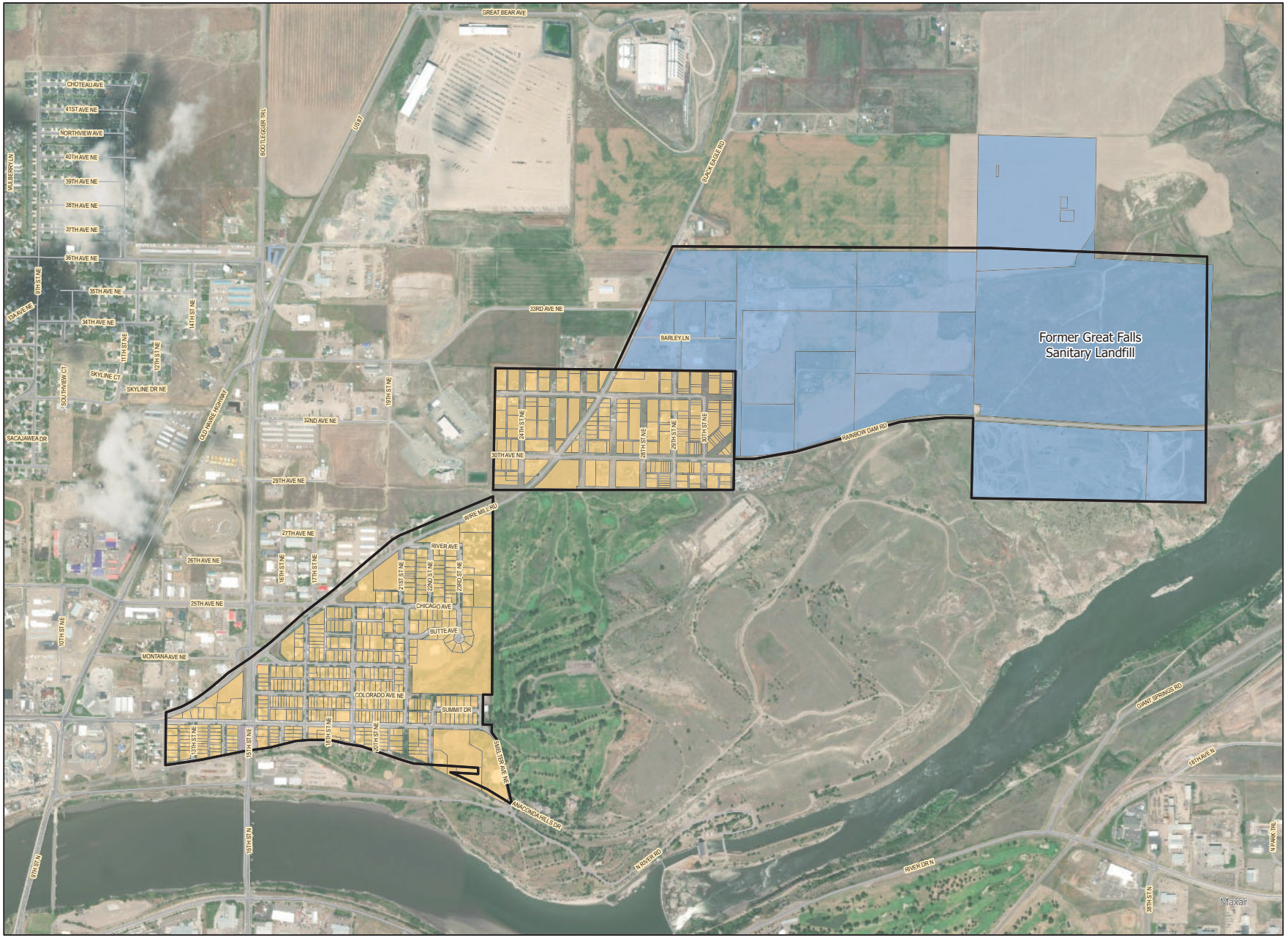


Figure J-2

Community Soils Operable Unit
Zoning
Great Falls and
Black Eagle, Montana

Legend

- Community Soils Operable Unit 1

Zone Code

- Industrial - 2
- Mixed Use
- Roadway

N

0 1000 Feet

Woodard & Curran
Atlantic Richfield Company

Project #: 0231336.05
Map Created: February 2023

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources:** zoning-cascadecountymt.gov/271/Zoning-information

Figure Exported: 3/6/2023 By: nmcleod Using: \\woodardcurran.net\shared\Projects\TREC\3030_AR_MT_GF_Refinery_O&MACM_GIS\Project Files\OU1\ICIAP_OU1.aprx: Figure Name: Figure J2 OU1 Zoning

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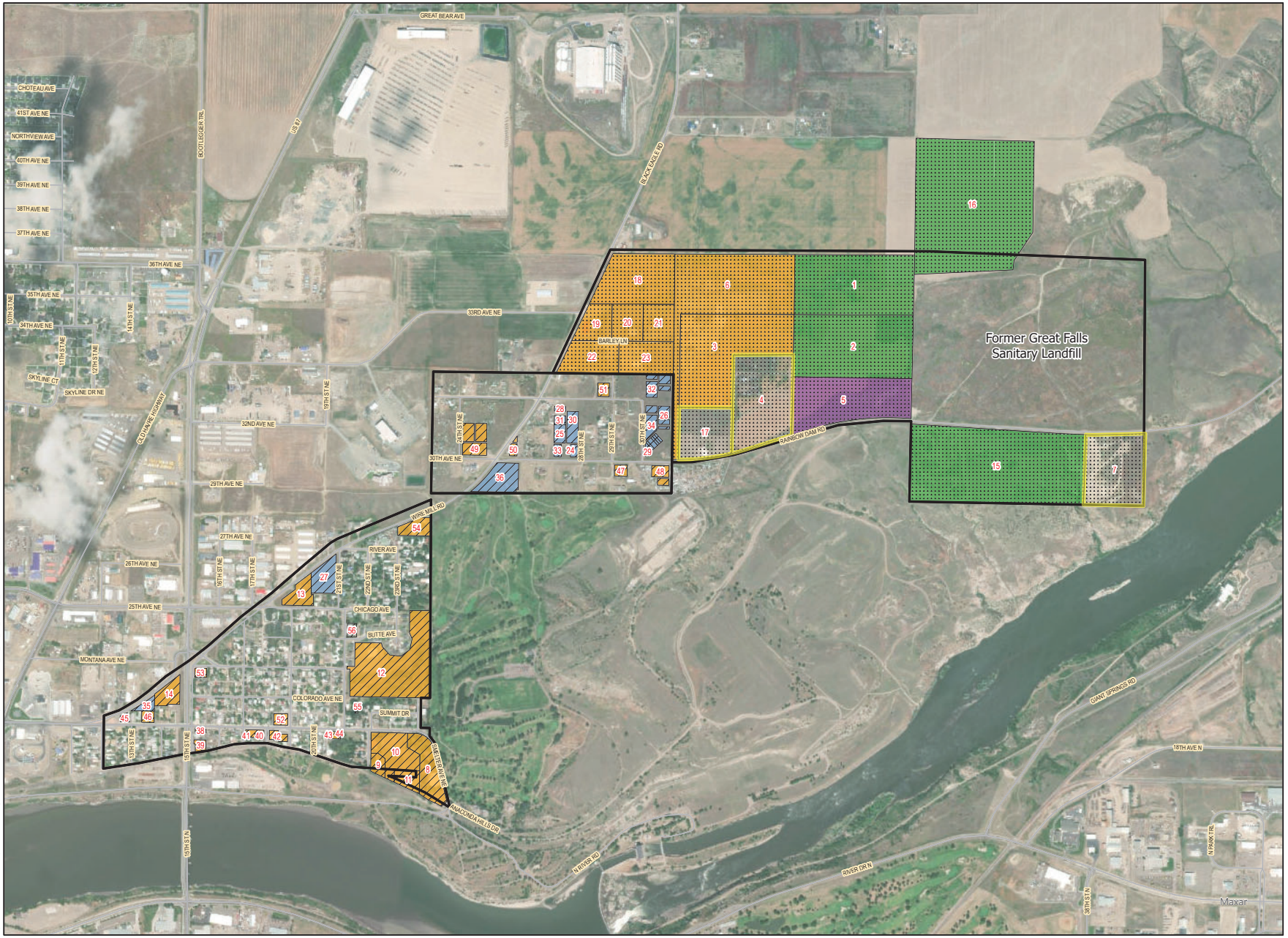


