

MISSOURI DEPARTMENT OF NATURAL RESOURCES

IN THE MATTER OF:  
MW Recycling Inc.  
Festus Missouri

Respondent

Proceeding Under Sections 104, 106(a), 107  
and 122 of the Comprehensive Environmental  
Response, Compensation, and Liability Act, as  
amended, 42 U.S.C §§ 9604, 9606(a), 9607 and  
9622, and §§ 260.370.3(5), 260.375(14),  
(15), (29), (30), 260.510, and 260.530, RSMo

ABATEMENT ORDER ON CONSENT FOR REMOVAL ACTION

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**Appendix A Site Map and List of Residences Requiring Removal Actions**

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**Appendix C Interior Dust Cleaning Work Plan**

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## I. JURISDICTION AND GENERAL PROVISIONS

1. This Abatement Order on Consent for Removal Action ("Order") is entered into by the Missouri Department of Natural Resources ("MDNR") and M.W. Recycling LLC ("Respondent"), a wholly owned subsidiary of PSC Metals Inc. Respondent is a Missouri corporation in good standing authorized to do business in Missouri. This Order pertains to residential properties surrounding the M.W. Recycling LLC facility operated as Shapiro Brothers Salvage located at 9<sup>th</sup> Street and Delmar Avenue in Festus, Missouri ("Operation") as shown on the Site Map and list of addresses attached hereto as Appendix A and by this reference, incorporated herein. This Order does not pertain to the Operation itself.

2. This Order requires the Respondent to conduct residential yard sampling and a removal action, pursuant to the Missouri Hazardous Waste Management Law, §§ 260.350 to 260.430 RSMo and the Missouri Hazardous Substance Emergency Law, §§ 260.500 to 260.550 RSMo, (collectively "MHWML") and 40 CFR 300.415 of the National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR Part 300 ("NCP"). It further requires the Respondent to reimburse all Response Costs, as defined herein, incurred by the MDNR in developing and negotiating this Order and overseeing this removal action.

3. This Order is issued under the authority of Sections 260.370.3(5) and 260.375(14), (15), (29) and (30), 260.510, and 260.530 RSMo, and under the authority provided to the states under Section 107 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9604, 9606(a), 9607 and 9622, as amended ("CERCLA"). For purposes of entering into this Order, Respondent agrees that MDNR has jurisdiction to issue this Order and jurisdiction over the activities required by this Order. Respondent consents to and agrees not to contest the MDNR's authority or jurisdiction to issue or to enforce this Order. Respondent further agrees not to contest the basis or validity of this Order or any of its terms.

4. This Order is issued pursuant to Section 260.530, RSMo, and pursuant to the authority provided to the states under Section 107 of CERCLA, 42 U.S.C. § 9607. Respondent's participation in this Order shall not constitute or be construed as an admission of liability or of the findings or determinations contained in this Order. Respondent agrees to comply with and be bound by the terms of this Order.

## II. PARTIES BOUND

5. This Order applies to and is binding upon MDNR and upon Respondent and its successors and assigns and anyone acting under or on behalf of Respondent. Any change in ownership or corporate status of Respondent including, but not limited to, any transfer of assets or real or personal property, shall not alter Respondent's responsibilities under this Order, except as provided for in section II, paragraph 7 and section VIII, paragraph 18 and of this Order. The signatories to this Order certify that they are authorized to execute and legally bind the parties that they represent to this Order.

6. Respondent is responsible and liable for carrying out all activities required by this Order. The actions undertaken by Respondent in accordance with this Order will constitute full

and complete satisfaction of Respondent's investigation and remediation obligations, if any, under CERCLA and Missouri statutes with respect to the Pre-Existing Environmental Conditions. The MDNR reserves its right under Missouri statutes to require Respondent to perform investigatory and remedial work with respect to contamination, if any, first introduced to the Site after the Effective Date. The MDNR further reserves its right under Missouri law to investigate and affect remediation of any other contamination at the Site that pre-dates the Effective Date and that is outside the scope of this Order and the approved Remedial Action Plan/Sampling and Analysis Plan ("RAP/SAP") and Interior Dust Cleaning Work Plan (DCWP). Respondent shall notify the MDNR as soon as practicable of any contamination encountered during implementation of the Work that is outside the scope of the Order and the RAP.

7. (a) No change in ownership or corporate or partnership status relating to the Operation shall in any way alter Respondent's responsibility under this Order, except as provided for herein. Respondent shall give written notice of this Order to any successor in interest prior to transfer of ownership or operation of the Operation (or any portion thereof) and, if practicable, shall notify the MDNR in writing thirty (30) days prior to such transfer. If such notification is not practicable prior to the transfer, Respondent shall notify MDNR within 10 days of the transfer.

(b) Upon written approval of MDNR, Respondent may assign its rights and obligations under this Order to the transferee and shall be relieved of any obligations under this Order, provided however, that the transferee accepts such rights and obligations in writing to MDNR. In the event that MDNR does not notify Respondent of MDNR's rejection of the transferee within 30 days of such notice, the Respondent shall be relieved of any obligations under this Order and the transferee shall assume all obligations and liabilities of the Respondent pursuant to this Order, provided however, that the transferee accepts such rights and obligations in writing to MDNR.

8. Respondent shall ensure that its contractors, subcontractors, and representatives receive a copy of this Order and comply with this Order. Respondent shall be responsible for any noncompliance with this Order.

### III. STATEMENT OF PURPOSE

9. This Order concerns residential properties near the Operation at which contamination has come to be located.

10. By entering into this Order, the mutual objectives of the Parties are: (a) to determine the nature and extent of contamination at the residential properties by conducting residential yard sampling; (b) to conduct remedial actions necessary to mitigate past releases of lead onto residential properties near the Operation; and (c) to reimburse past and future response and oversight costs incurred by the MDNR as set forth in this Order.

11. The activities conducted by Respondent under this Order are subject to approval by the MDNR, and Respondent shall provide all appropriate necessary information that is consistent with CERCLA and the National Contingency Plan (NCP), 40 CFR Part 300. The activities conducted under this Order shall be conducted in compliance with all applicable state laws and regulations, and all applicable state and EPA guidance, policies, and procedures.

### III. DEFINITIONS

12. Unless otherwise expressly provided in this Order, terms used in this Order which are defined in the MHWML and CERCLA or in regulations promulgated under the MHWML or CERCLA shall have the following meaning assigned to them in the MHWML or CERCLA or in such regulations. Whenever terms listed below are used in this Order or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

- (a) "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601, *et seq.*
- (b) "Day" shall mean a calendar day. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday, or Federal or State Holiday, the period shall run until the close of business of the next working day.
- (c) "Effective Date" shall be the effective date of this Order as provided in Section XXXII.
- (d) "Future Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the State of Missouri incurs on or after the Effective Date of this Order in reviewing or developing plans, reports and other items pursuant to this Order, verifying the Work, or otherwise implementing, overseeing, or enforcing this Order, including but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, and any costs under Paragraph 33 (emergency response).
- (e) "Hazardous Substances" shall have the same meaning as in Section 101(14) of CERCLA, 42 U.S.C. § 9604(14).
- (f) "Hazardous Substance Superfund" shall mean the Hazardous Substance Superfund established by the Internal Revenue Code, 26 U.S.C. § 9507.
- (g) "Interest" shall mean interest at the current rate specified for interest on investments of the Hazardous Substance Superfund, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a).
- (h) "Lead-bearing material" shall mean all granular or semi-granular product or waste material, which contains more than 400 milligrams per kilogram (mg/kg) of lead.
- (i) "MHWML" shall mean the Missouri Hazardous Waste Management Law, Sections 260.350 to 260.430 RSMo, as amended, and the Missouri Hazardous Substance Emergency Law, §§ 260.500 to 260.550 RSMo.
- (j) "MDNR" shall mean the Missouri Department of Natural Resources and any successor departments or agencies of the State of Missouri.
- (k) "National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

(l) "Operation" shall mean the property boundaries of the MW Recycling LLC salvage operation located in Festus, Missouri.

(m) "Order" shall mean this Order on Consent for Removal Action and all appendices attached hereto or incorporated by reference. In the event of a conflict between this Order and any appendix, the Order shall control.

(n) "Paragraph" shall mean a portion of this Order identified by an Arabic numeral.

(o) "Parties" shall mean MDNR and Respondent and, in the event of transfer pursuant to Section II paragraph 7 and section VIII, paragraph 18 , such transferee.

(p) "Pre-Existing Environmental Conditions" shall mean all lead bearing materials, including all Waste Material, existing at the Site prior to the Effective Date.

(q) "Past Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the State of Missouri incurred at or in connection with the Site from August 1, 2012 to the Effective Date of this Order, plus Interest on all such costs which has accrued pursuant to 42 U.S.C. § 9607(a) through such date.

(r) "RCRA" shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901, *et seq.* (also known as the Resource Conservation and Recovery Act).

(s) "Respondent" shall mean M W Recycling, LLC and all of its successors and assigns.

(t) "Section" shall mean a portion of this Settlement Agreement identified by a Roman numeral.

(u) "Site" shall mean those residential properties where lead bearing material has come to be located, specifically those 15 residential properties identified on the Site Map at the addresses identified in Appendix A and any other residential properties in the vicinity of the Operation found to be contaminated with lead bearing material above 400 ppm as a result of additional investigations conducted under this AOC.

(v) "State" shall mean the State of Missouri.

(w) "Remedial Action Plan/Sampling and Analysis Plan" or "RAP/SAP" shall mean the remedial action plan for implementation of the removal action as approved by MDNR and incorporated by reference herein and attached as Appendix B, including the QAPP and HASP incorporated into the RAP/SAP and any modifications made thereto in accordance with this Order.

(x) "Interior Dust Cleaning Work Plan" or "DCWP" shall mean the remedial action plan for implementation of the removal action as approved by MDNR and incorporated by

reference here in and attached as Appendix C and any modifications made thereto in accordance with this order.

(y) "Waste Material" shall mean 1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); 2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); 3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. §6903(27); and 4) any hazardous substance under Section 260.500(5) RSMo.

(z) "Work" shall mean all activities Respondent is required to perform under this Order.

#### IV. FINDINGS OF FACT

##### 13. Background

(a) Shapiro Brothers, Inc. ("Shapiro"), owned by Gregory E. Shapiro and David C. Shapiro, owned and operated a scrap metal recycling operation located at 9th and Delmar Streets, Festus, Missouri (the "Operation").

(b) The 15-acre Operation is located in the Northeast ¼, Northeast ¼, Section 6, Township 40 North, Range 6 East, Jefferson County, Missouri. The Operation buys, sells, and processes scrap metal and deconstructs old railroad cars, automobiles, and miscellaneous metal parts for scrap metal.

(c) Portions of the Operation have been operated as a metal scrap yard continuously since 1946.

##### 14. Previous Investigations and Findings

(a) On August 4, 2011, the City of Festus collected a sample of street sweepings from Vine Street and Delmar Avenue, which are streets used by truck traffic entering and exiting the Operation. The sample was found to contain 2,240 mg/kg of lead.

(b) On September 16, 2011, MW Recycling, LLC, acquired substantially all of the assets of Shapiro, including the Operation, and the Operation is now operated by MW Recycling, LLC, under the d/b/a "Shapiro Brothers a Division of MW Recycling, LLC", which is duly registered with the Missouri Secretary of State.

(c) On September 1, 2011, the Department received a complaint reporting that dust and sediment were leaving the Operation.

(d) On September 14, 2011, the Department collected five (5) surface soil samples at the Operation. Lead concentrations in those samples were measured at 5,860 mg/kg, 4,420 mg/kg, 2,210 mg/kg, 2,180 mg/kg, and 1,590 mg/kg.

(e) On November 14, 2011, the Department initiated and completed a Superfund Abbreviated Preliminary Assessment (PA) Investigation that was conducted in response to the above-referenced September 1, 2011 environmental concern. The PA

investigation concluded that a CERCLA Site Inspection/Removal Site Evaluation (SI/RSE) Investigation was warranted.

(f) On November 15, 2011 the Department initiated a CERCLA SI/RSE investigation.

(g) On December 1, 2011, a consultant working for M W Recycling, LLC collected a sample of street sweepings from Vine Street and Delmar Avenue, streets used by truck traffic entering and exiting the Operation. The sample contained a lead concentration of 4,860 mg/kg.

(h) On January 11, 2012, the Department collected six (6) surface soil samples at the Operation. Lead concentrations in those samples were measured at 37,400 mg/kg, 10,500 mg/kg, 16,200 mg/kg, 3,480 mg/kg, 1,890 mg/kg and 1,620 mg/kg.

(i) In April 2012, 42 residential yards around the Operation were sampled by MDNR.

(j) On September 25, 2012, the Department completed the SI/RSE Investigation Report. The following are findings of that investigation:

- i. Yard-wide average lead concentration in the surface soil of four (4) residential yards located away from the influence of the Operation (background) was 137 mg/kg.
- ii. The average lead concentration in the surface soil of three (3) city parks located away from the influence of the Operation (background) was 60 mg/kg.
- iii. The lead concentration in a sample of street sweepings collected from roadways away from the influence of the Operation (background) contained 190 mg/kg of lead.
- iv. The lead concentration in dust samples collected from exterior surfaces at two residences located away from the influence of the Operation (background) was below 30 ug/ft<sup>2</sup>.
- v. Yard wide average lead concentrations in the surface soil of ten (10) residential yards located near the Operation, along roadways used by trucks entering and exiting the Operation exceeded the EPA Removal Action Limit of 400 mg/kg. The highest yard wide lead concentration measured was 670 mg/kg.
- vi. At an additional five (5) residential yards located near the Operation, the lead concentration only in the portion of the yard nearest the Operation exceeded the EPA Removal Action Limit of 400 mg/kg.

- vii. For residences located nearest to the Operation, there was a general trend showing that the portion of the yard nearest to the Operation contained significantly more lead (up to 2,200 mg/kg) than in other portions of the yard. This trend was absent at the background residential yards and in most other yards located further from the Operation.
- viii. The lead concentration in dust wipes collected from exterior surfaces at six (6) residences located along roadways used by trucks entering and exiting the Operation were significantly higher than at the background residences, with levels at two (2) of the residences exceeding 4,000 ug/ft<sup>2</sup>.

## V. CONCLUSIONS OF LAW AND DETERMINATIONS

15. Based on the Findings of Fact set forth above, and solely for purposes of this Order:

- (a) The Site is a “facility” as defined by Section 101(9) of CERCLA, 42 U.S.C. §9601(9).
- (b) The contamination found at the Site, as identified in the Findings of Fact above, includes [a] “hazardous substance(s)” as defined by Section 101(14) of CERCLA, 42 U.S.C. §9601(14).
- (c) The Respondent is a “person” as defined by Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).
- (d) The Respondent is a potentially responsible party under Section 107(a)(1) of CERCLA, 42 U.S.C. § 9607(a), for performance of response action and for response costs to be incurred at the Site.
- (e) The conditions described in the Findings of Fact above constitute an actual or threatened “release” of a hazardous substance from a facility as defined by Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).
- (f) The removal action required by this Order is necessary to protect the public health, welfare, or the environment and, if carried out in compliance with the terms of this Order, will be consistent with the NCP, as provided in Section 300.700(c)(3)(ii) of the NCP.

## VI. ORDER

Based upon the foregoing Findings of Fact, Conclusions of Law and Determinations it is hereby Ordered and Agreed that Respondent shall comply with all provisions of this Order, including all attachments to this Order and all documents incorporated by reference into this Order.

**VII. DESIGNATION OF CONTRACTOR, PROJECT COORDINATOR,  
AND STATE PROJECT MANAGER**

16. Respondent has retained AMEC, Eugene Watson, 15933 Clayton Road, Suite 215, Ballwin, MO 63011, to perform the Work. MDNR has approved AMEC as Respondent's contractor. Respondent shall notify MDNR of the name(s) and qualification(s) of any other contractor(s) or subcontractor(s) retained to perform the Work at least (30) days prior to commencement of such Work, unless MDNR agrees to a shorter timeframe. MDNR retains the right to disapprove of any or all of the contractor(s) and/or subcontractor(s) retained by Respondent at any time. If MDNR disapproves of a selected contractor, Respondent shall retain a different contractor and shall notify MDNR of that contractor's name and qualifications within thirty (30) days of MDNR's disapproval.

17. Respondent has designated Steve Forystek, 5875 Landerbrook Drive, Suite 200, Mayfield Heights, Ohio, 44124, as Project Coordinator. Mr. Forystek shall be responsible for administration of all actions by Respondent required by this Order. MDNR has approved Mr. Forystek as Respondent's Project Coordinator. To the greatest extent possible, the Project Coordinator shall be present on Site or readily available during Site work. MDNR retains the right to disapprove of the designated Project Coordinator at any time. If MDNR disapproves of the designated Project Coordinator, Respondent shall retain a different Project Coordinator and shall notify MDNR of that person's name, address, telephone number, and qualifications within (30) days following MDNR's disapproval. Receipt by Respondent's Project Coordinator of any notice or communication from MDNR relating to the Work shall constitute receipt by Respondent.