Figure J-3

Community Soils Operable Unit 1
Land Use and Zoning
Properties Subject to
Potential Non-Residential Remedial Action
Great Falls and
Black Eagle, Montana

Legend

- Community Soils Operable Unit 1

Zoning

- Industrial
- Mixed Use

Land Use

- Centrally Assessed
- Commercial Property
- Non-Qualified Ag
- Residential Property
- Land Use Data Needed

**Additional information is needed to determine if the land use is residential as indicated by current cadastral data*

Refer to Table 2 of the RAWP and Table J-1 of the ICIAP for Map Reference Numbers

N

0 1000 Feet

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Project #: 0231336.05
Map Created: March 2023

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources:** zoning-cascadecountymt.gov/271/Zoning-Informationland use -svc.mt.gov/msl/mtcadastral

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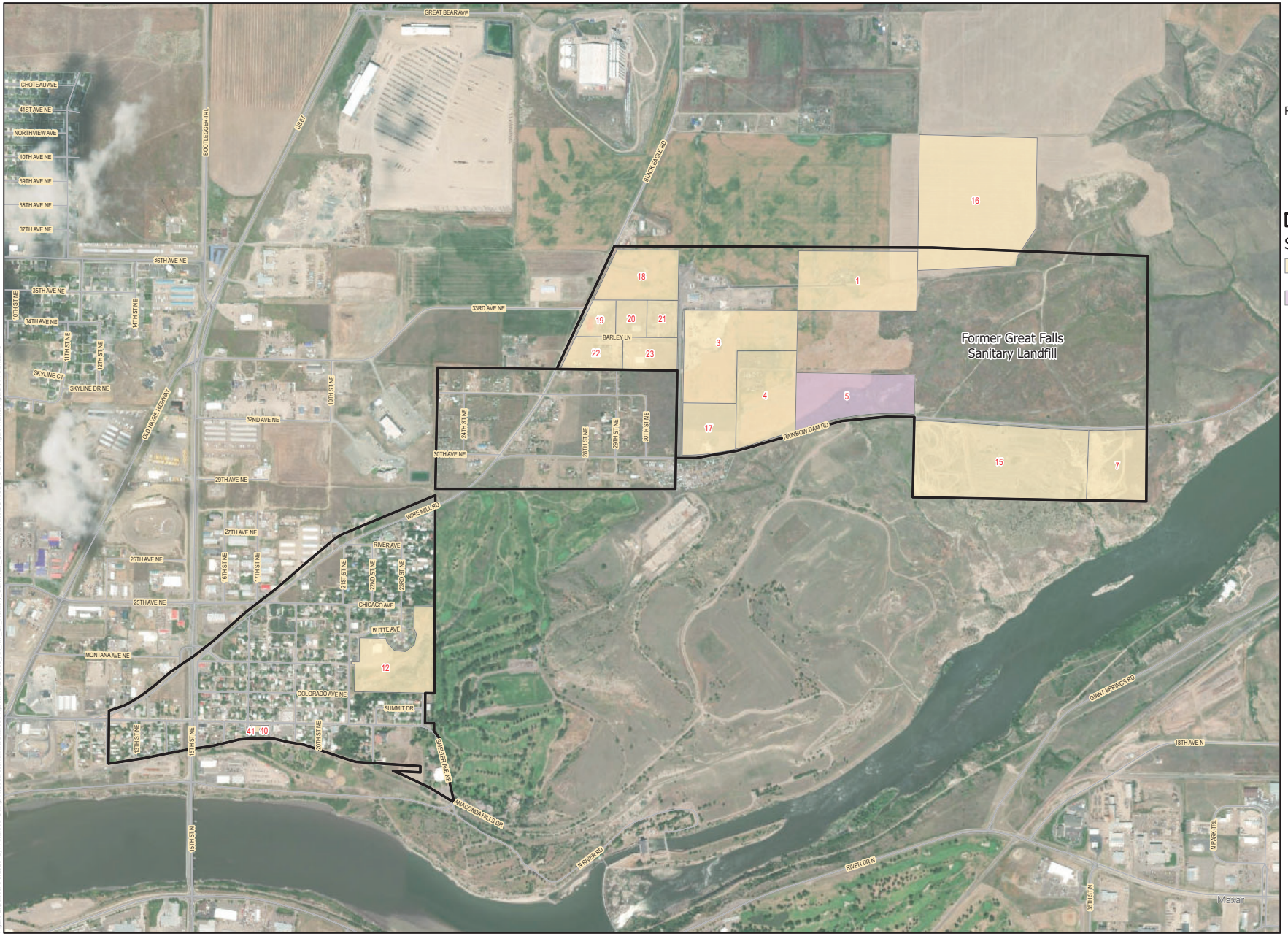


Figure J-4

Community Soils Operable Unit
Properties Subject to Potential Institutional Controls
Great Falls and
Black Eagle, Montana

Community Soils Operable Unit

Status

Data Needed

Remedial Action Needed to Meet Residential Remedial Action Objectives or Institutional Controls

Refer to Table 2 of the RAWP and Table J-1 of the ICIAP for Map Reference Numbers

N

0 1000 Feet

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Project #: 0231336.05
Map Created: March 2023

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& Curran

APPENDIX K: COMMUNITY IMPACTS MITIGATION PLAN

ACM SMELTER & REFINERY SITE

OU1 COMMMUNITY SOILS

Final Appendix K Community Impacts Mitigation Plan

Prepared for:
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Butte, Montana 59701

Prepared by:
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June 2023

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Figure K-1: ACM Smelter and Refinery Site Location
Figure K-2: Public Use Areas
Figure K-3: Business Locations

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REVISION SUMMARY

Revision No.	Author	Version	Description	Date
Rev 0	Woodard & Curran	Draft Final	Issued for Agency Review	March 17, 2023
Rev 0	Woodard & Curran	Final	Issued for Agency Approval	June 6, 2023

Woodard & Curran

LIST OF ACRONYMS

ACM	Anaconda Copper Mining Company
AOC	Administrative Settlement Agreement and Order on Consent
ARC	Atlantic Richfield Company
BMPs	Best Management Practices
CDP	Census-Designated Place
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CIMP	Community Impacts Mitigation Plan
CIP	Community Involvement Plan
CSAOIs	Community Soils Areas of Interest
DWA	Depth-Weighted-Average
ECDR	Electric City Dirt Riders
EJSCREEN	Environmental Justice Screen
EPA	U.S. Environmental Protection Agency
FFA	Former Facility Area
FS	Feasibility Study
ISWP	Individual Site Work Plan
MDEQ	Montana Department of Environmental Quality
mg/kg	milligrams per kilogram
NCP	National Oil and Hazardous Substances Pollution Continency Plan
NOA	Northern Outlying Area
NTE	Not to Exceed
OUs	Operable Units
OU1	Operable Unit 1
OU2	Operable Unit 2
OU3	Operable Unit 3
QAPP	Quality Assurance Project Plan
RA	Remedial Action
RAOs	Remedial Action Objectives
RAWP/FDR	Remedial Action Work Plan/Final Design Report
RCOU1	Railroad Corridor (of OU1)
RD/RA	Remedial Design/Remedial Action
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SOW	Statement of Work

1. INTRODUCTION

This Community Impacts Mitigation Plan (CIMP) describes community involvement activities and concerns and mitigation measures to be performed during construction of the selected remedy for the Community Soils Portion of Operable Unit 1 (OU1) (CSOU1) of the Anaconda Copper Mining Company (ACM) Smelter and Refinery Superfund Site (ACM Site) in and near Black Eagle, Cascade County, Montana. This plan is Appendix K to the Remedial Action Work Plan/Final Design Report (RAWP/FDR) for CSOU1, developed by Atlantic Richfield Company (ARC) to describe the scope of the remedy, the basis of the design, and the technical approach for implementation of the Remedial Action (RA).

In 2021, the U.S. Environmental Protection Agency (EPA) in consultation with the Montana Department of Environmental Quality (MDEQ) (collectively, the Agencies) issued the OU1 ROD (EPA, 2021) which presents the selected remedy for the ACM Smelter and Refinery Community Soils Operable Unit National Priorities Site. ARC is conducting the Remedial Design/Remedial Action (RD/RA) work pursuant to and in accordance with the Consent Decree for the Community Soils Portion of OU1 of the ACM Smelter and Refinery Superfund Site and associated Statement of Work (SOW) (EPA, 2023). The RD/RA for CSOU1 addresses arsenic and lead contamination in soils in residential and non-residential areas.

1.1 Purpose and Objectives

In accordance with section 7.7(c) of the SOW, the purpose of this CIMP is to describe activities that are intended to mitigate impacts to the community from RA work that will be performed under the CSOU1 RAWP/FDR.

Information about impacts to community areas provided in this CIMP is sufficient to assist EPA's Project Coordinator in performing the evaluations recommended in the EPA's *Superfund Community Involvement Handbook* (EPA, 2020, pp. 53-56). This CIMP also meets the requirements outlined in section 2.2(d) of the SOW for providing EPA information about the design and implementation of the remedy for the community.

The specific objectives of this CIMP, per section 7.7(c) of the SOW (EPA, 2023), are:

- to reduce and manage the impacts from remedy implementation (e.g., fugitive dust, traffic, noise, odor, temporary relocation) to residential areas, schools, playgrounds, healthcare facilities, or recreational or impacted public areas (community areas) from and during remedy implementation, (Section 3.1)
- to conduct monitoring in community areas of impacts from remedy implementation, (Section 3.2)
- to expeditiously communicate validated remedy implementation monitoring data, (Section 3.3)
- to make adjustments during remedy implementation in order to further reduce and manage impacts from remedy implementation to affected community areas, (Section 3.4)
- to expeditiously restore community resources damaged during remediation such as roads and culverts, (Section 3.5)
- to mitigate the economic effects that the RA may have on the community by structuring remediation contracts to facilitate local business participation. (Section 3.6)

1.2 Site Location and Description

The ACM Site is located on the north bank of the Missouri River and includes the unincorporated community of Black Eagle near Great Falls, Montana. Under the OU1 Remedial Investigation/Feasibility Study (RI/FS) Administrative Settlement Agreement and Order on Consent (AOC), EPA subdivided the ACM Smelter and Refinery Superfund Site into the following Operable Units (OUs) to manage the RI/FS process required under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA):

- OU1: Northern and Southern Community Soils Areas of Interest (CSAOIs), Northern and Southern Outlying Areas, and the Railroad Corridor (RCOU1);
- Operable Unit 2 (OU2): Former Smelter and Refinery; and
- Operable Unit 3 (OU3): Missouri River adjacent to, and downstream of, OU2.

RI/FS activities for the CSAOIs and Outlying Areas of OU1 were completed by ARC in accordance with the AOC (EPA, 2011). The RI and FS for the RCOU1 were conducted under a separate Unilateral Administrative Order between Burlington Northern Santa Fe Railway Company and EPA. As shown on Figure J-1, this CIMP addresses both CSAOIs and the eastern portion of the Northern Outlying area (NOA) east of Black Eagle Road. EPA determined in the OU1 ROD that the western portion of the NOA and the Southern Outlying Area were not subject to RA. However, ARC has identified ten properties in the western portion of the NOA that will evaluated for residential use and addressed under the RAWP/FDR if reconnaissance confirms the presence of an occupied residential structure.

The CSAOIs are located on the north side of the Missouri River. The Southern CSAOI is located immediately west of the Former Smelter and Refinery. The Southern CSAOI is primarily residential and includes the eastern portion of the community of Black Eagle, which was built as a company town for the copper smelter starting in 1891. Homes in the older, central part of Black Eagle were generally constructed before 1920, and the majority of homes within OU1 were constructed prior to 1950. These homes are a mix of brick and wood-frame structures, typically set on 30-foot by 150-foot lots along avenues and 40-foot by 150-foot lots on streets (URS, 2007). The Northern CSAOI is located on the north side of the Former Smelter and Refinery and is predominantly undeveloped land with some commercial and residential properties intermixed.