18. MDNR has designated Michael Stroh of the Hazardous Waste Program, as its state Project Manager (PM). Except as otherwise provided in this Order, Respondent shall direct all submissions required by this Order to the PM at P.O. Box 176, Jefferson City, MO 65102.

19. MDNR and Respondent shall have the right, subject to Paragraph 11, to change their respective designated PM or Project Coordinator. Respondent shall notify MDNR within 14 days before such a change is made. The initial notification may be made orally, but shall be promptly followed by a written notice.

**VIII. WORK TO BE PERFORMED**

20. Respondent shall perform all actions necessary to implement the additional investigation and removal action at the Site, as set forth in the approved RAP/SAP and DCWP. The actions to be implemented generally include, but are not limited to, the following:

(a) Excavation in six (6) inch lifts to a maximum depth of 12 inches of residential yard soil at the fifteen (15) residences where the yard wide lead concentration and/or the lead concentration in the portion of the yard nearest to the Operation were found to exceed 400 mg/kg.

(b) Confirmation sampling following excavation to document lead concentrations remaining in place as described in the approved RAP/SAP.

(c) Placement of a clean soil cap on the excavated areas to bring yard surface to its original elevation.

(d) Placement of a witness barrier, consisting of orange construction fence, on top of impacted soil left in place above 400mg/kg beneath the clean soil cap, if required.

(e) Proper off-site disposal of impacted soil.

(f) Additional sampling at residential yards not previously investigated as described in the approved RAP/SAP.

(g) Removal actions as described above will be conducted at any additional yards that, as a result of the additional sampling in (f) above, are found to contain yard wide average lead concentrations and/or the lead concentration in the portion of the yard nearest to the Operation were found to exceed 400 mg/kg.

(h) Perform in home interior lead dust cleanups at residences that have been identified for a yard cleanup under Paragraph (a) above or other residences identified for a yard cleanup under Paragraph (g) above and the residence located at 1107 Vine. The procedures for an interior lead dust cleanup are described in the approved DCWP.

#### 21. Work Plan and Implementation

(a) MDNR has approved the RAP/SAP attached as Appendix B and DCWP attached as Appendix C.

(b) MDNR may require revisions to, or modify, the approved RAP/SAP and/or DCWP. If MDNR requires revisions to the approved RAP/SAP or DCWP, Respondent shall submit a revised RAP/SAP or DCWP within 30 days of receipt of MDNR's notification of the required revisions. Respondents shall implement the RAP/SAP or DCWP as approved in writing by MDNR in accordance with the schedule approved by the MDNR. If the RAP/SAP or DCWP is revised at MDNR's request, once approved, or approved with modifications, the revised RAP/SAP or DCWP, the schedule, and any subsequent modifications shall be incorporated into and become fully enforceable under this Order.

(c) Respondent shall not commence any Work except in conformance with the terms of this Order.

22. Health and Safety Plan. MDNR has approved the Health and Safety Plan attached within Appendix B. Respondent shall implement the plan during the pendency of the removal action.

#### 23. Quality Assurance and Sampling.

(a) MDNR has approved the Quality Assurance and Sampling Plan attached within Appendix B.

(b) Upon request by MDNR, Respondent shall have an approved laboratory analyze samples submitted by MDNR for QA monitoring. Respondent shall provide to MDNR the QA/QC procedures followed by all sampling teams and laboratories performing data collection and/or analysis.

(c) Upon request by MDNR, Respondent shall allow MDNR or its authorized representatives to take duplicate samples. Respondent shall notify MDNR not less than 10 days in advance of any sample collection activity, unless shorter notice is agreed to by MDNR. MDNR shall have the right to take any additional samples that MDNR deems necessary. Upon request, MDNR shall allow Respondent to take split or duplicate samples of any samples it takes as part of its oversight of Respondent' implementation of the Work required under this Order.

#### 24. Reporting

(a) Respondent shall submit a written progress report to MDNR due on the 10th day of every month, or the first business day after the 10th of the month if the 10th falls on a weekend or state or federal holiday, concerning actions undertaken pursuant to this Order every 30 days after the date of receipt of MDNR's approval of the Work Plan until termination of this Order, unless otherwise directed in writing by the PM. These reports shall describe all significant developments during the preceding period, including the actions performed and any problems encountered, analytical data received during the reporting period, and the developments anticipated during the next reporting period, including a schedule of actions to be performed, anticipated problems, and planned resolutions of past or anticipated problems.

(b) Respondent shall submit all plans, reports or other submissions required by this Order in electronic form.

(c) If the Respondent owns or controls property at the Site it shall, if practicable, at least 30 days prior to the conveyance of any interest in real property at the Site, give written notice to the transferee that the property is subject to this Order and written notice to MDNR of the proposed conveyance, including the name and address of the transferee. If such notification is not practicable prior to the transfer, Respondent shall notify MDNR within 10 days of the transfer.

(d) Upon written approval of MDNR, Respondent may assign its rights and obligations under this Order to the transferee. If the Respondent owns or controls property at the Site, the Respondent also agrees to require that its successors comply with the immediately preceding sentence and Sections IX (Site Access) and X (Access to Information). In the event that MDNR does not notify Respondent of MDNR's rejection of the transferee within 30 days of such notice, the Respondent shall be relieved of any obligations under this Order and the transferee shall assume all obligations and liabilities of the Respondent pursuant to this Order, provided however, that the transferee accepts such rights and obligations in writing to MDNR.

25. **Final Report.** Within 60 days after completion of all Work required by this Order, Respondent shall submit for MDNR review and approval a final report summarizing the actions

taken to comply with this Order. The final report shall conform, at a minimum, with the requirements set forth in Section 300.165 of the NCP entitled "OSC Reports." The final report shall include a good faith estimate of total costs or a statement of actual costs incurred in complying with the Order, a listing of quantities and types of materials removed off-Site or handled on-Site, a discussion of removal and disposal options considered for those materials, a listing of the ultimate destination(s) of those materials, a presentation of the analytical results of all sampling and analyses performed, and accompanying appendices containing all relevant documentation generated during the removal action (e.g., manifests, invoices, bills, contracts, and permits). The final report shall also include the following certification signed by a person who supervised or directed the preparation of that report:

"Under penalty of law, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

26. Additional Work. MW Recycling has performed a soil cleanup at the Smiles Learning Center located at 1302 Kenner Street, Crystal City pursuant to the plan provided for in Appendix D. MDNR approved the plan and the soil clean up.

27. Off-Site Shipments of Waste Materials

(a) Respondent shall, prior to any off-Site shipment of Waste Material from the Site to an out-of-state waste management facility, provide written notification of such shipment of Waste Material to the appropriate state environmental official in the receiving facility's state and to the PM. However, this notification requirement shall not apply to any off-Site shipments when the total volume of all such shipments will not exceed 10 cubic yards.

- i. Respondent shall include in the written notification the following information: 1) the name and location of the facility to which the Waste Material is to be shipped; 2) the type and quantity of the Waste Material to be shipped; 3) the expected schedule for the shipment of the Waste Material; and 4) the method of transportation. Respondent shall notify the state in which the planned receiving facility is located of major changes in the shipment plan, such as a decision to ship the Waste Material to another facility within the same state, or to a facility in another state.
- ii. The identity of the receiving facility and state will be determined by Respondent following the award of the contract for the removal action. Respondent shall provide the information by Paragraph 20(a) and (b) as soon as practicable after the award of the contract and before the Waste Material is actually shipped.

(b) Before shipping any hazardous substances, pollutants, or contaminants

from the Site to an off-Site location, Respondent shall obtain MDNR's certification that the proposed receiving facility is operating in compliance with the requirements of CERCLA Section 121(d)(3), 42 U.S.C, § 9621(d)(3), and 40 C.F.R. § 300.440. Respondent shall only send hazardous substances, pollutants, or contaminants from the Site to an off-Site facility that complies with the requirements of the statutory provision and regulation cited in the preceding sentence.

## **IX. SITE ACCESS**

28. MDNR acknowledges that Actions under this Order are to be performed on properties owned by or in possession of someone other than Respondent. Respondent shall use its best efforts to obtain all necessary access agreements within forty-five (45) days after the approval of the Work Plan by the MDNR, or as otherwise specified in writing by the MDNR.

29. For purposes of this Order, "best efforts" includes the following: agreeing, upon request, to provide splits or duplicates of all samples collected on the property; agreeing, upon request, to provide results of all analyses of samples collected on the property. However, best efforts do not include the providing of any compensation to any property owner from whom access is sought.

30. Any such access agreements shall be incorporated by reference into this Order. Respondent shall immediately notify the MDNR if, after using its best efforts, it is unable to obtain such agreements. Respondent shall describe in writing its efforts to obtain access. The MDNR may then assist Respondent in gaining access, subject to oversight costs provisions of this Order, to the extent necessary to effectuate the response actions described herein, using such means as the MDNR deems appropriate.

31. Respondent, after have obtained access agreements, shall provide MDNR, and its representatives, including contractors, with access at all reasonable times to the Site, or such other property under Respondent's control, for the purpose of conducting any activity related to this Order.

32. Notwithstanding any provision of this Order, MDNR retains all of its access authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

33. If after Respondent's best efforts to obtain access and after MDNR's efforts pursuant to paragraph 23 of this section, Respondent is unable to secure access for a particular property or properties, then Respondent shall have no further obligation, responsibility or liability with respect to such property pursuant to this Order or any other MDNR order related to that property.

## **X. ACCESS TO INFORMATION**

34. Respondent shall provide to MDNR, upon request, copies of all documents and information within its possession or control or that of its contractors or agents relating to activities at the Site or to the implementation of this Order, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample

traffic routing, correspondence, or other documents or information related to the Work. Respondent shall also make available to MDNR, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

35. Respondent may assert business confidentiality claims covering part or all of the documents or information submitted to MDNR under this Order to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9640(e)(7), and 40 C.F.R. §2.203(b). Documents or information determined to be confidential by MDNR will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies documents or information when they are submitted to MDNR, or if MDNR has notified Respondent that the documents or information are not confidential 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 documents or information without further notice to Respondent.

36. Respondent may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If the Respondent assert such a privilege in lieu of providing documents, they shall provide MDNR with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the contents of the document, record, or information; and 6) the privilege asserted by Respondent. However, no documents, reports, or information created or generated pursuant to the requirements of this Order shall be withheld on the grounds that they are privileged.

37. No claim of confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydro-geologic, scientific, chemical, or engineering data, or any other documents or information evidencing the conditions at the Site.

## **XI. RECORD RETENTION**

38. Until 10 years after Respondent's receipt of MDNR's notification pursuant to Section XXIX (Notice of Completion of Work), Respondent shall preserve and retain all non-identical copies of records and documents in its possession or control or which come into its possession or control that relate in any manner to the performance of the Work or the liability of any person under CERCLA with respect to the Site, regardless of any corporate retention policy to the contrary. Until 10 years after Respondent's receipt of MDNR's notification pursuant to

39. Section XXIX (Notice of Completion of Work), Respondent shall instruct its contractors and agents to preserve all documents, records, and information of whatever kind, nature, or description relating to performance of the Work.

40. At the conclusion of this document retention period, Respondent shall notify MDNR at least 90 days prior to the destruction of any such records, or documents, and upon request by MDNR, Respondent shall deliver any such records or documents to MDNR. Respondent may assert that certain documents, records, or other information are privileged under the attorney-client or any other privilege recognized by federal law. If Respondent assert such a

privilege, they shall provide MDNR with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the contents of the document, record, or information; and 6) the privilege asserted by Respondent. However, no documents, reports, or information created or generated pursuant to the requirements of this Order shall be withheld on the grounds that they are privileged.

## **XII. COMPLIANCE WITH OTHER LAWS**

41. Respondent shall perform all actions required pursuant to this Order in accordance with all applicable state and federal laws and regulations except as provided in Section 121(e) of CERCLA, 42 U.S.C. § 6921(e), and C.F.R. §§ 300.400(e) and 300.415(j). In accordance with 40 C.F.R. § 300.415(j), all actions required pursuant to this Order shall, to the extent practicable, as determined by MDNR, considering the exigencies of the situation, attain applicable or relevant and appropriate requirements (“ARARs”) under federal environmental or state environmental or facility siting laws. Respondent shall identify ARARs in the Work Plan subject to MDNR approval.

## **XIII. EMERGENCY RESPONSE AND NOTIFICATION OF RELEASES**

42. In the event of any action or occurrence during the performance of the Work which causes or threatens a release of Waste Material from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Respondent shall immediately take all appropriate action. Respondent shall take these actions in accordance with all applicable provisions of this Order, including, but not limited to, the Health and Safety Plan, in order to prevent, abate, or minimize such release or endangerment caused or threatened by the release. Respondent shall also immediately notify the PM Michael Stroh (573) 522-9902 and the Unit Chief, Robert Hinkson, (573) 751-0634, and the MDNR 24-Hour Environmental Emergency Response Hotline (573) 634-2436 of the incident or Site conditions. In the event that Respondent fails to take appropriate response action as required by this Paragraph, and after notice to Respondent, MDNR takes such action instead, Respondent shall reimburse MDNR all costs of the response action not inconsistent with the NCP pursuant to Section XV (Payment of Response Costs).

43. In addition, in the event of any release of a hazardous substance from the Site, Respondent shall immediately notify the PM at (573) 522-9902 and the National Response Center at (800) 424-8802. Respondent shall submit a written report to MDNR within 7 days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, and not lieu of, reporting under Section 103(c) of CERCLA, 42 U.S.C. § 9603(c), and Section 304 of the Emergency Planning and Community Right-to-Know Act of 1986, 42 U.S.C. § 11004, et seq.

## **XIV. AUTHORITY OF STATE PROJECT MANAGER**

44. The PM shall be responsible for overseeing Respondent’s implementation of this Order. The PM shall have the authority vested in an On-Scene Coordinator by the NCP,

including the authority to halt, conduct, or direct any Work required by this Order, or to direct any other removal action undertaken at the Site. Absence of the PM from the Site shall not be cause for stoppage of work unless specifically directed by the PM.

#### **XV. PAYMENT OF OVERSIGHT & RESPONSE COSTS**

45. Respondent shall pay MDNR all Past and Future Response Costs not inconsistent with the NCP. On a periodic basis, MDNR will send Respondent a bill requiring payment that includes a standard MDNR-prepared cost summary, which includes direct and indirect costs incurred by MDNR and its contractors. Respondent shall make all payments within 45 days of receipt of each bill requiring payment, except as otherwise provided in Paragraph 49 of this Order. MDNR's Past and Future Response Costs in total shall not exceed \$50,000 for the purposes of this Order. MDNR reserves the right to requests costs in excess of \$50,000 at a future date. Respondent shall make all payments required by this Paragraph by a certified or cashiers check or checks made payable to "MDNR Hazardous Waste Fund" referencing the Site name – Shapiro Brothers. Respondent shall send certified checks or money orders to:

Missouri Department of Natural Resources  
Attention: Section Chief, Superfund Section  
Hazardous Waste Program  
P.O. Box 176

46. In the event that the payments for Past or Future Response Costs are not made within 45 days of Respondent's receipt of a bill, Respondent shall pay Interest on the unpaid balance. The Interest on Future Response Costs shall begin to accrue on the date of the bill and shall continue to accrue until the date of payment. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to the state of Missouri by virtue of Respondent's failure to make timely payments under this Section.

47. Respondent may contest payment of any Past and Future Response Costs billed under Paragraph 44 if it determines that MDNR has made a mathematical error, or if it believes MDNR incurred excess costs as a direct result of an MDNR action that was inconsistent with the NCP. Such objection shall be made in writing within 30 days of receipt of the bill and must be sent to the PM. Any such objection shall specifically identify the contested Future Response Costs and basis for objection. In the event of an objection, Respondent shall within the 45-day period pay all uncontested Future Response Costs to MDNR in the manner described in Paragraph 45. Simultaneously, Respondent shall establish an interest-bearing escrow account funds in a federally-insured bank duly chartered in the State of Missouri and remit to that escrow account funds equivalent to the amount of the contested Future Response Costs. Respondent shall send to the MDNR PM a copy of the correspondence that establishes and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. Simultaneously with establishment of the escrow account, Respondent shall initiate the Dispute Resolution procedures in Section XVI (Dispute Resolution). If MDNR prevails in the dispute, within 5 days of the resolution of the dispute, Respondent shall pay that portion of the costs (plus associated accrued interest) to MDNR in the manner described in Paragraph 44. If Respondent prevails concerning any aspect of the

contested costs, Respondent shall pay that portion of the costs (plus associated accrued interest) for which they did not prevail to MDNR in the manner described Paragraph 44. Respondent shall be disbursed any balance of the escrow account. The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XVI (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding Respondent's obligation to reimburse MDNR for Future Response Costs.

## **XVI. DISPUTE RESOLUTION**

48. Unless otherwise expressly provided for in this Order, the dispute resolution procedures of this Section shall be the exclusive mechanism for resolving disputes arising under this Order. The Parties shall attempt to resolve any disagreements concerning this Order expeditiously and informally.