The NOA is located north of the Missouri River and outside of the Great Falls city limits. The NOA includes the unincorporated areas of Cascade County that surround the CSAOIs and the Former Smelter and Refinery. The NOA includes commercial, industrial, agricultural, and recreational properties, as well as undeveloped land. The primary recreational property in the NOA is the Electric City Dirt Riders off-road racetrack.

1.3 Site History

The Great Falls Reduction Works operated as a copper smelter and refinery from approximately 1893 to 1917 and then primarily as a copper and zinc refinery until 1980. Specialty metals and copper and aluminum products were also produced. Emissions from the copper smelter were vented from a 186-foot-tall stack located on top of Indian Butte (ACM, 1943). In 1908, the original stack was replaced by a 506-foot-tall stack that was used from 1909 until the zinc plant closed in 1972. Demolition of the zinc plant facilities began in 1973. After closure of the Former Facility in 1980, large-scale building demolition, salvage, and reclamation

activities were performed in the 1980s and 1990s (Anderson, 2010). Historically, air emissions from copper smelting and copper and zinc refining operations were deposited on soils within OU1.

1.4 Description of the Remedial Action

Environmental data were collected in the CSAOIs and Outlying Areas as part of the OU1 RI (Formation, 2015). Residential soil investigation activities included collecting soil samples from various yard components (i.e., front yard, back yard, flower garden, rock garden, vegetable garden, earthen driveway, and play area) at residential properties from four depth intervals (0 to 2 inch, 2 to 6 inch, 6 to 12 inch, and 12 to 18 inch). Non-residential properties (e.g., commercial, agricultural, recreational, and vacant land) in the CSAOIs and Outlying Areas were sampled at the same four depth intervals.

A baseline Human Health Risk Assessment was conducted to assess whether arsenic and lead in soil might be harmful to people living, working, and recreating within OU1, potential risk levels were estimated, and risk-based Preliminary Remediation Goals were calculated for each exposure scenario (Ramboll Environmental, 2016). Areas of concern were identified as part of the FS and remedial alternatives were developed and evaluated to address impacted soil in these areas (Pioneer and Formation, 2017).

As described in section 2 and section 3.2 of the RAWP/FDR, the selected remedy in the OU1 ROD for the CSOU1 is Alternative 4 – Soil Removal and Replacement (Component-Specific Not to Exceed/Risk-based Remedial Approach) with some modification and addresses arsenic and lead contamination in soils in residential and non-residential areas. Each Individual Site Work Plan (ISWP) shows the components and depths that require removal for that specific property. The following summarizes the major components of residential and non-residential RA from the OU1 ROD (EPA, 2021):

Major components of the remedy to address current residential soils in the CSOU1 include:

- Step 1 – Remove soils in any yard component exceeding the Not to Exceed (NTE) action level of 250 milligrams per kilogram (mg/kg) arsenic and 400 mg/kg lead to a maximum depth of 18 inches (maximum 24 inches in gardens).
- Step 2 – Calculate the residual risk that may be present after Step 1 and remove any additional soil to achieve a yard average concentration, in the top 6 inches, less than 54 mg/kg arsenic and 281 mg/kg lead.

Major components of the remedy for current non-residential soils in the CSOU1 include:

- Confirm that the property average soil concentration, in the top 6 inches, is below risk-based action levels for the current non-residential land use or remediate soils to achieve the risk-based action levels for current non-residential land use in the top 6 inches.
- To address a potential land use change to residential, one of the following must be completed for properties where such a change in use could be reasonably anticipated:
    - Confirm that the property-specific 0 to 12-inch depth-weighted-average (DWA) soil concentration meets the RAOs for residential soils, or
    - Place ICs on the property, including, but not limited to, restricting future residential use or providing for additional remediation at the time of residential redevelopment, or

- Remediate soils to further reduce soil concentrations to achieve a property average concentration in the top 12 inches that meets the RAOs for residential soils.

Excavated materials removed from residential and non-residential properties during RA will be consolidated within OU2. If needed, clean cover materials, either soil or aggregate, will be used to backfill residential areas disturbed during RA activities and will be procured and then stockpiled within OU2. Materials (e.g., soil, aggregate, sod, etc.) will be sourced from local vendors when feasible.

1.5 Document Organization

In addition to the introduction, this CIMP consists of the following sections:

Section 2 – Community Involvement and Concerns,

Section 3 – Mitigation of Community Impacts, and

Section 4 – References.

2. COMMUNITY INVOLVEMENT AND CONCERNS

Community involvement activities for Superfund sites are stipulated by CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). As stated in section 2.2(a) of the SOW, EPA has the lead responsibility for developing and implementing community involvement activities at the ACM Smelter and Refinery Superfund Site.

During the RI/FS phase of the OU1 project, EPA with the support of ARC conducted interviews of community members, established information repositories, set up a technical advisory group funded by a Technical Assistance Grant, held public meetings and small group meetings, distributed information mailings, provided press releases, published display ads, maintained a webpage, and developed a *Draft Community Involvement Plan (CIP)* for the ACM Smelter and Refinery Superfund Site (EPA, 2011).

This Section provides information on the factors considered to identify the potential effects of RA activities on community areas and determine appropriate mitigation measures. Specific topics addressed in this Section include community concerns identified from community interviews; the proximity to residential areas and public facilities; environmental justice or Tribal concerns; potential disruptions to community members, businesses, or community life; the level of community concern; and the extent of community involvement during RD/RA.

2.1 Community Concerns, Comments, and Issues

EPA conducted community interviews from January 24 through January 28, 2011, with a wide spectrum of area residents and representatives, such as community leaders, elected officials, business representatives, and community service workers, to identify key community concerns, comments, and issues. Based on the responses, additional interviews were conducted. As stated in EPA's Draft CIP (EPA, 2011), the information obtained in the interviews and subsequent conversations reflects interviewees' responses and residents' concerns, comments, and issues, not those of EPA, MDEQ, or ARC.

General areas of community concern include the following:

- Health risks (e.g., gardening in contaminated soil)
- Degree of contamination
- Locations of priority areas
- Dust
- Access via local roads during construction
- Timeframe
- Property values
- Future land use
- Impacts to local recreation areas
- Communication

Additional information on the level of community concern regarding these general areas and more specific issues is provided in Section 2.5 of this CIMP.

2.2 Proximity to Residential Areas and Public Facilities

Black Eagle residents and community members will be living and working in and near properties where RA activities will be conducted. Black Eagle is a census-designated place (CDP). The town was established as a smelter community in the 1890s and ACM was the primary employer until closure of the ACM Smelter and Refinery facility in 1980. The total population in Black Eagle CDP is 949 (U.S. Census, 2021). There are 382 households and 238 families residing in Black Eagle.