49. If Respondents object to any MDNR action taken pursuant to this Order, including billings for Past and Future Response Costs, they shall notify MDNR in writing of their objection(s) within 10 days of such action, unless the objection(s) has/have been resolved informally. MDNR and Respondents shall have 20 days from MDNR's receipt of Respondents' written objection(s) to resolve the dispute through formal negotiations (the "Negotiation Period"). The Negotiation Period may be extended at the sole discretion of MDNR.

50. If Respondent objects to any MDNR action taken pursuant to this Order, it shall notify MDNR in writing of its objection(s) within 10 days of such action, unless the objection(s) has/have been resolved informally. MDNR and Respondent shall have 20 days from MDNR's receipt of Respondents' written objection(s) to resolve the dispute through formal negotiations (the "Negotiation Period"). The Negotiation Period may be extended at the sole discretion of MDNR.

51. Any agreement reached by the parties pursuant to this Section shall be in writing and shall, upon signature by both parties, be incorporated into and become an enforceable part of this Order. If the Parties are unable to reach an agreement within the Negotiation Period, an MDNR management official at the Director, Division of Environmental Quality will issue a written decision on the dispute to Respondents. MDNR's decision shall be incorporated into and become an enforceable part of this Order. Respondents' obligations under this Order shall be tolled by submission of any objection for dispute resolution under this Section. Following resolution of the dispute, as provided by this Section, Respondents shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with MDNR's decision, whichever occurs.

## **XVII. FORCE MAJEURE**

52. Respondent agrees to perform all requirements of this Order within the time limits established under this Order, unless the performance is delayed by a force majeure. For purposes of this Order, a force majeure is defined as any event arising from causes beyond the control of Respondent, or of any entity controlled by Respondent, including but not limited to their contractors and subcontractors, which delays or prevents performance of any obligation under this Order despite Respondent's best efforts to fulfill the obligation. Force majeure does not include financial inability to complete the Work or increased cost of performance.

53. If any event occurs or has occurred that may delay the performance of any obligation under this Order, whether or not caused by a force majeure event, Respondent shall notify MDNR orally within 3 days of when Respondent first knew that the event might cause a delay. Within 7 days thereafter, Respondent shall provide to MDNR in writing an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Respondent's rationale for attributing such delay to a force majeure event if they intend to assert such a claim; and a statement as to whether, in the opinion of Respondent, such event may cause or contribute to an endangerment to public health, welfare or the environment. Failure to comply with the above requirements shall preclude Respondent from asserting any claim of force majeure for that event for the period of time of such failure to comply and for any additional delay caused by such failure.

54. If MDNR agrees that the delay or anticipated delay is attributable to a force majeure event, the time for performance of the obligations under this Order that are affected by the force majeure event will be extended by MDNR for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the force majeure event shall not, of itself, extend the time for performance of any other obligation. If MDNR does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, MDNR will notify Respondent in writing of its decision. If MDNR agrees that the delay is attributable to a force majeure event, MDNR will notify Respondent in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure event.

**XVIII. STIPULATED PENALTIES**

55. Respondent shall be liable to MDNR for stipulated penalties in the amounts set forth in Paragraph 43 and 44 for failure to comply with the requirements of this Order specified below, unless excused under Section XVII (Force Majeure). "Compliance" by Respondent shall include completion of the activities under this Order or any work plan or other plan approved under this Order identified below in accordance with all applicable requirements of law, this Order, the Remedial Action Plan and any plans or other documents approved by MDNR pursuant to this Order and within the specified time schedules established by and approved under this Order. Notwithstanding the foregoing, MDNR may extend the time for performance or waive the imposition of any penalty, or any portion thereof, in its discretion.

56. Stipulated Penalty Amounts – Work.

(a) The following stipulated penalties shall accrue per violation per day for any noncompliance identified in Paragraph 43(b):

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$ <u>100.00</u>	1 <sup>st</sup> through 14 <sup>th</sup> day
\$ <u>200.00</u>	15 <sup>th</sup> through 30 <sup>th</sup> day
\$ <u>500.00</u>	31 <sup>st</sup> day and beyond

(b) Compliance Milestones: The additional investigation, sampling, and removal actions as defined in the approved RAP shall serve as compliance milestones for purposes of this Order.

57. Stipulated Penalty Amounts – Reports. The following stipulated penalties shall accrue per violation per day for failure to submit timely or adequate reports [or other written documents pursuant to Paragraphs 15-19:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
<u>\$ 100.00</u>	1 <sup>st</sup> through 14 <sup>th</sup> day
<u>\$ 200.00</u>	15 <sup>th</sup> through 30 <sup>th</sup> day
<u>\$ 500.00</u>	31 <sup>st</sup> day and beyond

58. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. However, stipulated penalties shall not accrue: 1) with respect to a deficient submission under Section VIII (Work to be Performed), during the period, if any, beginning on the 31st day after MDNR’s receipt of such submission until the date that MDNR notifies Respondent of any deficiency; and 2) with respect to a decision by the MDNR Management Official at the Division Director level or higher, during the period, if any, beginning on the 21st day after the Negotiation Period begins until the date that the MDNR Management Official issues a final decision regarding such dispute. Nothing in this Order shall prevent the simultaneous accrual of separate penalties for separate violations of this Order.

59. Following MDNR’s determination that Respondent has failed to comply with a requirement of this Order, MDNR may give Respondent written notification of the failure and describe the noncompliance. MDNR may send Respondent a written demand for payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether MDNR has notified Respondent of a violation.

60. All penalties accruing under this Section shall be due and payable to MDNR within 30 days of Respondent’s receipt from MDNR of a demand for payment of the penalties, unless Respondent invoke the dispute resolution procedures under Section XVI (Dispute Resolution). All payments to MDNR under this Section shall be paid by certified or cashiers check(s) made payable to “State of Missouri (Jefferson County)” and sent to the Office of the Attorney General, P.O. Box 899, Jefferson City, Missouri, 65102-0899, Attention: Collections Specialist, Financial Services Division.

61. Checks shall indicate that the payment is for stipulated penalties for the Site and the name and address of the party(s) making payment. Copies of check(s) paid pursuant to this Section, and any accompanying transmittal letter(s), shall be sent to MDNR as provided in Paragraph 36.

62. The payment of penalties shall not alter in any way Respondent’ obligation to complete performance of the Work required under this Order.

63. Penalties shall not continue to accrue during any dispute resolution period.

64. If Respondent fails to pay stipulated penalties when due, MDNR may institute proceedings to collect the penalties. Nothing in this Order shall be construed as prohibiting, altering, or in any way limiting the ability of MDNR to seek any other remedies or sanctions available by virtue of Respondent's violation of this Order or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Sections 106(b) and 122(1) of CERCLA, 42 U.S.C. §§ 9606(b) and 9622(1), and punitive damages pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3). Provided, however, that MDNR shall not seek civil penalties pursuant to Section 106(b) or 122(1) of CERCLA or punitive damages pursuant to Section 107(c)(3) of CERCLA for any violation for which a stipulated penalty is provided in this Section, except in the case of a willful violation of this Order. Notwithstanding any other provision of this Section, MDNR may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued to this Order.

### **XIX. COVENANT NOT TO SUE BY MDNR**

65. In consideration of the actions that will be performed and the payments that will be made by the Respondents under the terms of this Order, and except as otherwise specifically provided in this Order, MDNR covenants not to sue or to take administrative action against Respondents pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9906 and 9907(a), for the Work, Past Response Costs, and Future Response Costs. This covenant not to sue shall take effect upon receipt by MDNR of the Past Response Costs due under Section XV of this Order and any interest or Stipulated Penalties due for failure to pay Past Response Costs as required by Sections XV and XVIII of this Order. This covenant not to sue is conditioned upon the complete and satisfactory performance by Respondents of their obligations under this Order, including, but not limited to, payment of Future Response Costs pursuant to Section XV. This covenant not to sue extends only to Respondents and successors and assigns pursuant to section II, paragraph 7 and section VIII, paragraph 18 of this Order and does not extend to any other person.

### **XX. RESERVATIONS OF RIGHTS BY MDNR**

66. Except as specifically provided in this Order, nothing in this Order shall limit the power and authority of MDNR or the state of Missouri to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants, or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing in this Order shall prevent MDNR from seeking legal or equitable relief to enforce the terms of this Order, from taking other legal or equitable action as it deems appropriate and necessary, or from requiring Respondent in the future to perform additional activities pursuant to CERCLA or any other applicable law.

67. The covenant not to sue set forth in Section XIX above does not pertain to any matters other than those expressly identified therein. MDNR reserves and this Order is without prejudice to, all rights against Respondent with respect to all other matters, including, but not limited to:

- Order;
- (a) claims based on a failure by Respondent to meet a requirement of this Order;
  - (b) liability for costs not included within the definition(s) of Past Response Costs or Future Response Costs;
  - (c) liability for performance of response action other than the Work;
  - (d) criminal liability;
  - (e) liability for damages for injury to, destruction of, or loss of natural resources, and for costs of any natural resource damage assessments;
  - (f) liability arising from the past, present, or future disposal, release or threat of release of Waste Materials outside of the Site, and
  - (g) liability for costs incurred or to be incurred by the Agency for Toxic Substances and Disease Registry related to the Site.

#### **XXI. COVENANT NOT TO SUE BY RESPONDENT**

68. Respondent covenants not to sue and agrees not to assert any claims or causes of action against the state of Missouri, or its contractors or employees, with respect to the SOW, RAP; Future Response Costs, or this Order, including, but not limited to:

- (a) any direct or indirect claim for reimbursement from the Hazardous Substance Superfund established by 26 U.S. C. § 9507, based on Sections 106(b)(2), 107, 111, 112, or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provisions of law;
- (b) any claim arising out of response actions at or in connection with the Site, including any claim under the United States Constitution, the Missouri Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, as amended, or at common law, or
- (c) any claim against the state of Missouri pursuant to Sections 107 and 113 of CERCLA, 42 U.S.C. §§ 9607 and 9613, relating to the Work, or Future Response Costs.

These covenants not to sue shall not apply in the event (i) the State of Missouri brings a cause of action or issues an order pursuant to the reservations set forth in Paragraph 53 (b), (c), and (e) – (g), but only to the extent that Respondent' claims arise from the same response action, response costs, or damages that the State of Missouri is seeking pursuant to the applicable reservation.

69. Nothing in this Agreement shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section III of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

## XXII. OTHER CLAIMS

70. By issuance of this Order, the State of Missouri and MDNR assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondent. The State of Missouri or MDNR shall not be deemed a party to any contract entered into by Respondent or their directors, officers, employees, agents, successors, representatives, assigns, contractors, or consultants in carrying out actions pursuant to this Order.

71. Except as expressly provided in Section XIX (Covenant Not to Sue by MDNR), nothing in this Order constitutes a satisfaction of or release from any claim or cause of action against Respondent or any person not a party to this Order, for any liability such person may have under CERCLA, other statutes, or common law, including but not limited to any claims of the state of Missouri for costs, damages, and interest under Sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607.

72. Except as provided for herein, no action or decision by MDNR pursuant to this Order shall not give rise to any right to judicial review, except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

## XXIII. CONTRIBUTION

73. (a) The Parties agree that this Order constitutes an administrative settlement for purposes of Section 113(f)(2) of CERCLA, 42 U.S.C. § 9613(f)(2), and that Respondent are entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), for matters addressed “in this Order. The “matters addressed” in this Order are the Work and Past and Future Response Costs.

(b) The Parties agree that this Order constitutes an administrative settlement for purposes of Section 113(f)(3)(B) 5 of CERCLA, 42 U.S.C. § 9613(f)(3)(B), pursuant to which Respondent has, as of the Effective Date, resolved its liability to the State of Missouri for the Work , Past Response Costs, and Future Response Costs.

(c) Nothing in this Order precludes the State of Missouri or Respondent from asserting any claims, causes of action, or demands for indemnification, contribution, or cost recovery against any persons not parties to this Order. Nothing in this Order diminishes the right of the State of Missouri, pursuant to Section 113(f)(2) and (3) of CERCLA, 42 U.S.C. § 9613(f)(2)-(3), to pursue any such persons to obtain additional response costs or response action and enter into settlements that give rise to contribution protection pursuant Section 113(f)(2).

## XXIV. INDEMNIFICATION

74. (a) Except as provided for in subsection (b) of this section, Respondent shall indemnify, save and hold harmless the State of Missouri, its officials, agents, contractors, subcontractors, employees, and representatives from any and all claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of Respondent, their officers, directors, employees, agents, contractors, or subcontractors, in carrying out actions

pursuant to this Order. In addition, Respondent agrees to pay the State of Missouri all costs incurred by the State of Missouri, including but not limited to attorney fees and other expenses of litigation and settlement, arising from or on account of claims made against the State of Missouri based on negligent or other wrongful acts or omissions of Respondent, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Order. The State of Missouri shall not be held out as a party to any contract entered into by or on behalf of Respondent in carrying out activities pursuant to this Order. Neither Respondent nor any such contractor shall be considered an agent of the State of Missouri.

75. The State of Missouri shall give Respondent notice of any claim for which the State of Missouri plans to seek indemnification pursuant to this Section and shall consult with Respondent prior to settling such claim.

76. Respondent waives all claims against the State of Missouri for damages or reimbursement or for set-off of any payments made to or to be made to the State of Missouri, arising from or on account of any contract, agreement, or arrangement between any one or more of Respondent and any person for performance or Work on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, Respondent shall indemnify and hold harmless the State of Missouri with respect to any and all claims for damages or reimbursements arising from or on account of any contract, agreement, or arrangement between any one or more of Respondent and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays.

## **XXV. INSURANCE**

77. At least 10 days prior to commencing any on-Site work under this Order, Respondent shall secure, and shall maintain for the duration of this Order, comprehensive general liability insurance and automobile insurance with limits of one million dollars, combined single limit, naming MDNR as an additional insured. Within the same time period, Respondent shall provide MDNR with certificates of such insurance and a copy of each insurance policy. Respondent shall submit such certificates and copies of policies each year on the anniversary of the Effective Date. In addition, for the duration of the Order, Respondent 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 Respondent in furtherance of this Order. If Respondent demonstrate by evidence satisfactory to MDNR that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering some or all of the same risks but in an equal or lesser amount, then Respondent need to provide only that portion of the insurance described above which is not maintained by such contractor or subcontractor.

## **XXVI. FINANCIAL ASSURANCE**

78. Within 30 days of the Effective Date, Respondent shall establish and maintain financial security for the benefit of MDNR in an amount to be determined by Respondent and approved by MDNR but no less than \$200,000, unless written authorization of lower amount is issued by MDNR. Financial security shall take one or more of the following forms, in order to secure the full and final completion of Work by Respondent:

- (a) a surety bond unconditionally guaranteeing payment and/or performance of the Work;
- (b) one or more irrevocable letters of credit, payable to or at the direction of MDNR, issued by financial institution(s) acceptable in all respects to MDNR;
- (c) a trust fund administered by a trustee acceptable in all respects by MDNR;
- (d) a policy of insurance issued by an insurance carrier acceptable in all respects to MDNR, which ensures the payment and/or performance of the Work;
- (e) a written guarantee to pay for or perform the Work provided by one or more parent companies of Respondent, or by one or more unrelated companies that have a substantial business relationship with at least one of Respondent; including a demonstration that any such guarantor company satisfies the financial test requirements of 40 C.F.R. Part 264.143(f); and/or
- (f) a demonstration of sufficient financial resources to pay for the Work made by Respondent, which shall consist of a demonstration that Respondent satisfies the requirements of 40 C.F.R. Part 264.143(f).

79. Any and all financial assurance instruments provided pursuant to this Section shall be in form and substance satisfactory to MDNR, determined in MDNR's sole discretion. In the event that MDNR determines at any time that the financial assurances provided pursuant to this Section (including, without limitation, the instrument(s) evidencing such assurance) are inadequate, Respondent shall, within 30 days of receipt of notice of MDNR's determination, obtain and present to MDNR for approval one of the other forms of financial assurance listed in Paragraph 75, above. In addition, if at any time MDNR notifies Respondent that the anticipated cost of completing the Work has increased, then, within 30 days of such notification, Respondent shall obtain and present to MDNR for approval a revised form of financial assurance (otherwise acceptable under this Section) that reflects such cost increase. Respondent's inability to demonstrate financial ability to complete the Work shall in no way excuse performance of any activities required under this Order.

80. If Respondent seeks to ensure completion of the Work through a guarantee pursuant to Subparagraph 75(e) or 75(f) of this Order, Respondent shall (i) demonstrate to MDNR's satisfaction that the guarantor satisfies the requirements of 40 C.F.R. Part 264.143(f); and (ii) resubmit sworn statements conveying the information required by 40 C.F.R. Part 264.143(f) annually, on the anniversary of the Effective Date or such other date as agreed by MDNR, to MDNR. For the purposes of this Order, wherever 40 C.F.R. Part 264.143(f) references "sum of current closure and post-closure costs estimates and the current plugging and abandonment costs estimates," the dollar amount used in the relevant calculations shall be the current cost estimate for the Work at the Site as identified in paragraph 75 plus any other RCRA, CERCLA, TSCA, or other federal environmental obligations financially assured by the relevant Respondent or guarantor to MDNR by means of passing a financial test.

81. If, after the Effective Date, Respondent can show that the estimated cost to complete the remaining Work has diminished below the amount set forth in Paragraph 65 of this

Section, Respondent may, on any anniversary date of the Effective Date, or at any other time agreed to by the Parties, reduce the amount of the financial security provided under this Section to the estimated cost of the remaining Work to be performed. Respondent shall submit a proposal for such reduction to MDNR, in accordance with the requirements of this Section, and may reduce the amount of the security after receiving written approval from MDNR. In the event of a dispute, Respondent may seek resolution pursuant to Section XV (Dispute Resolution). Respondent may reduce the amount of security in accordance with MDNR's written decision resolving the dispute.

82. Respondent may change the form of financial assurance provided under this Section at any time, upon notice to and prior written approval by MDNR, provided that MDNR determines that the new form of assurance meets the requirements of this Section. In the event of a dispute, Respondent may change the form of the financial assurance only in accordance with the written decision resolving the dispute.

### **XXVII. MODIFICATIONS**

83. The PM may make modifications to any plan or schedule in writing or by oral direction. Any oral modifications will be memorialized in writing by MDNR promptly, but shall have as its effective date, the date of the PM's oral direction. Any other requirements of this Order may be modified in writing by mutual agreement of the parties.

84. If Respondent seek permission to deviate from any approved work plan or schedule, Respondent's Project Coordinator shall submit a written request to MDNR for approval outlining the proposed modification and its basis. Respondent may not proceed with the requested deviation until receiving oral or written approval from the PM pursuant to Paragraph 70.

85. No informal advice, guidance, suggestion, or comment by the PM or other MDNR representatives regarding reports, plans, specifications, schedules, or any other writing submitted by Respondent shall relieve Respondent of their obligation to obtain any formal approval required by this Order, or to comply with all requirements of this Order, unless it is formally modified.

### **XXIII. NOTICE OF COMPLETION OF WORK**

86. (a) When MDNR determines, after MDNR's review of the Final Report, that all Work has been fully performed in accordance with this Order, including payment of MDNR costs as provided for herein with the exception of any continuing obligations required by this Order, MDNR will provide written notice to Respondent ("Completion Notice"). If MDNR determines that any such Work has not been completed in accordance with this Order, MDNR will notify Respondent, provide a list of deficiencies, and require that Respondent modify the Work Plan if appropriate in order to correct such deficiencies. Respondent shall implement the modified and approved Work Plan and shall submit a modified Final Report in accordance with the MDNR notice. Failure by Respondent to implement the approved Work Plan shall be a violation of this Order.

(b) Upon MDNR providing Respondent with the Completion Notice, Respondent will have satisfied all obligations of this Order and shall have no further obligations pursuant to this Order.

### XXIX. INTEGRATION/APPENDICES

87. This Order and its appendices constitute the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Order. The parties acknowledge that there are no representations, agreements, or understandings relating to the settlement other than those expressly contained in this Order.

### XXX. EFFECTIVE DATE

88. This Order shall be effective 10 days after the Order is signed by the MDNR Division of Environmental Quality Director or his/her designee.

The undersigned representative(s) of Respondent certify(s) that it (they) is (are) fully authorized to enter into the terms and conditions of this Order and to bind the party(s) it (they) represent(s) to this document.

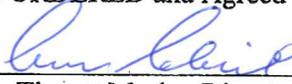
Agreed this 14<sup>th</sup> day of November, 2013.

For Respondent MW Recycling LLC

By [Signature]

Title V.P. Operations Services

It is so ORDERED and Agreed this 19<sup>th</sup> day of ~~October~~<sup>NOVEMBER</sup>, 2013.

BY:  FOR  
Leanne Tippett Mosby, Director  
Division of Environmental Quality  
Missouri Department of Natural Resources

DATE: \_\_\_\_\_

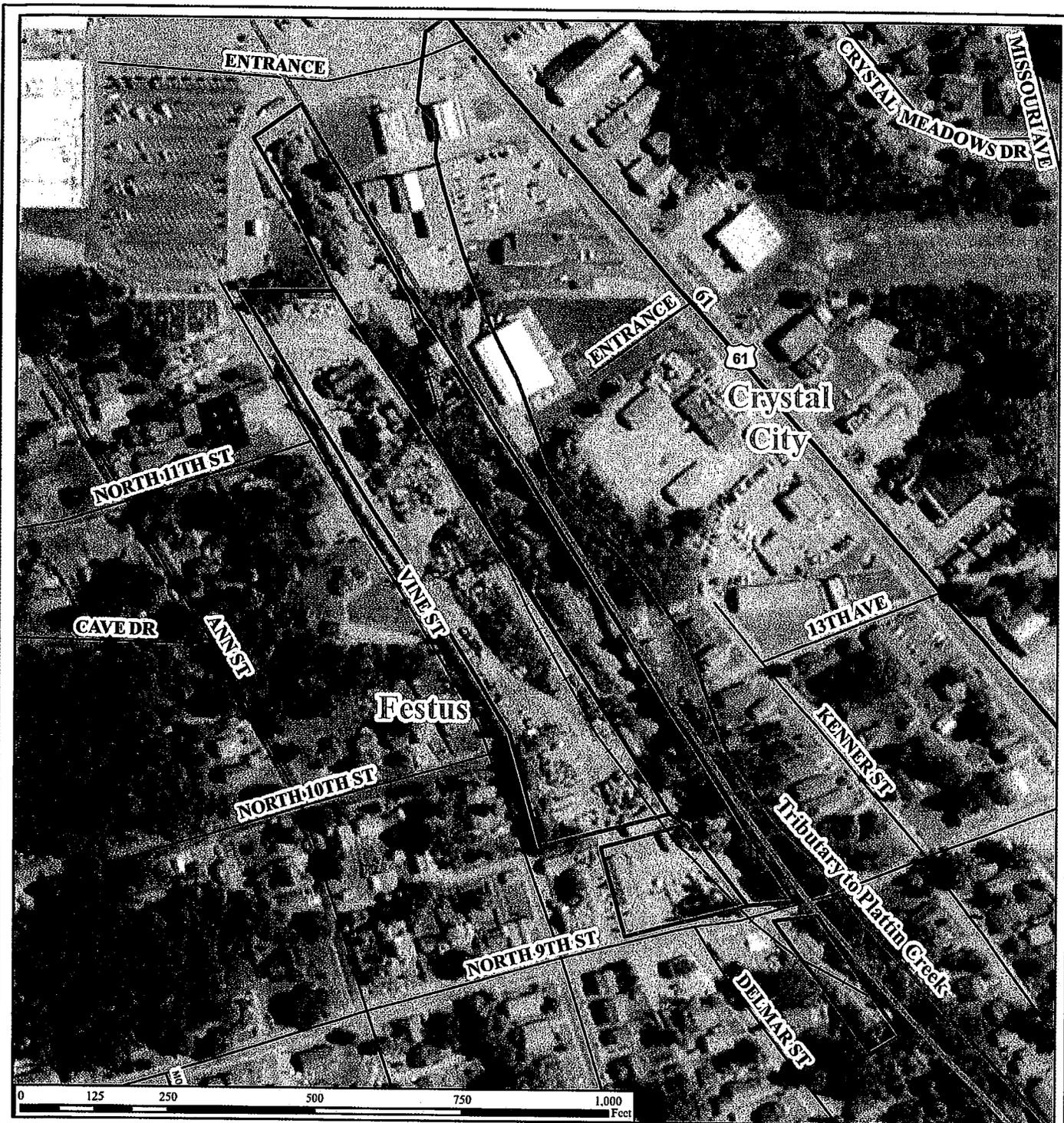
EFFECTIVE DATE: November 29, 2013

## **Appendix A**

### **Site Map and List of Residences Requiring Removal Actions**

**Appendix A**  
**Site Map and List of Residences Requiring Removal Actions**

Street Number	Street	City	ZIP
1019	Vine St.	Festus	63028
1011-1017	Vine St.	Festus	63028
1009	Vine St.	Festus	63028
119	N. Tenth St.	Festus	63028
913	Vine St.	Festus	63028
115	Ninth St.	Festus	63028
116	N. Ninth St.	Festus	63028
111	N. Ninth St.	Festus	63028
855	Delmar Ave	Festus	63028
854	Delmar Ave	Festus	63028
1303	Kenner St.	Crystal City	63019
1305	Kenner St.	Crystal City	63019
1209	Kenner St.	Crystal City	63019
1022	Kenner St.	Crystal City	63019
1024	Kenner St.	Crystal City	63019



**Site Location Map**  
**Shapiro Borthers Salvage Site**  
**9th & Delmar Festus, MO 63028**  
**Jefferson County**

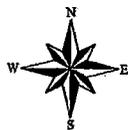
Created on: October 16, 2013 by Valerie Wilder.  
 This map is located at  
 M:\Superfund\Shapiro Bros\Site\_Location\_Map\_8x11.mxd

Base Map:  
 National Agriculture Imagery Program (NAIP) ortho photography.  
 Flight Date: 2012

Although data sets used to create this map have been compiled by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the department in the use of these data or related materials.



**Missouri Department of  
 Natural Resources**  
**Division of Environmental Quality**  
**Hazardous Waste Program**



Legend	
	Shapiro Brothers Salvage Site Boundary
	Municipal Boundary
	Railroad
	US Highway
	Local Road
	Stream

## **Appendix B**

### **Remedial Action Plan/Sampling and Analysis Plan**

# **Remedial Action Plan/Sampling and Analysis Plan for Residential Area near the Shapiro Brothers Festus Site**

Prepared for:

**MW Recycling  
5875 Landerbrook Drive  
Mayfield Heights, Ohio 44124**

Prepared by:

**AMEC Environment & Infrastructure, Inc.  
15933 Clayton Road, Suite 215  
Ballwin, Missouri 63011**



September 2013

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Figure 2	No Figure – Intentionally Left Blank
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Figure 4	Sampling Design

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Appendix A	XRF SOP
Appendix B	Field Sample Collection Form
Appendix C	Laboratory Chain of Custody Forms

## ACRONYMS AND ABBREVIATIONS

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cm	centimeter
COC	chain of custody
DHSS	Department of Health and Senior Services
DQO	data quality objectives
DU	decision unit
EU	exposure unit
HRS	Hazard Ranking System
ICS	incremental composite sampling
IDW	investigation derived wastes
MDNR	Missouri Department of Natural Resources
mg/kg	milligrams per kilogram
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyls
PBDE	polychlorinated biphenyl ethers
PPE	personal protection equipment
QAPP	Quality Assurance Project Plan

RAL        Removal Action Levels  
RCRA      Resource Conservation and Recovery Act  
SAP        Sampling and Analysis Plan  
SU         sampling unit  
USEPA     U.S. Environmental Protection Agency

## 1.0 Introduction

On behalf of MW Recycling Inc, AMEC is submitting this Sampling and Analysis Plan (SAP) and Remedial Action Plan (RAP) for proposed residential soil sampling and remediation as required by the Missouri Department of Natural Resources (MDNR)<sup>1</sup>. The SAP/RAP has followed the initial plan outline prepared by MDNR for the Integrated Site Inspection/Removal Site Evaluation Sampling and Analysis Plan. The scope of the AMEC investigation will include the collection and analyses of surface soil samples and the remediation of selected residential properties.

## 2.0 Site Information

### 2.1 Site Location

The facility is located at the intersection of 12<sup>th</sup> Street and Vine in Festus, Missouri. It is a rectangular 9-acre area, oriented primarily north-south, along the boundary that separates Festus and Crystal City, Missouri (Figure 1). The Site consists of residential properties that require site characterization and/or remediation located to the east, south and west of the facility.

### 2.2 Description

The Shapiro Brothers Festus yard has been used as a metal scrap processing and recycling facility since the 1940s. Prior to fall of 2011, when a truck wash system was installed in to clean the undercarriage and wheels of trucks leaving the southern gate, trucks left the unpaved facility unwashed. During periods of wet soil conditions, trucks would historically have tracked mud from the facility onto nearby streets. In late 2010, Shapiro Brothers began operating a street sweeper in the roads around the facility to remove residual material tracked into the streets by trucks, and this practice continues to present.

Prior to the spring of 2011, trucks primarily approached the facility by traveling along 12<sup>th</sup> Street to and from Truman Boulevard (U.S. Highway 61). A heavy spring flood event in 2011 washed out the culvert beneath 12th Street near the facility making the road impassable. Since then, trucks have traveled south from the facility on the residential street (Delmar Avenue) before connecting with Truman Boulevard via 6th Street.

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<sup>1</sup> MW Recycling disputes MDNR's conclusions that remediation of the residential homes is necessary based upon the soil lead levels found. Further, MW Recycling believes that the lead contamination in the yards and potentially the residential homes is not from the Shapiro yard. Nevertheless, MW Recycling has agreed to undertake this remediation as a good corporate citizen and neighbor and to avoid the cost and expense of litigation.

### 2.3 History/Contaminants of Concern

In July and September 2011, the Missouri Department of Natural Resources conducted a series of environmental inspections at Shapiro Brothers Inc. (Site). The inspections were conducted in response to a complaint received from the city of Festus concerning soil being tracked onto city streets from the site. Sampling conducted by the city indicated elevated lead levels in street sweepings collected from roadways near the facility which resulted in additional sampling being conducted by MDNR as part of a CERCLA Combined Site Inspection/Removal Site Evaluation. The Department's investigation identified elevated lead levels in the soils of residential yards adjacent to the facility and along haul residential roads used by trucks leaving the facility. Based on the results of the sampling events, lead has been determined to be the contaminant of concern in the residential areas near the Site.

### 3.0 Data Quality Objectives

To help ensure precise, accurate, representative, complete, and comparable data, all field work and analyses will be conducted in general accordance with a site-specific QAPP included as an appendix to the SOW. The sampling design used for this effort will conform to that described in the **MDNR Integrated Site Inspection/Removal Site Evaluation Sampling and Analysis Plan** to ensure compatibility with data previously generated by MDNR in April 2012.

#### 3.1 Conceptual Site Model

Based on review of the previously collected data from the Shapiro Brothers Site and the residential properties near the Site, lead will be the only contaminant of concern for the residential sites. MDNR remedial action decisions for residential yards are typically conducted on an exposure unit (EU) by EU basis. Therefore, yard decision units (DUs) for this investigation will be set the same as the EUs. However, to aid in evaluating source attribution and to evaluate sub-areas within the yard DUs that may have special exposure concerns (e.g., children's play areas); sampling will be conducted in sampling units (SUs) smaller than the DU. The sampling design is further discussed in this section and is designed to mimic the previous residential sampling performed in this location, so sampling results can be compared.

Contaminants deposited on residential yard soils through air deposition would be expected to show a spatial pattern with higher concentrations nearer to the facility/haul road, and MDNR believes that this pattern was observed during the MDNR SI/RSE Investigation. Lead poses some unique challenges since it may also be present near residential structures due

to past use of lead paint, and near roadways due to fallout from vehicle exhaust during the period when leaded fuel was used. Additionally, there may be other sources of the lead present in the soils, including that the nation's only primary lead smelter is located approximately 2 miles north of the Shapiro facility and the residential neighborhood, or from past use of smelter slag as traction control on streets of Festus in the winter as indicated in a conversation with the City Manager and Mayor of the City of Festus.

Exterior dust was sampled as part of the MDNR SI/RSE investigation and elevated levels of lead were observed at residences near the facility. The MDNR has indicated to us that they will be conducting indoor dust sampling at residences identified for yard cleanup.

### **3.2 Decision Units**

The primary study goal for this investigation is:

- To define the boundary of the surficial residential lead contamination outward away from the facility during the planned second phase of Residential sampling (Figure 3, light blue/purple parcels) by determining the mean concentrations of lead in the fine fraction of surface soil (0"-1") in residential yard DUs adjacent to the facility and/or along or near haul routes and comparing the mean lead concentrations to the health-based screening levels of 400 mg/kg.

### **3.3 Study Boundary**

Figure 3 shows the locations of each residential property for which access was requested as parcels with light blue/purple boundaries.

### **3.4 Decision Rules**

#### **Removal Assessment**

If the estimate of the mean lead concentration for any sampling unit exceeds the EPA Remedial Action Level (RAL) of 400 mg/kg, a yard cleanup action will be initiated; otherwise no further soil cleanup action will be taken for that residence. MW Recycling will cleanup dust, as outlined herein, for those residential homes where the lead soil levels in SU1 and/or SU-2 exceed 400mg/kg.

### 3.5 Tolerable Limits on Decision Error

The null hypothesis is that the additional yards to be sampled contain average yard-wide lead concentrations above 400 mg/kg. Falsely rejecting that hypothesis, considered a Type I decision error, would mean mistakenly concluding that yards are clean. Falsely accepting this hypothesis, considered the Type II decision error, would mean concluding that the yards are contaminated when in fact they are not. The Type I error would result in taking no action at yards actually contaminated at levels that could pose a health threat to residents. A Type II error would result in the unnecessary use of resources to conduct removal and/or removal action at yards that do not warrant it. The Type I error is considered more severe since it results in potential threats to human health.