The community areas that will undergo RA are primarily residential properties within the portion of the Black Eagle community bounded by Wire Mill Road on the north, 11th Street NE on the west, the old railroad grade or access road on the south, and the Anaconda Hills Golf Course on the east. A handful of residential properties in the Northern CSAOI, which is bounded by 32nd Avenue NE on the north, 24th Street NE on the west, Rainbow Dam Road on the south, and 29th Street NE on the east, will also undergo RA. Black Eagle and Great Falls community members will be going to school and recreating near properties where RA activities will be conducted (Figure J-2).

The closest school is North Middle School, which is approximately 1 mile northwest of Black Eagle. There are two playgrounds in Black Eagle, The Art Higgins Memorial Park (also known as Black Eagle Park) north of the old railroad grade which is now an unnamed access road and Black Eagle Ball Field and Park south of the access road. As described in the Draft CIP (EPA, 2011), children also play along the old railroad grade or access road, at the playground at Immaculate Heart of Mary Church, the Black Eagle Community Center grounds, at the ravine near Moose Lodge, the ravine near the old railroad grade or access road, the road at the end of Chicago Avenue, the ditch area on 22nd Avenue south of Smelter Avenue, and at the ECDR off-road racetrack.

Nearby recreational areas include the Anaconda Hills Golf Course; the Black Eagle Memorial Island Park; the River's Edge Trail, which includes paved and singletrack trails along the Missouri River for walking, hiking, jogging, cycling, and mountain biking; and numerous fishing spots on the riverbank. Deer hunting is allowed on several privately-owned properties in the NOA.

There are no healthcare or nursing home facilities within the community areas. There is a new cemetery in Black Eagle at the Immaculate Heart of Mary Church.

2.3 Environmental Justice or Tribal Concerns

EPA defines environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies" (EPA, 2020). Fair treatment means that no group of people should bear a disproportionate burden of environmental harms and risks, including those resulting from negative environmental consequences of industrial, governmental, and commercial operation or program and policies. Meaningful involvement means that: (1) potentially affected community members have an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment and/or health; (2) the public's contribution can influence the regulatory agency's decision; (3) the concerns of all participants involved will be considered in the decision-making process; and (4) the decision-makers seek out and facilitate the involvement of those potentially affected. In the implementation of environmental justice, EPA has expanded the concept of fair treatment to include not only the consideration of how burdens are distributed across all populations, but also how benefits are distributed.

The Black Eagle community has been identified as an area of potential environmental justice concern based on the results of EPA's Environmental Justice Screen (EJSCREEN) report (EPA, 2022) which assesses environmental indicators and demographics. EJSCREEN uses environmental indicators to indicate potential exposures. Environmental indicators in Black Eagle that are above the state and national averages include proximity to Superfund sites (i.e., ACM Smelter and Refinery Superfund Site), number of underground storage tanks within 3 miles (10 tanks), and potential lead paint and lead-containing dust exposure which is based on the percentage of houses built before 1960 (about 35%).

Socioeconomic factors are used as general indicators of a community's susceptibility to environmental factors. The demographic index,[1] which is based on the average of two socioeconomic indicators (low-income and people of color), for the Black Eagle area is 21%. About 17% of the population in the Black Eagle community live in poverty, which is above the nationwide average. About 12% of the population are people of color, which is below the national average. Of significance, about 5% of the population are indigenous American Indians of the Little Shell Chippewa Tribe (Tribe), which is a federally recognized tribe of Ojibwe people in Montana (Little Shell Chippewa Tribe, 2022). There are about 4,500 tribal members who live in Black Eagle, Great Falls, Havre, Lewistown, Helena, Butte, Chinook, Hays, Wolf Point, Hamilton, and Billings, Montana. ARC will work with the Tribe to identify issues and places of cultural importance that may be affected by remediation activities (Woodard & Curran, 2022).

Minority and low-income individuals live in older housing more often than the rest of the U.S. population. In addition, EJSCREEN data show that minority and low-income individuals have a higher environmental indicator value on average than the rest of the U.S. population for ten of the eleven environmental indicators. Areas of potential environmental justice concern identified with EJSCREEN are candidates for further review, including additional consideration, analysis, or outreach.

2.4 Potential Disruptions to Community Members, Businesses or Community Life

Implementation of the RA is not anticipated to result in permanent relocation of houses or residents within the Black Eagle community.

Residential and non-residential RA activities will require transport of excavated materials, borrow soil, sod, and construction equipment and materials through residential streets, county roads, and public highways in the Black Eagle and Great Falls communities. Many of the streets in Black Eagle are unpaved and truck traffic in these residential areas may generate dust. Narrow roads may require temporary closure and / or detours.

Businesses on county roads and public highways and local businesses within Black Eagle may be temporarily affected by noise, reduced accessibility, rerouted traffic, or other site-related factors. Local businesses in Black Eagle are shown on Figure J-3.

2.5 Level of Community Concern

As described in the Draft CIP (EPA, 2011), most of the residents in the Black Eagle community and nearby areas are aware of RI/FS activities at CSOU1 and either they or their neighbors have been contacted by EPA and/or ARC regarding soil sampling or testing on their property. Community members also learned about

[1] The demographic estimates used in EPA's EJSCREEN are from the American Community Survey from the U.S. Census Bureau (U.S. Census, 2021).

the sampling and cleanup activities from reading the Great Falls Tribune or the Black Eagle Newsletter or by attending Black Eagle Civic Club meetings.

Most community members identified the smelter stack and wind dispersal as the most likely source of contamination. Some community members recalled hearing about people carrying brick, wood or timbers, and slag from the smelter property for sidewalks, foundations and retaining walls at their properties.

Community members expressed concerns about health risks primarily related to gardening in contaminated soil. Some people are also apprehensive about potential air emissions and dust control during cleanup and disturbance of soil. Others are concerned about road work on Smelter Avenue. Community members have concerns about the effects of cleanup activities on their property values and on future land use, particularly local trails and recreation areas along the Missouri River, and the health of the river and risks of eating fish from the river.

2.6 Extent of Community Involvement During RD/RA

EPA, with the support of ARC, sought community input through meetings with community members and local groups to discuss the potential effects of the RA on the community and the measures that will be taken to mitigate impacts.

EPA will use various techniques, some suggested by the community, to provide CSOU1 information to the public (EPA, 2011). An effective way to share information with Black Eagle area residents is to provide project updates via newspapers (e.g., Black Eagle Newsletter and Great Falls Tribune) and radio. EPA maintains a webpage dedicated to the ACM Smelter and Refinery Superfund Site to update people on activities, decisions, and issues regarding the ACM Site. This webpage also provides contact information so community members can communicate issues and concerns back to EPA.