A sampling design has been chosen to control error and minimize the likelihood of making a Type I decision error. In-situ XRF analyses will be used to obtain a high density data set about concentration gradients for lead with distance from each residence. The use of field analytical techniques such as XRF allows much higher density data sets than is practical with conventional discrete soil sample/laboratory analysis. Large data sets will increase confidence about conclusions drawn from the data and decrease the likelihood of committing either type of error.

An incremental composite sampling (ICS) approach will be used to collect soil samples in each SU. ICS is designed to obtain single soil sample that contain contaminants in the same proportion in the sample as they are present in the SU (e.g. are representative samples). This is achieved through inclusion of many increments of adequate-mass soil across each SU. Representative sampling will decrease the likelihood of committing either type of error. The ICS sampling procedure will be replicated and results of the replicates will be used to provide a conservative estimate (95% UCL) of the true mean lead concentration. By using a conservative estimate of mean concentration, we will protect against underestimating the true mean, and therefore potentially walking away from a residence that is actually contaminated.

### 3.6 Sampling Design

Based on the CSM, higher contaminant concentrations are expected closest to the suspected source of contamination (the facility or the haul road). This assumption will be tested by conducting in-situ XRF analyses along transects set up in each yard perpendicular to the suspected source. Several transects will be set up at each residence, and 3-5 30-second in-situ XRF readings will be collected at several distances along each transect. At all residences, the XRF results will be used to identify a sampling unit (SU1) as a rectangle parallel to the suspected source across the entire yard. For residences whose back yards are adjacent to the facility (e.g. those along Kenner Street), SU1 will be established parallel

to the facility across the back of the property. Dimensions of this SU will depend on yard size and configuration and observed concentration trends from in-situ XRF analysis.

For yards where in-situ XRF is conducted, but no elevated lead concentrations (> 100 mg/kg) are observed, no SU1 will be established; a single 30-increment ICS will be collected from the entire yard (excluding the drip zone DU as discussed below). For those residences at which SU1 is established, the area of the SU in square feet (ft<sup>2</sup>) will be recorded on the field sheet, and a 16-increment ICS will be collected from this SU. When an SU1 is established at a property, a second SU (SU 2) will be established as the rest of the yard (excluding SU1 and the drip zone, SU3) as shown in Figure 4. A 25-increment ICS will be collected from this SU. The area of SU2 will be measured using GIS tools after the field work is complete. If a special-use exposure area is observed in a yard such as a children's play area, its area in square feet will be recorded on the field sheet and it will be sampled as a separate SU. The number of increments collected from a special use area will be determined in the field based on the SU size, but will contain no less than 15 increments. When an SU1 is not established at a yard, the entire yard (excluding the drip zone SU) will be sampled as a single decision unit with a 30-increment ICS.

Most of the homes in the study area were built prior to the banning of lead-based paint in 1978. Therefore it is possible that lead levels in soil near the structures may be elevated due to that potential source. This will be assessed through in-situ XRF analysis conducted along transects extending away from the house in 4 directions. The drip zone transects will be conducted at target residences.

Each SU and DU ICS will be air dried, disaggregated, sieved (0.25mm, #60), and analyzed for lead by XRF. For yards where an SU1 and SU2 sample are collected, an estimate of the contaminant concentration for the entire DU (yard) will be made by mathematically combining results for the ICS collected in SUs 1 and 2. A weight-averaging approach will be used.

20% replicate ICS will be collected in the sampling units. The replicate data from each SU will be used to calculate 95 % upper confidence limits (UCLs). Cleanup decisions will be made based on UCL of the mean lead concentration for each SU in each yard. For yards where replicates are collected, a measure of variability will be directly available for UCL calculation. However, since field replicate will be collected in only a percentage of the SUs, the measure of variability required for UCL calculation will be extrapolated from yards where replicates are collected to those where they are not collected for the purposes of calculating a UCL. For such yards, the arithmetic mean standard deviation from among sets of replicate data will be used as the measure of variability.

### 3.7 Decision Rules

Investigative data will be used to make decisions to assess the need for a yard cleanup and to determine if the boundary of lead impacts on residential properties has been delineated.

#### 3.7.1 Yard Assessment

- If the 95% upper confidence level (UCL) on the mean lead concentration in a yard sampling unit exceeds 400 mg/kg, yard cleanup activities will be initiated; otherwise no further soil cleanup action will be taken for that residence.

#### 3.7.2 Indoor Dust Assessment

MW Recycling will cleanup dust, as outlined herein, for those residential homes where the lead soil levels in SU1 and/or SU-2 exceed 400mg/kg.

### 3.8 Field Decontamination

Clean disposable latex gloves will be worn by sampling personnel and clean or field decontaminated equipment will be utilized for each separate DU to minimize the possibility of cross-contamination. Reusable soil sampling equipment will be cleaned between DUs as follows:

- Scraping with putty knife or similar tool to remove soil clumps;
- Brushing with stiff-bristle nylon brush to remove visible soil debris;
- Immersion in a 5-gallon bucket of soapy water and further brushing;
- Rinsing tool with deionized water; and
- Wiping dry with clean paper towels.

### 3.9 Quality Assurance/Quality Control Samples

The following samples will be collected as part of the quality control/quality assurance procedures for the investigation.

#### 3.9.1 Equipment Rinsate Blank

An equipment rinsate blank will be collected after decontaminating the soil coring tool between DUs once per day of sampling. Following decontamination of the tool, deionized water will be rinsed over the core cylinder and into a sample container, properly preserved with nitric acid in an 8 oz plastic or 250 mL glass bottle, and will travel with the other samples back to the laboratory for analysis. If disposable soil coring tools are used, no equipment rinsates will be collected.

### **3.9.2 Replicate Field ICS**

Replicate ICS will be collected to measure precision of the overall soil sampling and analysis process, and to provide data for calculating a UCL on the mean lead concentration. For 20% percent of the SUs, three independent ICS will be collected in an identical manner, except the increment locations for each ICS will be off-set as much as possible within the SU/DU. The replicate sample will be labelled with the DU/SU name and "replicate". SUs will be chosen for replicate sampling based on the proximity of the yard to the facility, in-situ XRF results if available, and other field observations. An effort will be made to conduct replicate sampling at residences both near the facility and further away along haul routes.

### **3.9.3 XRF Precision Samples**

The precision of bagged sample XRF analyses will be evaluated by conducting multiple analyses of selected samples at a frequency of 5 percent for bagged sample analysis and once per day per analyzer for in-situ analysis. For bagged samples, the precision samples will be selected based on lead concentrations. Samples will be chosen to reflect the full range of concentrations observed. However, special emphasis will be placed on selecting samples near the action level if possible. The selected sample will be analyzed seven separate times without moving the bagged sample (without moving the analyzer for in-situ analysis) between each analysis. The relative standard deviation among the multiple analyses will be assessed as an indication of instrument precision.

### **3.9.4 Laboratory QC**

Laboratory precision and accuracy will be assessed as described in the QAPP by a laboratory that has been selected and is an approved National Environmental Laboratory Accreditation Program (NELAP) per the Site specific QAPP. Laboratory duplicate analyses will be requested at a frequency of 10% of samples submitted for lead analysis.

## **3.10 Data Gap Investigations**

Following completion of the MDNR SI/RSE investigation, 15 additional residences were identified for sampling to identify the extent of contaminant influence from the facility. The additional residential locations proposed are shaded in light blue/purple in Figure 3. The additional 17 residential properties (301, 308, 305, 311, 314, 303, 306, 313, 307, 309, 310, 315, 304, 312, 316, 317 and 302) will be sampled along with resampling at one previously sampled Phase I residential location (216) resulting in a total of 18 proposed locations. Sample location 216 is being resampled because based on the results for the parcel are not clear if the property was properly sampled based on the dimensions of the parcel and the

fact that MDNR field personnel identified the parcel as only having one sampling unit (SU). Therefore, based on the hand drawn map of the parcel (sketch by Shelly), the Site results and the one SU, AMEC proposes to resample the parcel per Section 3.6. If a proposed property location does not grant access for residential sampling, MW Recycling and MDNR will categorize this property as denied access with no further action required. In addition, any property(s) that has met the Performance Standard (see Section 4.6) and requires an Environmental Covenant (Under the Missouri Environmental Covenant's Act) or soil removal activities due to the presence of lead at depth will require property owner's consent. If consent is not granted for the Environmental Covenant, MW Recycling and MDNR will categorize this property as denied legal covenant access with no further action required. Depending on the findings of this additional yard sampling, and whether it allows for identification of a clean perimeter around the facility, it may be necessary to conduct sampling in more than the 18 proposed perimeter yards in order to fully characterize the extent of influence the alleged from the facility.

## **4.0 Field Activities**

The sampling event will include collection of surface samples and XRF data from 18 parcels, if AMEC is granted access. No background sampling is planned during this sampling event.

All sample locations, descriptions, and field notes will be recorded on field sample collection forms, with a blank field sample collection form included in Appendix B of the QAPP.

Site sketches and in-situ XRF readings at each residence will be recorded on the field sample collection form (Appendix B), and all samples collected will be recorded on chain of custody forms (Appendix C, as an addendum to this Plan after a NELAP Laboratory is chosen). The sample locations and SUs will be recorded with an iPad with geospatial software, GPS and high resolution aerial photographs of each potentially impacted land parcel. Photographs will be taken to document the sampling event with the iPad or digital camera.

## **4.1 Sample Collection**

### **4.1.1 Surface Soil Sampling**

In-situ XRF analyses will be conducted along transects set up perpendicular to the suspected source to help establish the width of SU1. The boundary of SU1 will be set at a distance where distinct drops in lead concentration are observed with distance from the road. If trends in this distance are observed after several residences, in-situ XRF analysis may be discontinued and the width of SU1 will be set based on previous observations, if there are no other factors which would alter expected deposition patterns. An iPad with

geospatial software, GPS and high resolution aerial photographs of each potentially impacted land parcel will be used to record the approximate dimensions of SU1/SU2/SU3/DRIP ZONES and information for the field log. The use of Apple iPad tablets has the potential not only to save time collecting data in the field through the streamlined data collection, but also to drastically improve accuracy. The use of iPads in the field allows the field team to locate sample points using the iPad GPS software, record XRF data, link the data to the sample location, and conduct real time data analysis. The use of hard maps requires preparation of hard copy maps at the office, often at multiple scale levels; the use of iPad to collect data allows the user to zoom on screen to place data points without carrying around cumbersome large maps and pens.

Surface soil ICS samples will be collected as follows. An EVS™ or similar stainless steel or disposable polyethylene incremental sampling tool will be used to collect equal-mass increments (aliquots) of soil at equal spacing across each. Each increment will contain approximately 30 grams of soil. The sampling core will be advanced into the soil and ejected into a 2-gallon size heavy duty sealable plastic bag or other suitable container. This process will be repeated at each increment collection location, and all increments within the SU will be combined together into one sample container. Sample containers will be labelled with the Location ID, SU#, date, time, & sampler's initials.

The boundaries of the drip zones will be determined using XRF data as described in Section 4.1.2. Past experience has indicated that drip zone lead effects can extend out 6 feet or more from residential structures. For this study in-situ XRF analyses will also be used initially to establish the boundaries of the drip zone SU.

Transects will be set up extending out from the edge of the suspected source. Along each transect, 30-second in-situ XRF readings will be taken at 2-foot intervals starting at 30 inches from the edge of the road, extending outward from the road, until a distinct significant drop in the lead concentration is observed or until the levels drop near background. ICS samples will be conditioned as described in Section 4.3 and analyzed for lead by XRF. A portion of the samples will also be submitted for laboratory confirmation analysis. All field sample collection and analysis will be conducted in conformance with the Health and Safety Plan (HASP).

#### **4.1.2 In Situ XRF Analysis**

The XRF analyzer will be calibrated and standardized as per the manufacturer's instruction. Known reference standards containing certified concentrations of lead at various levels will be analyzed prior to initiating field work. Results will be documented on an XRF data field sheet for each residence. The serial number of the analyzer(s) used at each residence will be noted on the field sheet. Prior to XRF analysis, the Location ID, SU, transect, distance and analyst will be entered into the XRF analyzer. Excessive soil moisture interferes with

XRF. If soil conditions are saturated (>25% moisture), in-situ XRF analyses will not be conducted and field work will stop until conditions are dry enough for work to commence onsite.

At each distance interval from the house along the transects, the surface vegetation will be removed. Any soil clinging to the vegetation roots will be shaken back out over the bare soil. The soil will be flattened out, large debris (rocks, sticks, etc.) removed, and a 30 second in-situ analysis will be performed. The Location ID and SU# will be entered into the XRF prior to each analysis. The results will be recorded on the field sheet. Two to four additional in-situ analyses will be conducted at the same distance interval perpendicular to the transect at 2-foot spacings. The results will be recorded on the field sheet, and the averages for each distance interval will be calculated.

When a distinct drop is observed in the average lead concentration along a transect, no further in-situ readings will be taken for that transect, and a flag will be placed to mark the boundary of the SU for that transect. For the drip zone, the process will be repeated for the other transects to form a polygon around the house considered the "drip zone" of influence from lead-based paint.

In-situ XRF precision will be evaluated once per day per XRF analyzer by collecting seven replicate XRF readings at a single location without moving the analyzer. The XRF data will be downloaded from each analyzer upon returning from the field and will be QC-checked and validated.

#### **4.2 Sampling Order**

Though not always practical, attempts will be made to collect all samples in the order from least-to-most contaminated.

#### **4.3 Sample Conditioning and Analysis**

Soil and sediment samples will be returned to the laboratory and air dried in aluminum pans lined with wax paper. The samples to be submitted for that analysis will be dried and processed under a hood to minimize potential for contamination of the samples. The air dried samples will be returned to their original bags, placed inside an additional bag, and then disaggregated by striking the sample 30 times with a mallet to disaggregate clumps of soil. The soil sample will then be passed through a 0.25 mm sieve to obtain the target particle size. The soil passing through the sieve will be placed inside a thin-walled resealable plastic baggie. XRF analysis will be conducted on the dried/sieved soil samples following the XRF SOP, which will be supplied in Appendix A of the SAP when the XRF

make/model is selected from the models available in the AMEC inventory. Following the XRF analysis, the soil samples will be archived by AMEC for potential further analyses. After ex-situ XRF analysis, the representative SU lead results will be mathematically combined to arrive at the representative lead concentration for the DUs. Should the investigation indicate that a removal action is warranted, it may be of interest to know whether yard soil would need to be handled as hazardous waste should it be excavated. Instructions will be relayed to analytical personnel on selected DU ICS samples that toxicity characteristic leaching procedure (TCLP) analysis will be performed.

**Number of Samples, and Container and Preservation**

The estimated number of samples for laboratory analysis is provided in Table 1 below. Note that samples receiving in-situ XRF analysis only are not included. The actual number of samples submitted will depend on lead concentrations observed during XRF analysis and visual observations made during collection of the samples. Soil samples sent for offsite confirmation testing will be at the rate of 10% of XRF samples. The test method will be USEPA SW-846 Method 6010B Metals ICP. In addition, 17 parcels will have samples collected for laboratory analysis. The sample collected from each SU will be submitted to an approved laboratory for analysis of lead. Laboratory duplicate analyses will be requested on 10% of the SU samples submitted for laboratory analysis.

**Table 1  
 Summary of Sampling Locations**

Sample Type	Analysis	Number of Parcels	Total
SU1 Soil	Lead	17	17
SU2 Soil	Lead	17	17
Replicate Field Sample* *(replicates in 20% of SUs)	Lead	13	13
<b>Total XRF Analyses on Bagged ICS samples</b>			<b>47</b>
Laboratory Confirmation	Lead		10
Laboratory Duplicates	Lead		1
<b>Total Laboratory Analyses</b>			<b>11</b>

Refer to the Table 2 for container and preservation requirements on all samples. Note that soil samples will initially be collected in large resealable plastic bags for transport to Pace. Once samples have been air dried, disaggregated, sieved, and analyzed by XRF, they will be submitted for laboratory analysis. All samples will be collected in certified-clean containers and preserved in the field as appropriate.

**Table 2  
 Preservation Methods**

Soil Samples			
Parameters	Container(s)/Volume	Preservative(s)	Holding Time
Total Metals (Pb)	One or more 8-oz glass jars or a 1-gallon resealable baggie	Cool, 2°C	6 months

#### 4.4 Chain-of-Custody

The ICS soil samples will be stored in the plastic bags in which they were collected. Each bag will be labelled with a unique DU identifier, date, collector initials, and depth using permanent marker. The samples will be recorded on a separate chain of custody (COC) form (Appendix C). The samples will remain in the custody of AMEC field personnel during sample processing and XRF analysis. Those samples identified for laboratory analysis will be placed into appropriate sample containers and entered onto an NELAP Laboratory Approved COC form to be relinquished to a of sample custodian at the environmental laboratory for analysis. Samples remaining at AMEC for ex-situ analysis will have the COCs completed by AMEC personnel.

#### 4.5 Remediation Assessment and Guidance

Based on the results of the Phase I Residential sampling, remediation will be required in at least fifteen (15) sampling units (see Figure 3). Sections 4.5, 4.6 and 4.7 will detail the identification of the lead impacted parcels, the excavation and removal action, confirmation sampling, contractor requirements, O&M Plans, and Institutional Controls (if required).

Based on the results of the proposed Phase II residential sampling, additional sampling units may require additional site characterization and/or remediation. The sampling units identified for remediation in the MDNR Phase I Residential sampling are:

- Sampling Unit 1:
  - 120, 119, 217, 103, 127, 106, 116, and 117;
- Sampling Unit 2:
  - 216\*, 146 and 143;

- Yard wide remediation:
  - 125, 110, 115, and 105.

\* Denotes resampling to confirm Phase I results.

Residential Site Remediation for SU1, SU2 and yard-wide non-time critical lead impacted areas greater than 400 mg/kg will follow these remediation goals with performance standards. The Performance Standards shall mean the cleanup levels (400 mg/kg) required in each of the remediation area(s) that must be met by Respondent in conducting the removal actions as provided for in this document:

- 1) SU1, SU2, and Yard Wide Residential Soils (12" soil impact zone):
  - Remove the top 6" of soil in the lead impacted zone and after removal acquire XRF readings for the measurement of lead impact on the soil floor.
  - 15 in-situ XRF analyses will be collected from the floor of the excavated area. If the average in-situ XRF readings in the soils floor are less than 400 mg/kg, then clean borrow soil will be added to the area to bring the ground surface of the excavated area level with the yard.
  - If the average in situ XRF readings in the soil floor are greater than 400 mg/kg, then another 6" lift of impacted soil will be removed from the lead-impacted excavation area. If average in-situ XRF readings in the soils floor are less than 400 mg/kg, then clean borrow soil will be added to the area to bring the ground surface of the lead-impacted excavation area level with the yard.
  - If average in-situ XRF readings are still greater than 400 mg/kg at the depth of 12" below ground surface (bgs), the performance standard will be met and no further excavation will be required.
  - In those area(s) where average in-situ XRF readings are greater than 400 mg/kg at 12" bgs, a witness barrier (i.e. an orange snow fence barrier) will be laid down to identify the extent and vertical boundary of excavated lead-impacted materials for future soil removal activities. Clean borrow soil, defined as borrow source soil with an average lead concentration (as measured by a NELAP approved laboratory) less than 100 mg/kg, will be added to the area to bring the ground surface level with the yard. A single ICS of 30 increments per 500 cubic yards of borrow source soil will be collected and analyzed. If the average ICS XRF readings in the 100 cubic yards of soil are less than 100 mg/kg, then the borrow source will be deemed to meet standards.
  - If the average in-situ post-excavation soil samples indicate that the mean lead concentration in remaining soil will exceed the EPA remediation action level of 400 ppm, MW Recycling (MWR) and/or MDNR may request the

Owner to execute an Environmental Covenant pursuant to the Missouri Environmental Covenants Act.

2) Garden Soils (24" soil impact zone):

- Remove the top 6" of soil in the lead impacted zone and after removal acquire XRF readings for the measurement of lead impact on the soil floor. A 15-increment ICS will be collected from the floor of the excavated area.
- If the average in-situ XRF readings in the soils floor are less than 400 mg/kg, then clean borrow soil will be added to the area to bring the ground surface of the excavated area level with the yard.
- If the average in-situ XRF readings in the soil floor are greater than 400 mg/kg, then another 6" lift of impacted soil will be removed from the lead-impacted excavation area and another 15-increment ICS will be collected. If average in-situ XRF readings in the soils floor are less than 400 mg/kg, then clean borrow soil will be added to the area to bring the ground surface of the lead-impacted excavation area level with the yard.
- This 6" removal action will continue until the XRF floor soil sampling is less than 400 mg/kg or a depth of 24" has been achieved.
- If average in-situ XRF readings are less than 400 mg/kg at any lift depth less than 24" below ground surface (bgs), the performance standard will be considered to be met and no further excavation will be required.
- If the lifts continue to a depth of 24", those area(s) where XRF readings are greater than 400 mg/kg, a witness barrier will be laid down to identify the extent and vertical boundary of excavated lead-impacted materials for future soil removal activities. Clean borrow soil will be added to the area to bring the ground surface level with the yard.
- If the average in-situ post-excavation soil samples indicate that the mean lead concentration in remaining soil will exceed the EPA remediation action level of 400 ppm, MW Recycling (MWR) and/or MDNR may request the Owner to execute an Environmental Covenant pursuant to the Missouri Environmental Covenants Act.

#### 4.6 Excavation of Lead Impacted Soils to Facilitate Soil Cap

The following summarizes the proposed remedial action activities at the Site that have been developed in general accordance with the EPA Superfund Lead-Contaminated Residential Site Handbook, August 2003. No changes related to the foundations of built structures or flatwork (sidewalks and driveways) within the Site will occur. No new structures will be constructed.

1. A clean soil cap will be placed over the portions of SUs as described above. The current structures (houses, driveways, sidewalks, and other impenetrable hardscape) will remain in place. Excavations shall start adjacent to all concrete sidewalks, walkways, drives, and other structures and shall extend to the extent of the SU boundary. All excavations that start adjacent to all concrete sidewalks, walkways, drives, and other structures will be excavated by hand as deep and SAFELY as possible and will only employ mechanical means when it is determined by the Site Manager that a safe distance from the concrete structures has been achieved as not to impact the structural integrity or physical appearance of such structures.
2. A qualified remediation contractor (Remediation Contractor) will be contracted to provide all labor, materials, services and equipment necessary for the excavation, relocation, and/or off-site disposal of impacted soil.
3. AMEC will oversee and manage the implementation of the remedial action plan. AMEC will be present during excavation, backfilling and restoration activities in order to closely monitor the work being performed.
4. It is currently assumed that all shrubs and bushes will need to be removed and properly disposed offsite. Larger trees will remain in-place undisturbed.
5. Once the excavated material is ready for off-site disposal, the excavated material shall be loaded, hauled, and properly disposed of at a permitted waste disposal facility.
6. When possible, excavated impacted soil will be placed directly into a licensed special waste hauler's trucks. Excess soil and debris will be removed from the sides of the vehicle, wheels and undercarriage prior to leaving the Site. The load will be transported directly to an approved sanitary landfill permitted to accept special waste. The waste hauler will be required to cover all loads of lead-impacted soil leaving the Site and will be required to ensure that no soil is spilled onto public rights-of-way.
7. TCLP testing of representative areas of the soil excavation will be performed as necessary to determine if the soil should be classified as a hazardous waste.
8. Based on the results of testing at the Site, the Contractor may assume that the excavated materials can be handled and disposed as a non-hazardous special waste. The landfill facility shall be permitted by the State of Missouri to accept such material. The Contractor will be required to provide documentation of the anticipated landfill with their bid. All truckloads of material shall be properly manifested.
9. If required by the landfill disposal facility, additional samples needed for landfill characterization purposes depending on disposal facility requirements will be collected.
10. Temporary stockpiling of soils may be required. On-site storage methods will consist of stockpiling on 10-mil minimum polyethylene sheeting and securely covered in the same in a manner that will minimize access to the soil and prevent any precipitation infiltration or leaching.
11. If groundwater should be encountered during excavation or if a significant precipitation event should occur during excavation which requires the removal of the water, the water will be sampled and characterized in order to determine appropriate handling and

- disposal alternatives. Excavations will be conducted in a manner which minimizes the potential for surface run-off. Based on the shallow depths of the excavation, groundwater is not anticipated to be encountered.
12. Project activities requiring the disturbance of the impacted soils will be conducted in a manner that minimizes the potential for airborne lead emissions. Engineering controls will be implemented to minimize the potential for airborne lead emissions. The primary technique will consist of misting the exposed fill material areas with a fine water spray throughout the duration of the project. The misting will not be excessive as to create any surface run-off. If periods of high winds persist that render dust suppressant techniques ineffective, project activities will be temporarily suspended. Perimeter dust particulate monitoring will be performed to document effective dust control measures are employed throughout the duration of the project.
  13. It is anticipated that houses near or within the excavation and capping zone will be occupied during remediation activities. Fugitive dust emissions will be monitored in-the-field using a Total Suspended Particulate counter, such as a MiniRam or equivalent instrument. The site-specific action level will be determined by calculating the maximum amount of particulates that can be in the air without exceeding the National Ambient Air Quality Standard (NAAQS) for lead of 0.15 ug/cubic meter measured as an eight-hour Time Weighted Average. A MiniRam or equivalent will provide real-time data, and allow for immediate corrective actions if necessary to adequately protect residents and the general public from the hazards of lead contaminated suspended dusts. Measurements will be taken near, or on, residents' front porches, and also downwind from active work areas at the property line. If the action level is exceeded, additional engineering controls will be implemented.
  14. Throughout the duration of the project, the initial level of safety is assumed to be Level D Modified. Level D Modified protective equipment shall consist of hardhats, coveralls, gloves and boots/shoes (leather or chemical resistant) with steel toe and shank.
  15. Tools, machinery, vehicles or other equipment used on Site that comes into direct contact with lead-impacted soils will be wiped clean of any excessive soil or debris upon completion of work activities and prior to leaving the Site. Any resulting lead-impacted soil and debris will be segregated, contained and characterized in order to determine appropriate disposal alternatives. If washing, rinsing or steam cleaning of equipment is deemed necessary, the rinsates will be contained and characterized in order to determine appropriate disposal alternatives.
  16. A Site Health and Safety Plan will be developed that addresses all applicable safety precautions associated with the project. All safety precautions in accordance with the project specific Site Health and Safety Plan will be followed during excavation activities.
  17. All work shall be performed in a manner that minimizes transfer of lead-impacted soils beyond the excavation areas. Cleanup of any soils or debris that may collect on adjoining surface areas including, but not necessarily limited to, driveways, patios, sidewalks or public right-of-ways will be performed.

#### 4.7 Post-Excavation Sampling

One 30-increment ISM sample per property will be collected from the floor of excavated areas, prior to placement of the witness barrier (if necessary) and the clean soil cap to document the lead levels remaining beneath the soil cap. Analysis of the soils will be as follows:

- Total Lead (EPA Method 6010)

The collection of samples will be performed in accordance with the site specific Quality Assurance Project Plan (QAPP).

In order to assess the potential for continuing facility operations to cause recontamination of residential yards following the cleanup activities, post-excavation sampling will be conducted approximately 1 year following the yard cleanups. The follow-up sampling will include in-situ XRF analysis in the SU1 portion of each yard that received a cleanup. 30 in-situ XRF readings will be collected from evenly spaced locations across the SU1 area. The average lead concentration from these readings will be calculated and compared to the lead concentration documented in the clean fill soil used as backfill during the excavation to assess the degree of recontamination (if any).

#### 4.8 Soil Cap (Backfill) and Witness Barrier

- 1) Backfilling with clean fill will commence as soon as possible following removal of impacted soils surrounding each house. Exposed excavations will not be allowed more than 24 hours in duration without prior permission from the Owner of the Parcel. In the event the excavation is exposed for a period greater than 24 hours, the excavation will be cordoned off with orange construction fencing and notifications.
- 2) A witness barrier, consisting of orange-mesh plastic webbing will be placed upon completion of excavation and relocation of soils. The fabric will cover the entire excavation not already covered by impermeable surfaces including excavation areas, on-site relocation areas, and areas that will have only the clean soil cap. The cloth will be rolled into place, overlapped at the edges, and anchored into position.
- 3) Backfilling will start adjacent to all concrete sidewalks, walkways, drives, and build structures and shall extend to the yard boundary.
- 4) The soil barrier cap shall be a minimum of 12 inches compacted in thickness and after compensating for settling, shall return the Site grade to its previous state in areas around existing structures.
- 5) The fill material used for the barrier soil cap shall come from a clean fill source, and be capable of compaction and supporting new grass growth. The fill material will be

free of large rocks, debris, vegetation, and dirt clumps. The source of the fill material has not been determined. Written documentation will be provided of the source of the clean fill and proof by laboratory analysis. If another fill source is utilized, the frequency and type of analysis required may vary depending upon the source of the fill material and heterogeneous nature of the material. Laboratory analysis will generally be provided on a frequency as follows:

- A soil sample will be collected for every 500 cubic yards borrow source material. Analysis will be for Barium, Cadmium, Lead, and Arsenic by EPA Method 6010B ICPMS.

Prior to the initiation of excavation and fill activities, samples from the proposed borrow area to be used as fill materials will be sampled to prevent the placement of contaminated soils on the Site. The levels of lead, barium, arsenic and cadmium will be compared to Missouri Risk Based Target Levels, Departmental Guidelines for Type 1 soils, Ingestion, Inhalation, and Dermal Contact pathway; where applicable. No backfill material with lead concentrations greater than 100 mg/kg for lead will be allowed on-site after testing and acceptance by the Site Manger. The backfill will be placed in a manner that is consistent with Site grading plans and should provide for slopes away from buildings.

- 6) Compaction will be performed by tracking and tamping with heavy equipment that will effectively eliminate the potential for future settling of materials.
- 7) The soil barrier cap will be prepared for a sod cap which will be laid in place based on specifications and timeframe by the distributor of the sod to complete the warranty of the sod.
- 8) Watering will be provided following the sod as required to establish the turf. MW Recycling will provide watering of the sod up to a maximum of 24 times, dependent upon temperature, humidity and moisture.
- 9) If it is dry during excavation and backfill activities, MW Recycling will employ water spray from mobile devices that will not allow water to accumulate or runoff, but will control fugitive dust.

#### **4.9 Verification of Cap Thickness**

Confirmation that the clean soil cap thickness is a minimum of 12 inches (in the presence of a witness barrier) will be achieved by a combination of work practices including the following:

1. Upon the completion of the excavation of soils and the relocation areas of soils, and following the placement of the witness barrier, stakes will be driven into the ground until 12 inches of the stake remains exposed above grade; when required. The stakes will be positioned as points of reference outside of the track areas of earth moving equipment so as to retain their position and avoid disturbance. Following the

placement of the cap adjoining these reference points, areas around the stakes will be filled in. The compacted soil cap will be considered of satisfactory thickness when the stakes are no longer exposed.

Following the completion of the excavation and relocation of soils, and the placement of the witness barrier, elevation surveys based on an established reference datum (i.e. manhole cover, concrete slab, etc.) will be performed as needed to measure the cap thickness following compaction and confirm a thickness of 12 inches. To ensure the locations of pre/post measuring points are duplicated, the locations of the original measurements locations will be calculated by measuring distances from points of reference (i.e., homes).

#### 4.10 Contractor Requirements and O&M Plan

- 1) All work shall be performed in accordance with the project specific OSHA compliant Site Health and Safety Plan in accordance with all applicable local, state and federal laws and regulations.
- 2) To limit access to the Site during project activities, the Remediation Contractor may be required to secure the Site including appropriate fencing (e.g. plastic orange fencing) and warning signs prepared in number and content satisfactory to AMEC placed at regular intervals along the work area perimeter.
- 3) Prior to initiating field activities, the Contractor will be required to furnish the following information:
  - a) Work plan summary describing the manner in which the project will be completed.
  - b) List of all equipment to be used on the project.
  - c) List of off-site disposal facilities to be used.
  - d) List of workers including name, length of service with the company and evidence of participation in a 40-hour Personnel Protection and Safety Course which meets the requirements of Title 29 Code of Federal Regulations (CFR) Section 1910.120 - Occupational Safety and Health Administration's (OSHA) Hazardous Waste Operations and Emergency Response Standard. The workers used on the project shall be skilled and experienced as evidenced by participation in at least two environmental remediation projects of similar scope and scale.
  - e) Site specific health and safety plan.
  - f) Copies of all necessary permits, insurance certificates, worker certifications, waste hauler certifications and the designated off-site disposal facility.

- g) Solid waste handling, characterization, disposal plan.
- h) The remediation contractor will be responsible for notifying the Missouri One Call System prior to any excavation.

#### **4.11 Community Relations Plan**

Upon approval of this Remedial Action Plan, a Community Relations Plan (CRP) will be developed and implemented by MDNR for the residents of the City of Festus, Missouri, if required, by the City Manager Happy Welch, Mayor Mike Cage and MDNR.

#### **5.0 Investigation Derived Wastes (IDW) Plan**

Efforts will be made to minimize IDW generation. The IDW may include soil, sediment, decontamination fluids, disposable sampling equipment, and disposable personal protective equipment (PPE).

Field personnel will attempt to return unused soils to their source immediately after generation. Disposable PPE and disposable sampling equipment will generally be handled as solid waste, containerized, and properly disposed. Wash and rinse waters generated during equipment decontamination will be discharged to the wheel washing station at the Shapiro Brothers facility.

#### **6.0 Site Safety**

A safety briefing will be held on-site prior to initiating field activities and field personnel will be required to read and sign the site-specific health and safety plan.

#### **7.0 Reporting**

Pace will provide a copy of the chain of custodies and laboratory result sheets. AMEC will prepare an Investigation Report for the additional sampling results.

#### **8.0 MDNR References**

Festus, 2011. St. Louis Testing Laboratory, Report of Test Results – Street Sweepings Sample, City of Festus, August 12, 2011.

MDNR, 2007. Missouri Department of Natural Resources, QAPP for Pre-Remedial, Pre-Removal and Targeted Brownfields Assessments, December 7, 2007.