Consistent with the NCP, during the RD/RA phase, EPA (with the support of ARC) will:

- Issue a fact sheet after completion of the final design and prior to beginning the RA.
- If appropriate, hold a public meeting at RD completion and prior to the initiation of the RA.

Because the RA will be conducted under a Consent Decree between EPA and ARC, the Department of Justice must publish a notice of a proposed settlement in the Federal Register and announce an opportunity for the submission of written comments.

3. MITIGATION OF COMMUNITY IMPACTS

This Section describes the potential effects of RA activities in community areas and identifies the mitigation measures and other activities to be performed during RA implementation to meet the objectives listed in Section 1.1 of this CIMP. Concerns of environmental justice and disadvantaged communities will be addressed as appropriate.

3.1 Potential Effects of RA Activities and Mitigation Measures

General areas of community concern are related to construction and include dust and local roads and access, or traffic. Potential effects of the RA (e.g., air emissions or dust, traffic, noise, odor, and temporary relocation) to residential areas, schools, playgrounds, or recreational areas are described and mitigation measures are identified to reduce and manage the impacts from the RA.

3.1.1 Air Emissions

Potential Effects. The potential for air emissions and the plan for dust suppression is a community concern. The old railroad grade or unnamed access road on the south side of Black Eagle is unpaved and construction traffic along that roadway may generate dust north of the roadway and at the Black Eagle Ball Field and Park and at Art Higgins Memorial Park. In addition, some roads and alleys within Black Eagle are unpaved. Construction traffic on the unpaved roads and alleys may also generate dust.

Mitigation Measures. Best Management Practices (BMPs) to minimize air emissions will be implemented during all RA activities. Dust control measures may include: the application of a water to removal areas and haul roads, construction of windbreaks around the excavation areas, using paved surfaces for construction traffic when feasible, and covering loads during transport to and from the excavation and consolidation areas.

3.1.2 Traffic

Potential Effects. Residential and non-residential RA activities will require transport of excavated materials, borrow soil, sod, and construction equipment and materials through residential streets, county roads, and public highways in the Black Eagle and Great Falls communities.

Mitigation Measures. Transportation methods and proposed haul routes and associated traffic control will be established by the Construction Subcontractor to maximize safety and efficiency. A Construction Transportation Plan will be prepared by the Construction Subcontractor and is subject to approval from ARC and EPA. Work zone access will be restricted to authorized personnel only. The Supervising Contractor will coordinate any necessary local road closures with Cascade County and the City of Great Falls. Appropriate traffic control signage will be posted on all haul routes to inform and re-route traffic as needed. If necessary, flaggers will be used to control traffic in confined work areas. Care will be taken to minimize road closure on streets with commercial businesses (e.g., Smelter Avenue).

3.1.3 Noise

Potential Effects. The RA may result in temporarily increased noise levels in Black Eagle and in the surrounding community due to construction for the RA.

Mitigation Measures. Throughout RA implementation, construction noise will be limited to daylight hours.

3.1.4 Odor

Potential Effects. Soil that will be removed as part of the RA is contaminated with arsenic and/or lead. No odors are anticipated to be released from excavations during soil removal activities. However, exhaust emissions and associated odors from diesel and other vehicular traffic will occur.

Mitigation Measures. Transportation methods and routes will be determined by the Construction Subcontractor to maximize safety and efficiency and to limit impacts to community members.

3.1.5 Temporary or Permanent Relocation

Potential Effects. Implementation of the RA is not anticipated to result in permanent relocation of structures or residents within the Black Eagle community. Some fences, swing sets, sand boxes, or other play areas at individual residential properties may require temporary relocation to a part of the yard that is not being remediated. ARC and EPA will develop an approach to informing and consulting with the community to ensure that all community concerns and issues are adequately addressed.

Mitigation Measures. The Construction Subcontractor will remove or relocate the fence or play feature as necessary and replace it once work is completed. Care will be taken to temporarily relocate these features without damaging them. For semi-permanent obstacles such as old cars, dog kennels, and wood piles, the Landowner will be responsible for relocation and replacement. Any damage resulting from the RA work will be repaired once work is completed.

3.2 Monitoring in Community Areas

As described in the RAWP/FDR, no ambient or worker air monitoring is anticipated to be required during the RA. Soil sampling is anticipated at residential and non-residential properties that were not sampled during the OU1 RI or where additional data are needed. These properties are described as part of the data gap analysis in the CSOU1 RAWP/FDR. Additional soil sampling and analysis will be required in these areas to determine the extent of contamination and the proposed RA, if necessary. Soil sampling will be performed in accordance with the OU1 Quality Assurance Project Plan (QAPP) (*see* Appendix C of the RAWP/FDR).

3.3 Communication of Monitoring Data

As described in Section 2.1, communication, degree of contamination, and health risks are some of the general areas of community concern related to CSOU1. ARC and EPA will work together to expeditiously communicate validated remedy implementation monitoring data to the community. For properties where additional soil sampling is performed prior to RA, a letter with the validated monitoring data will be sent to the Landowner by EPA and ARC. If the results (i.e., elevated concentrations of arsenic and/or lead) indicate that RA is required, an ISWP will be developed for the property as described in the RA implementation section of the RAWP/FDR and provided to the Landowner with an access agreement (*see* Appendix E of the RAWP/FDR for examples). Photographic documentation will be completed for construction at each property requiring RA.

Upon completion of the RA work, each individual Landowner will be encouraged to inspect the work completed on their property and then sign a Statement of Completion to acknowledge that the work was completed to their satisfaction and in accordance with the ISWP (*see* Appendix E of the RAWP/FDR for examples). The EPA Field Oversight representative and the ARC Project Coordinator also will sign the Statement of Completion to assure all work was completed in accordance with the regulatory requirements. Upon EPA approval of the work,

an RA Completion Letter will be sent to the Landowner by EPA and ARC. Each Landowner whose property is remediated will be provided with instructional materials that describe appropriate maintenance of the seeded areas, sod, or aggregate.

3.4 Adaptive Management

As described in Section 2.1, degree of contamination and locations of priority areas are some of the general areas of community concern related to the CSOU1. Adjustments will be made during remedy implementation in order to further reduce and manage impacts from construction to affected community areas. As the RA activities proceed, the ARC Project Coordinator, Supervising Contractor and Construction Subcontractor will re-evaluate the procedures used during implementation of the RA as needed and will prioritize remediation activities to account for new information and changing conditions at individual properties and within the community areas.

3.5 Restoration of Community Resources

ARC will work in coordination with Cascade County Public Works to expeditiously restore any community resources clearly damaged during remediation such as roads or culverts. Unpaved road surfaces that are clearly damaged during the RA will be repaired, bladed, or graded as needed. Culverts that are clearly disturbed or damaged by the RA will be rehabilitated, repaired, or replaced as needed.