MDNR, 2009. Missouri Department of Health and Senior Services, Lead Poison Prevention Manual, 2009. <http://health.mo.gov/living/environment/lead/manual/index.php>

MDNR, 2011a. Missouri Department of Natural Resources, RCRA Site Investigation Report, September 14, 2011.

MDNR, 2011b. Missouri Department of Natural Resources, Report of Compliance Inspection November 23, 2011.

MDNR, 2011c. Missouri Department of Natural Resources, RCRA and Missouri Hazardous Waste Management Law Compliance Evaluation Inspection Report, November 22, 2011.

MDNR, 2012. Missouri Department of Natural Resources, Data from January 2012 Sampling Event (not yet published).

NPN, 2011. Letter to Mr. Greg Shapiro, Shapiro Brothers/MW Recycling, from David B. Rowe, NPN Environmental, December 12, 2011.

USEPA, 1990. U.S. Environmental Protection Agency Hazard Ranking System, 40 CFR Part 300, Appendix A, 55 FR 51583, December 14, 1990, <http://www.thefederalregister.com/d.p/2007-05-25-E7-10055>.

USEPA, 1992. U.S. Environmental Protection Agency Hazard Ranking System Guidance Manual, EPA/540/R-92/026, November, 1992. <http://www.epa.gov/superfund/sites/npl/hrsres/index.htm>

AMEC, 2013. Conference with Mayor Cage and City Manager Welch regarding historical removal of snow/ice on roadways.

# Figures

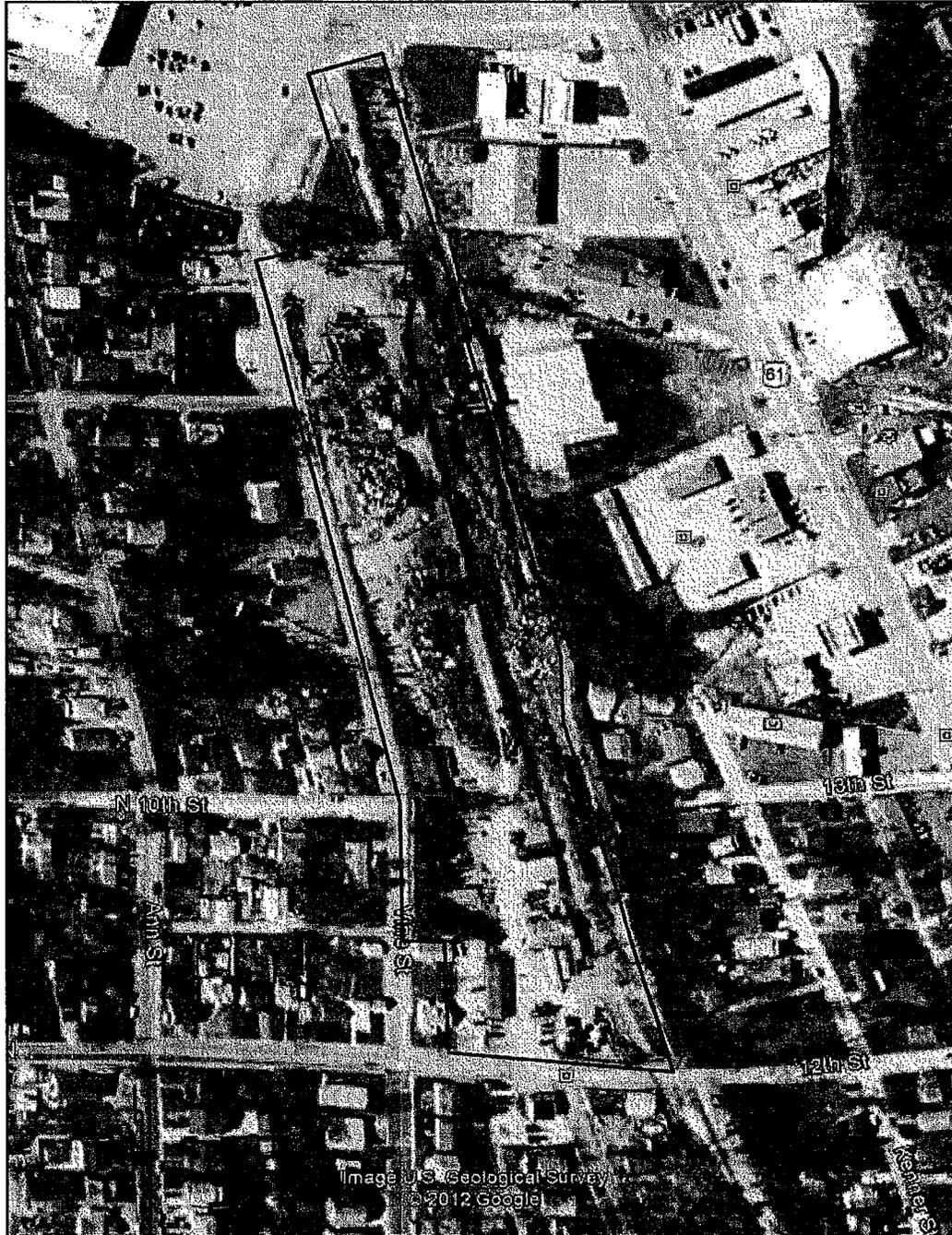


Figure 1. Site Location Map- Shapiro Brothers Facility, Festus, MO

MW Recycling  
Shapiro Brothers Site  
Remedial Action Plan/Sampling and Analysis Plan – Proposed Additional Sampling

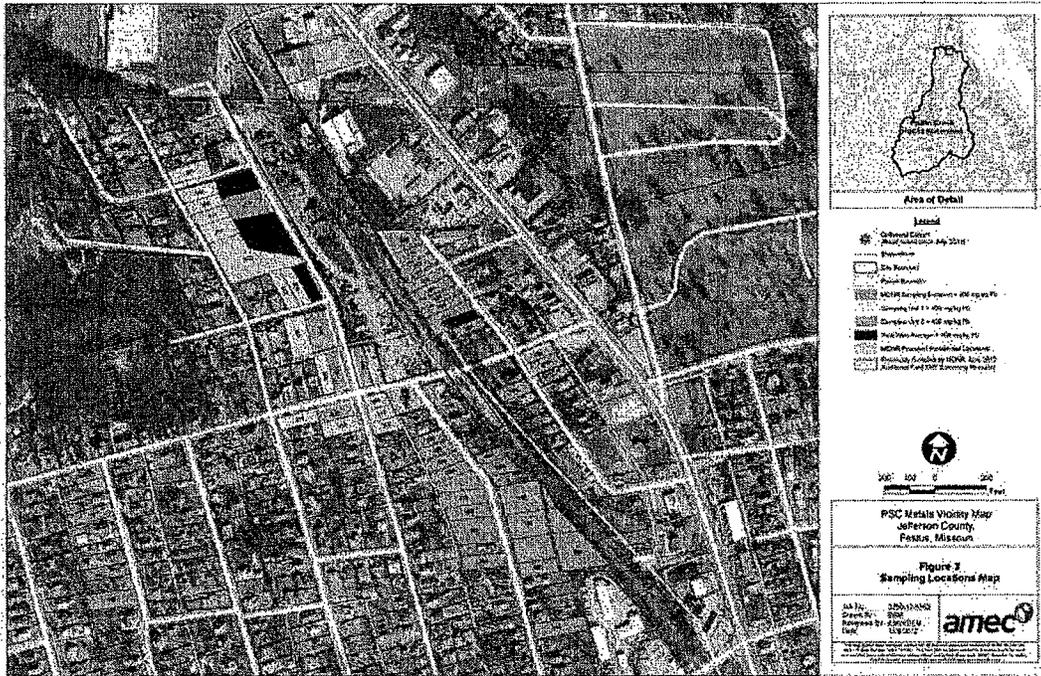


Figure 3. Residential Sampling Map

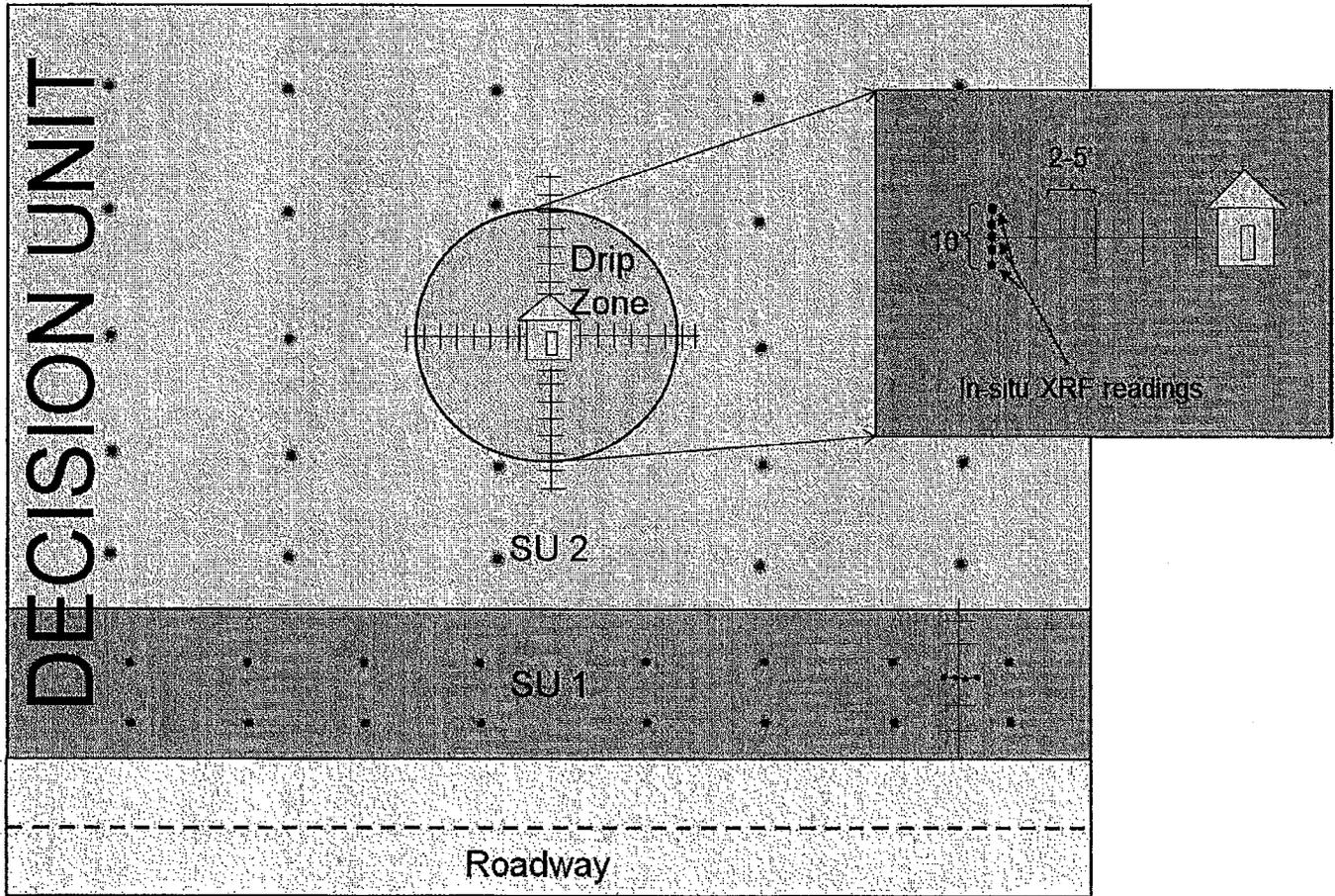


Figure 4. Sampling Design

# Appendix A

	<b>Employee Health and Safety Policy Manual</b>	Procedure #:	<b>HS-25</b>
		Page:	<b>1 of 4</b>
	Subject: <b>X-Ray Radiation Protection Program</b>	Revision:	<b>02</b>
		Issue Date:	<b>March 18, 2011</b>

### 1. Purpose

The purpose of this Radiation Protection Program (RPP) is to keep radiation exposures to workers using a portable, X-Ray Tube based Thermo NITON Analyzer XL3t at Environmental Restoration to levels that are as low as reasonably achievable (ALARA), and

Ensure that use of the NITON Analyzers is in compliance with all applicable State and Federal regulations.

### 2. Scope

This RPP applies to any use of NITON Analyzers at Environmental Restoration, LLC.

### 3. Responsibilities

Luke Wisniewski shall be designated as the individual in charge of the RPP. Luke Wisniewski will be responsible for maintaining and implementing the RPP which will minimize the risks associated with using portable X-Ray producing machines and which will ensure compliance with the regulations of the Nebraska.

The specific actions to be performed by the individual in charge are as follows:

- Receive Radiation Safety Training at a one day course provided by Thermo NITON Analyzers or by a qualified expert. This will be documented by a certificate of completion which is to be kept on file with other RPP documents
- Maintain a list of authorized users and ensure that only authorized users operate the Analyzers.
- *Notify staff of additions to or subtractions from the authorized user list.*
- Schedule and/or conduct training for employees prior to authorizing their use of the NITON Analyzer without direct supervision. Maintain records of training including a copy or a summary of the training material. Training shall include Radiation Safety, Operational, and Emergency Procedures.
- *If personal exposure monitoring (dosimetry) is part of the RPP, then the Individual in charge will be responsible for maintaining dosimetry records.*
- Ensure that all users are following appropriate operating procedures while using Analyzers.
- Maintain manufacturer provided instruction manuals, and operations and maintenance records.
- Ensure proper disposal of unneeded Analyzers.
- Ensure that labels on Analyzers are intact and legible. Notify NITON for assistance with labeling that is damaged or illegible.
- *Review, as needed, the RPP content, implementation, and effectiveness.*

Authorized Workers are responsible for using only approved safe techniques and procedures in operations involving the Analyzer. The specific actions to be performed are as follows:

- Follow proper operating procedures as described in training and ensure other individuals also adhere to these requirements.
- Ensure that the label on the Analyzer is in tact and legible.
- *Ensure proper use of dosimetry, if dosimetry is issued.*
- Be familiar with emergency procedures and know how to recognize and terminate unsafe operations.

### 4. Safe Operating Procedures

A copy of the Users Manual or Operating and Emergency Procedures shall be made available to all workers using the NITON Analyzer. A copy will be kept with the Analyzer and another copy shall be kept on file with other RPP records.

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Only authorized personnel with training on state regulations, operating and emergency procedures shall be allowed to operate the NITON Analyzer. All authorized personnel are responsible for complying with the requirements of this RPP and will report any and all incidents involving the NITON Analyzer to the individual in charge.

The operator is responsible for ensuring that no part of a person's body is at or near the measurement point, and no closer than one foot during a measurement (trigger finger excluded).

The operator must be aware that the NITON Analyzer is emitting radiation when lights are flashing.

The operator must be aware that radiation in the primary beam could eventually cause physical harm if the device is used improperly and must be able to recognize the symptoms which would begin with skin reddening in the exposed area and at higher doses would appear as a burn or localized tissue damage.

Prior to each use:

- The operator will inspect and maintain the Kapton window and all labels on the NITON Analyzer
- The operator will fill out the utilization log (if required)

*Environmental Restoration will maintain a log documenting use of the Analyzer that contains, at a minimum, the unit serial number, date/time removed, date/time returned, and responsible individual. At the front of this log will also be a list of authorized users. Refer to Appendix A for example.*

## 5. Emergency Procedures

In any case where one suspects that the x-ray tube remains on when the measurement is terminated:

- Disconnect the battery pack immediately to turn off the x-ray tube, and
- Call Thermo Electron Corporation's Service Department in the United States, toll free, at (800) 875-1578.

Suspect accidental exposure to primary beam

Notify the Individual in Charge and RSO at 314 280-8328

Individual in charge will assess impact and call NITON RSO for assistance if necessary

Severe Physical Damage

There is no radioactive material so a fire or severe damage poses no radiation hazard.

## 6. Radiation Safety Training

The Individual in charge will be responsible for receiving Radiation Safety Training from Thermo NITON Analyzer LLC 1 day training, or a qualified expert. It will then be this individual's responsibility to train the rest of the workers, whether the workers are trained by the individual in charge, Thermo NITON Analyzer LLC, or by a qualified expert. This training will be documented by a sign-off sheet that includes the topics covered in the radiation safety training which is to be kept with all the RPP documents.

## 7. Personnel Monitoring

*Personal exposure levels may, as determined by the responsible individual or as required by state regulations, be monitored utilizing dosimetry providers accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). Badges are not transferable. The following are a few examples of NVLAP accredited labs:*

- *Environmental Restoration will use AEIL, 9251 Kirby Drive, Houston, TX 77054*
- *Dosimeters shall only be worn by the individuals they are issued to and shall only be worn during occupational hours.*
- *Never wear the badge during non-occupational exposures such as during medical x-rays or any medical procedures involving radiation.*
- *Dosimeters should be protected from extremes of heat, moisture, and pressure.*
- *Dosimeters shall be stored in a protected area to prevent loss, damage, and other sources of radiation.*

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## 8. Posting and Labeling

There is a relatively low radiation hazard associated with the Analyzer, and because the authorized user will be with the Analyzer at all times it is operational, posting radiation area signs will not be necessary. A copy of the Nebraska Notice to Employees will be kept in the Analyzer case as well as on file with other RPP documents and will be available for review at any time.