3.6 Mitigation of Economic Effects

Remediation contracts will be structured to allow local business participation to the extent practicable. This may include excavation contractors, trucking services, bulk soil or aggregate material enterprises, and sod farms in Cascade County.

Proposed haul routes and associated traffic control will be determined by the Construction Subcontractor to maximize safety and efficiency and will consider customer traffic and other factors that could affect local businesses. Care will be taken to minimize road closure on streets with commercial businesses (e.g., Smelter Avenue). The degree of soil contamination and resulting potential health risks will be reduced by the RA. Areas will be prioritized by the Construction Subcontractor in consultation with ARC and EPA. Road closures will be kept to a minimum and dust will be mitigated during construction using BMPs.

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Woodard & Curran

FIGURES

Figure K-1: ACM Smelter and Refinery Site Location

Figure K-2: Public Use Areas

Figure K-3: Business Locations

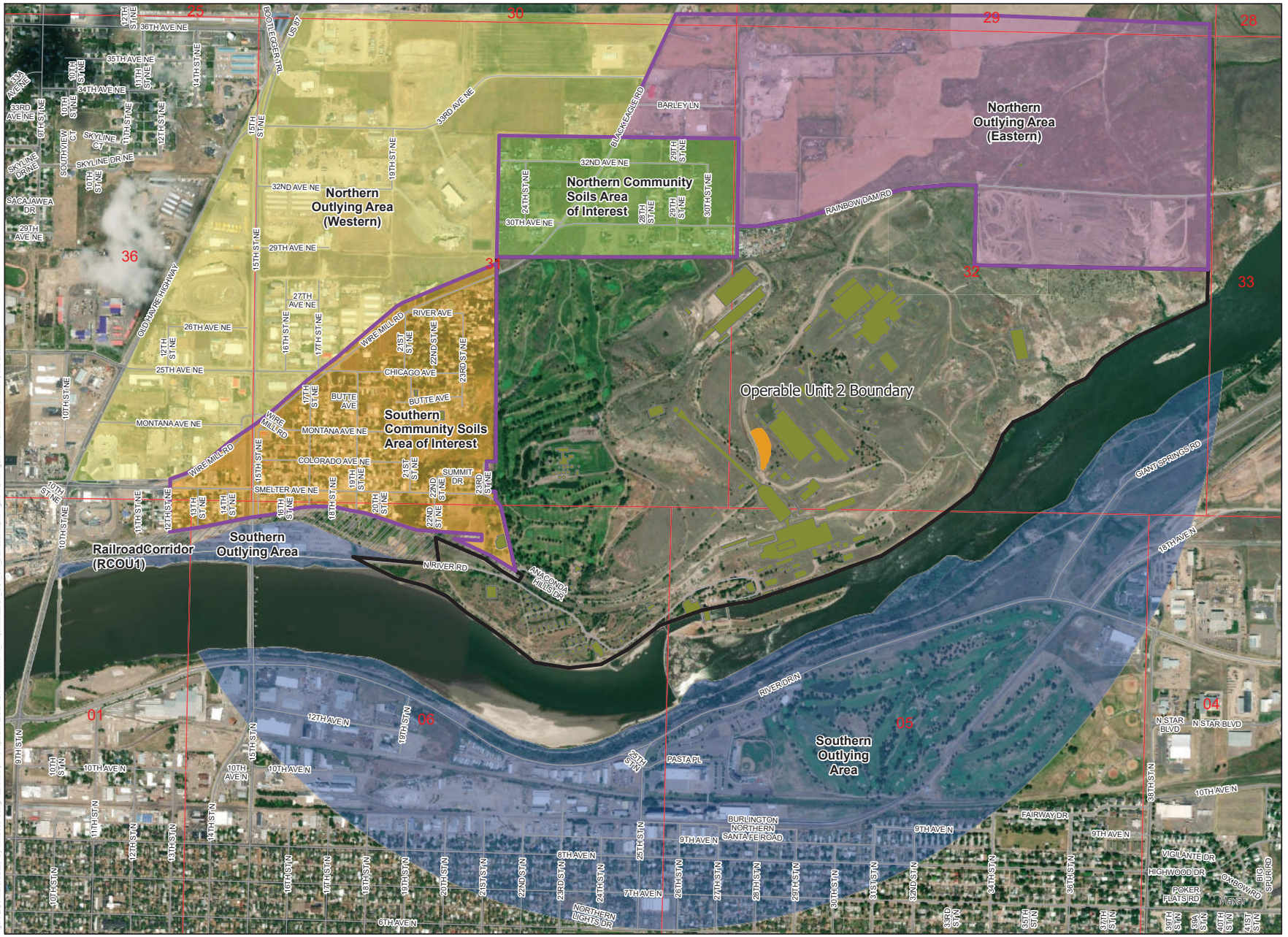


Figure K-1

ACM Smelter & Refinery Site Location
Community Soils Operable Unit
Black Eagle and Great Falls, Montana

Cummunity Soils Operable Unit 1
Operable Unit 2 Former Facility Area
Proposed Consolidation Area
Former Facilities

Unit
Northern Community Soils Area of Interest
Northern Outlying Area (Western)
Northern Outlying Area (Eastern)
Railroad Corridor
Southern Community Soils Area of Interest
Southern Outlying Area

N

0 1000 Feet

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Atlantic Richfield Company

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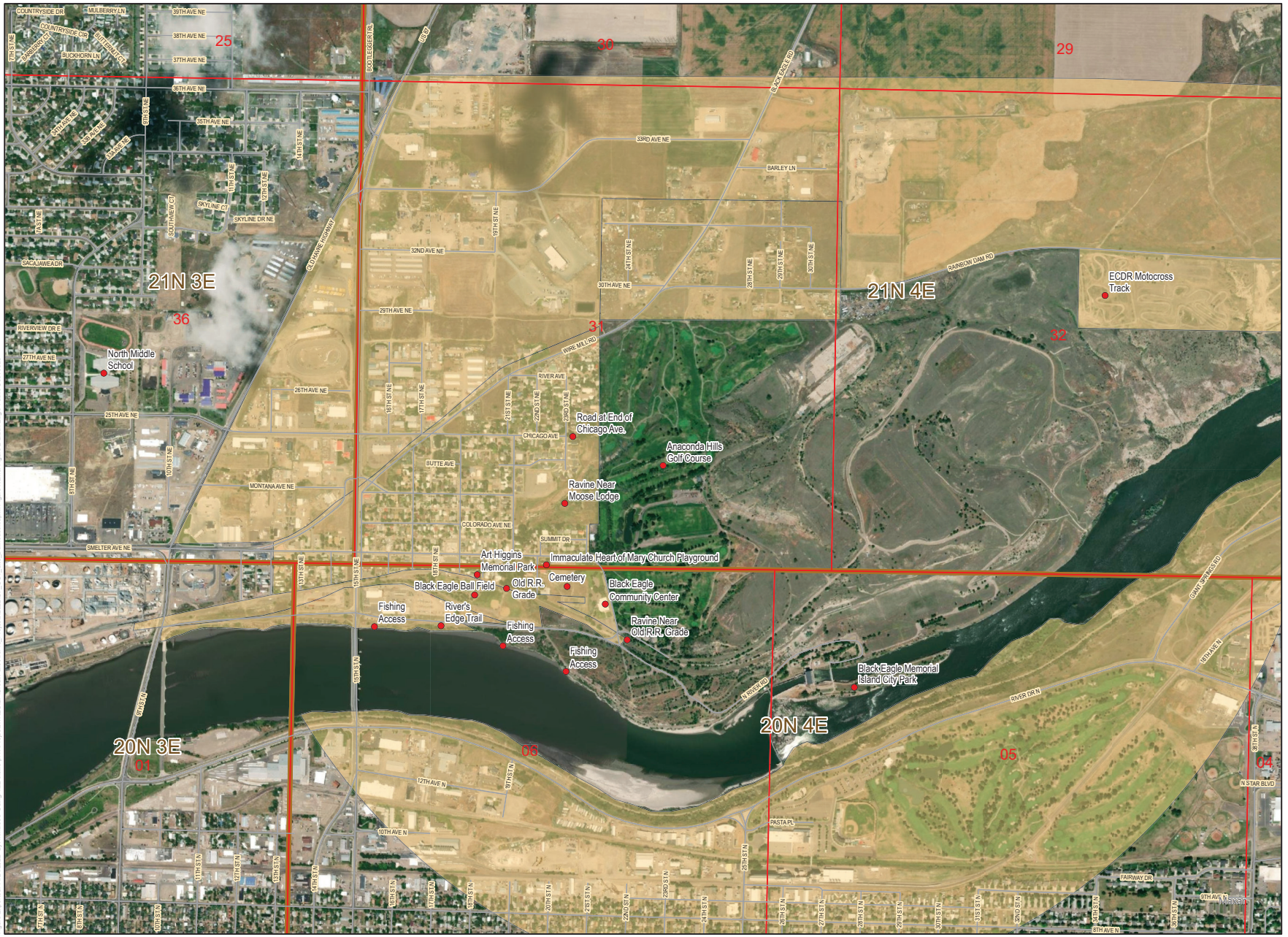


Figure K-2

Public Use Areas
ACM Smelter & Refinery Site Location
Great Falls, Montana

- Public Use Areas
- Operable Unit #1 Boundary

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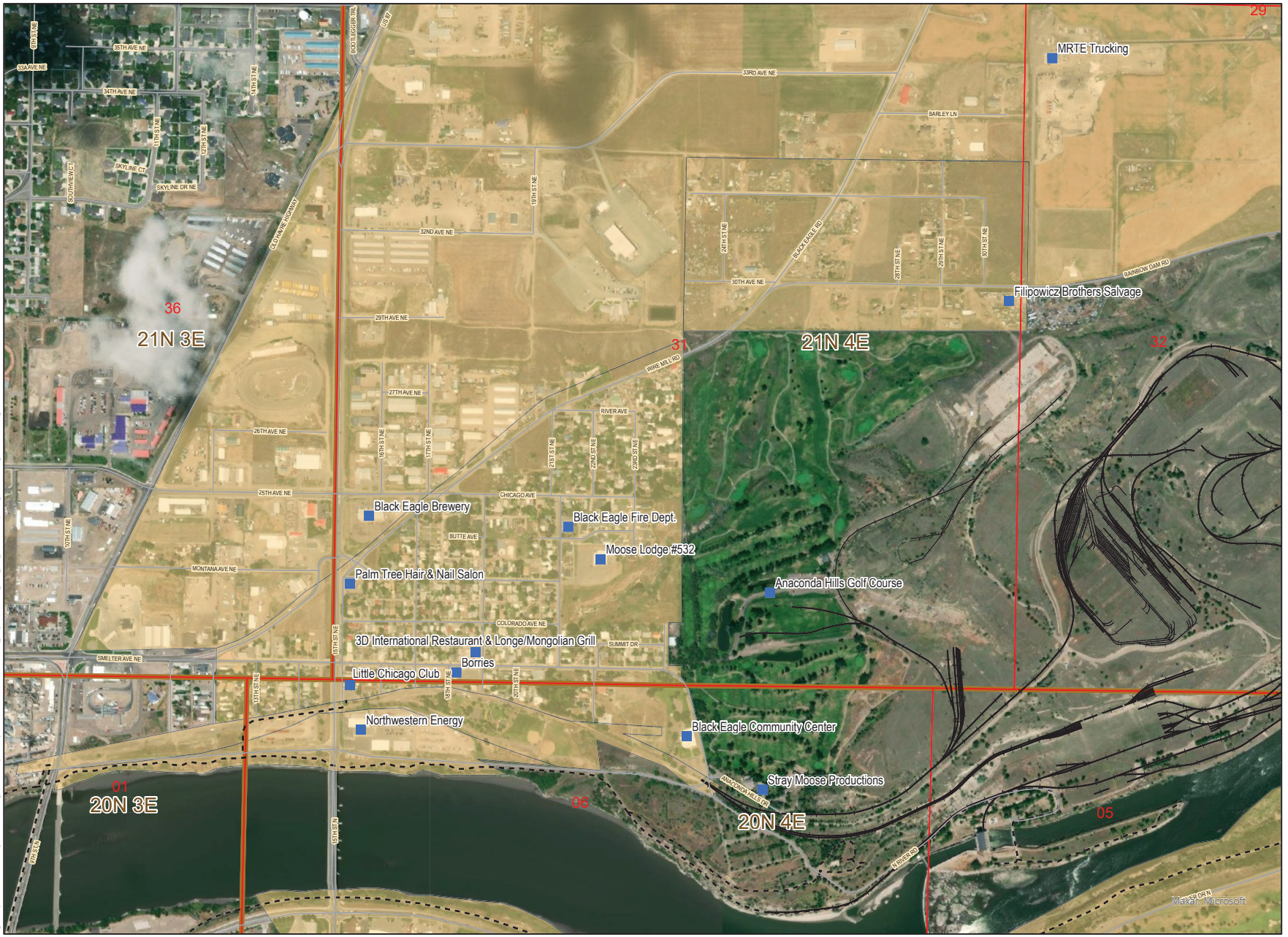


Figure K-3

Business Locations
ACM Smelter & Refinery Site Location
Great Falls, Montana

Business Locations
Operable Unit #1 Boundary

N

0 700 Feet

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