The label on the Analyzer will be checked periodically by the Individual in charge as well as the workers using the Analyzer. The label will be checked for integrity and legibility. If the label becomes faded, worn, damaged, or defaced, the Analyzer will be promptly returned to Thermo NITON Analyzers LLC for relabeling.

## 9. Record Keeping

The individual in charge will be responsible for all the records associated with the RPP. These records will be kept in an identified location and will be made available for review by any worker or state official upon request. The following is a list of records that will be kept at minimum:

- Personnel training records
- Manufacturer provided instruction manuals and service & maintenance records
- Authorized Users
- State Analytical X-Ray Regulations and Notice to Radiation Workers
- *Analyzer usage log*
- *Personnel Dosimetry Records, if dosimetry is required*

## 10. Quality Assurance / Annual Review

*At the minimum, items on the following list will be done annually:*

- *Radiation Safety Review for all workers*
- *Operational & Emergency Procedures Review for all workers*
- *Audit of the RPP content, implementation, and effectiveness*

## 11. References:

- DOE G 441.1-5 "Radiation-Generating Devices Guide"
- Thermo NITON Analyzers Sample Radiation Safety Program
- NBS Handbook 111, Revised 1977
- Radiation Safety Topics "Writing a Radiation Protection Program For the Industrial X-Ray Program For a Facility with Cabinet Radiographic or Analytical X-Ray Machines"
- Table 11.4.9 "Good Work Practice for X-Ray Diffraction and X-Ray Fluorescence Units" The Health Physics and Radiological Health Handbook



# Appendix B



# Appendix C



## **Appendix C**

### **Interior Dust Cleaning Work Plan**

# **Interior Dust Cleaning Work Plan for Residential Area near the Shapiro Brothers Festus Site**

Prepared for:

MW Recycling  
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Prepared by:

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Ballwin, Missouri 63011



September 2013

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Table 1 HUD Dust Lead Hazard Standards

## FIGURES

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Figure 1 Site Location Map

## APPENDICES

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None

## ACRONYMS AND ABBREVIATIONS

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cm	centimeter
COC	chain of custody
DHSS	Department of Health and Senior Services
DQO	data quality objectives
DU	decision unit
EU	exposure unit
HRS	Hazard Ranking System
ICS	incremental composite sampling
IDW	investigation derived wastes
MDNR	Missouri Department of Natural Resources
mg/kg	milligrams per kilogram
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyls
PBDE	polychlorinated biphenyl ethers
PPE	personal protection equipment
QAPP	Quality Assurance Project Plan
RAL	Removal Action Levels
RCRA	Resource Conservation and Recovery Act
SAP	Sampling and Analysis Plan
SU	sampling unit
USEPA	U.S. Environmental Protection Agency

## 1.0 Introduction

On behalf of MW Recycling Inc., AMEC has prepared this Interior Dust Cleaning Work Plan (DCWP) for proposed residential dust cleaning as required by the Missouri Department of Natural Resources (MDNR)<sup>1</sup>. The scope of the AMEC DCWP will concentrate on point-of-entry/exit areas between outdoor and indoor areas and interior living spaces, which are considered the primary potential exposure areas for residents. At each target residential parcel where total yard concentrations exceed 400 mg/kg for lead, interior dust cleaning will be conducted only after exterior soil cleanup has been completed, to avoid the potential for recontamination of interior areas from the "track-in" of yard soil with elevated lead concentrations.

## 2.0 Site Information

### 2.1 Site Location

The facility is located at the intersection of 12<sup>th</sup> Street and Vine in Festus, Missouri. It is a rectangular 9-acre area, oriented primarily north-south, along the boundary that separates Festus and Crystal City, Missouri (Figure 1). The Site consists of residential properties that require site characterization and/or yard soil remediation. The residences where we will undertake interior dust cleaning are located to the east, south and west of the facility.

### 2.2 Description

The Shapiro Brothers Festus yard has been used as a metal scrap processing and recycling facility since the 1940s. Prior to fall of 2011, when a truck wash system was installed in to clean the undercarriage and wheels of trucks leaving the southern gate, trucks left the unpaved facility unwashed. During periods of wet soil conditions, trucks would historically have tracked mud from the facility onto nearby streets. In late 2010, Shapiro Brothers began operating a street sweeper in the roads around the facility to remove residual material tracked into the streets by trucks, and this practice continues to present.

Prior to the spring of 2011, trucks primarily approached the facility by traveling along 12<sup>th</sup> Street to and from Truman Boulevard (U.S. Highway 61). A heavy spring flood event in 2011 washed out the culvert beneath 12th Street near the facility making the road impassable. Since then, trucks have traveled south from the facility on the residential street (Delmar Avenue) before connecting with Truman Boulevard via 6th Street.

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<sup>1</sup> MW Recycling believes that the lead contamination in the yards and potentially the residential homes is not from the Shapiro yard and that MDNR has neglected key data in demonstrating the completed exposure pathway from exterior residential soil to interior dust, i.e. the residential dust lead analysis. Not all lead containing dust is available for exposure to the targeted receptor, the child. MW Recycling, by agreeing to offer interior dust cleaning to certain residences, does not admit that it is responsible for any contamination that may exist in the dust in these residences, nor liable for the deposition of interior lead dust within the residential structure.

## 2.3 History/Contaminants of Concern

In July and September 2011, the Missouri Department of Natural Resources conducted a series of environmental inspections at the Shapiro Brothers Festus yard. (Site). The inspections were conducted in response to a complaint received from the city of Festus concerning soil being tracked onto city streets from the site. Sampling conducted by the city indicated elevated lead levels in street sweepings collected from roadways near the facility which resulted in additional sampling being conducted by MDNR as part of a CERCLA Combined Site Inspection/Removal Site Evaluation. The Department's investigation identified elevated lead levels in the soils of residential yards adjacent to the facility and along haul residential roads used by trucks leaving the facility. Based on the results of the sampling events, lead has been determined to be the contaminant of concern in the residential areas near the Site.

## 3.0 Interior Dust Cleaning Program

Interior dust cleaning will be performed at a given property where total yard concentrations exceed 400 mg/kg for lead. The interior dust cleaning objective is to remove lead containing dust<sup>2</sup> within a designated area of the structure meeting the single sample HUD Clearance Dust Standards (see below).

Much of the guidance for cleaning house dust derives from the Guidelines for the Evaluation and Control of Lead-based Paint Hazards in Housing (HUD 1995) (the HUD Guidelines). The HUD Guidelines address a variety of lead paint abatement procedures. The interior dust cleaning associated with the MDNR Program is not intended to be a lead abatement program; however, the following components of the HUD Guidelines have been used as guidance in developing of the DCWP: Chapter 11, Section V - Interim Controls for dust removal and control, Section V, Chapter 14, – Cleaning Throughout Hazard Controls, Section V, Chapter 15 – Clearance, Section VI and Appendix 13.1 Wipe Sampling for Settled Lead-Contaminated Dust. Only portions of Chapters 11, 14 and 15 of HUD Guidelines have been used as guidance in developing the cleaning procedures, i.e., Those specific to settled dust. While MW Recycling has agreed to undertake this limited residential lead dust cleaning, MW Recycling believes that no such remediation is warranted based on present information.

### 3.1 Interior Dust Cleaning Program Activities

This section presents a description of the various dust cleaning activities to be performed at individual properties where total yard concentrations exceed 400 mg/kg for lead. Included in this section is information for obtaining access, dust cleaning activities, post-dust cleaning sampling, and debriefing/reporting. It is important to note that the property owner may elect not to have all of the cleaning activities described within this Section be performed.

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<sup>2</sup> There are two potential sources of lead containing dust in the interior of the homes. The first is the lead impacted dust from the soil that is exterior to the home and the second is interior sources of lead impacted dust that is inherent to the home; e.g. lead-base paint.

### **3.1.1 Interior Dust Cleaning Property Access**

Dust cleaning activities at a particular property cannot proceed until a property owner has signed a property access agreement specifically authorizing interior dust cleaning activities. AMEC personnel will be responsible for soliciting the access agreements.

### **3.1.2 Pre-Dust Cleaning Inspection**

Prior to initiating interior dust cleaning activities, the Site Manager (SM) or Project Manger (PM) will obtain access from the property owner to conduct the interior dust cleaning activities. The SM/PM will then prepare an AMEC interior dust cleaning form. To prepare the AMEC interior dust cleaning form, the SM/PM will first inspect the home interior in the company of the property owner or tenant that would include visual observations of any interior lead source(s) and completion of a checklist. During this inspection, the SM/PM will document all pertinent details of the upcoming interior dust cleaning, including identifying items to be relocated to facilitate dust cleaning access, identifying all interior dust cleaning areas, and itemizing any specific areas that the property owner or tenant requests remain unaddressed.

In addition to the identification of all items that require relocating and itemization, AMEC will also complete a photo-documentation log of the residence. AMEC will request that all personal possessions, valuables, keepsakes, and fragile objects be put away during the dust cleaning activities to avoid breakage. Any damage to the home interior will also be noted during the inspection/site walk through; including any damage to furniture and other features; including flooring (carpet and rugs); tiled or hardwood floors or hard floors of other surface types (vinyl tiles, laminate, etc.); kitchen and bathroom countertops; other horizontal hard surfaces, such as tops of tables, bureaus, bookcases, etc.; all window sills; lower areas of supply and return air ducts (as applicable by the SM/PM); points of outdoor entry/exit to the interior of the structure; and deteriorated paint prior to cleaning activities will be noted and NOT repaired.

AMEC will document the digital photographs in a digital log that will be reviewed with each property owner (and tenant for tenant occupied properties) prior to the initiation of Site cleaning activities to ensure both parties, AMEC and the Resident, are protected.

The SM/PM will include the dust cleaning form at the completion of the inspection; and the property owner and tenant will be asked to acknowledge the details of the dust cleaning plan by signing the interior dust cleaning form. The SM/PM will provide the property owner and tenant with a copy of the signed interior dust cleaning form. If the property owner fails to attend or declines to sign the dust cleaning form after review, the SM/PM will record the failure of the property owner to attend the inspection or any concerns raised by the owner and how the SM/PM attempted to address such concerns.

### **3.1.3 Dust Cleaning Activities**

The SM/PM will attempt to notify the property owner and tenant of the intended start date for activities at a particular property at least four calendar days in advance of their planned initiation. Implementation may proceed at a given property with shorter notice if the property owner and/or tenant consent to such implementation.

### **3.1.4 Dust Cleaning Methods**

Consistent with HUD guidance, a combination of wet cleaning and vacuuming with a High-Efficiency Particulate Air (HEPA) vacuum will be used to remove both surface and embedded dust from targeted household surfaces. All horizontal surfaces will be cleaned, beginning with vacuuming, with a HEPA vacuum, followed by wet cleaning using a household cleaning agent selected to minimize any discoloration or damage to the surfaces to be cleaned. Dust removal will begin at the top rear room in the dwelling, working forward and down, keeping a similar sequence in all rooms so that surfaces will not be missed. Within rooms, the highest surface will be cleaned first and work down. The windows, other dust traps and finally the floors will be cleaned.

A HEPA vacuum is one that is equipped with a special filter that removes nearly all small particles from the vacuum's exhaust airstream that would otherwise be redistributed throughout the house. Protocols for the use of the HEPA vacuum are provided within this DCWP, more specifically within the HUD Guidelines, Section V, Chapter 11: Interim Controls and Chapter 14: Cleaning Throughout Hazard Controls. HEPA filters and bags will be changed outside the residence in a controlled environment, following all appropriate manufacturers' instructions.

Wet cleaning will be conducted, if appropriate and required for surfaces that cannot be cleaned with a vacuum. The targeted surfaces will be wiped with a wet cloth dipped in warm soapy water until no surface dust is visible. After which, the surface will be rinsed with clean water using a new sponge or cloth and dried, if appropriate. The environmental technicians, who clean the homes, will not be required to have any Missouri lead certifications.

#### **3.1.4.1 Surfaces to be Cleaned**

Dust cleaning will focus on accessible horizontal surfaces and other specified areas of the interior residential living structure, as well as points of entry and exit to the interior areas where dust cleaning is being performed. "Living areas" are defined as the interior portions of the dwelling that are typically furnished and heated. Points of entry and exit may include accessible portions of garages, carports, patios, balconies, and porches. Inaccessible and infrequently accessed areas

will be excluded from this dust cleaning program due to the limited exposure risk associated with such areas.

"Horizontal surfaces" are considered "accessible" to the extent exposures to young children may readily occur. Accessible areas may include "soft" surfaces such as rugs and upholstered furniture and "hard" surfaces such as tabletops, counters, and floors. Wet cleaning as defined in HUD guidelines, Chapter 11, Section 5, Part B.1. will be the primary method used for cleaning hard surfaces and areas. If dust levels are excessive prior to the wet cleaning, HEPA vacuuming may be used as a preparatory step in the wet cleaning process. Accessible surfaces and areas subject to wet cleaning may include the following unless the surface consists of deteriorated paint (e.g., chalking, cracking, peeling, etc.):

- Tiled or hardwood floors or hard floors of other surface types (vinyl tiles, laminate, etc.)
- Kitchen and bathroom countertops
- Other horizontal hard surfaces, such as tops of tables, bureaus, bookcases, etc.
- Window sills
- Blinds or shutters and similar window coverings
- Points of outdoor entry/exit to the interior of the structure

HEPA vacuuming will be conducted according to guidelines set forth in HUD Chapter 14, Sections III and IV and Chapter 11, Section V, Part B.2 and B.3, on the following surfaces:

- Area or wall-to-wall carpeting
- Upholstered furniture
- Draperies/curtains and other similar window coverings
- Heating, ventilation, and air conditioning vent covers, including cold air return vent covers
- Fixtures, including light, bathroom and kitchen
- The portion of a surface area that is excluded from wet cleaning due to deteriorated paint

### **3.1.5 Access for Property Residents**

During dust cleaning activities, the property owner or tenant will be provided access to the home at all times. Appropriate measures will be taken to ensure that the property owner or tenant will not have to walk through dust cleaning areas where possible. Residents will be asked to avoid areas where active dust cleaning activities are underway. All handicapped and special needs

access will be addressed, as required and as applicable. The projected duration for this interior dust cleaning work is approximately one to two days for each targeted property.

### 3.1.6 Clearance

Consistent with the number and locations of dust clean sampling in Chapter 15 of the HUD Guidelines (and the method of dust sampling in Appendix 13.1) for the dust clearance sampling, the single sample dust loading results from the wipe sampling for the interior surfaces will be compared to the Dust Lead Hazard Standards (**Table 1**). The Environmental Professional(s) that read the sample for single sample dust loading clearance will be required to have the appropriate Missouri lead certifications as a lead inspector or lead risk assessor. All clearance sampling will be conducted by an independent third party not associated with the indoor remedial contractor. The independent third party firm, to be named at a later date, will be required to have the appropriate Missouri lead certifications as a lead inspector or lead risk assessor. The following number and locations of samples to be taken in the residential homes for clearance sampling will be as follows:

Within rooms, clearance dust samples will be taken from floors, interior window sills (if present) and window troughs (if present). As least one floor sample will be collected in each room using single surface sampling and one sample alternating between a sill and trough (if present) will be collected in each sampled room, i.e., collect a sill sample in one room and a trough sample in the next and so forth. A minimum of two single-surface wipe samples will be taken from each room, e.g., two floor samples (in rooms without windows), a floor and a sill sample, or a floor and a trough sample. All samples will be submitted to a National Lead Laboratory Accreditation Program (NLLAP) laboratory for laboratory analysis.

**Table 1 – HUD Dust Lead Hazard Standards**

<b>Surface</b>	<b>Single Sample Dust Loading Results equal to or less than:</b>	<b>Single Sample Dust Loading Results equal to or less than:</b>
Bare and carpeted floors	40 ug/ft <sup>2</sup>	0.43 mg/m <sup>2</sup>
Interior window sills	250 ug/ft <sup>2</sup>	2.7 mg/m <sup>2</sup>
Window troughs	400 ug/ft <sup>2</sup>	4.3 mg/m <sup>2</sup>

If any sample results is equal to or above the applicable standard for the horizontal surface, the area will be recleaned and resampled until the clearance standards are met.

### **3.1.7 Follow-up Activities**

The AMEC Program Manager, Eugene M. Watson and the QA Manager will conduct follow-up activities after dust cleaning activity completion at a given property to verify that the work has been performed appropriately, as described below.

#### **3.1.7.1 Repair Work**

Dust cleaning activities will be conducted in a manner that minimizes damage to the home interior, including furniture and other features. Damaged features, such as furniture and flooring, will be repaired or replaced upon their discovery. Deteriorated paint that was present prior to cleaning activities will not be repaired.

#### **3.1.7.2 Property Inspection**

Upon completion of dust cleaning (and any necessary repairs, of which there should be none), the AMEC Site Manager and Project Manager will inspect the structure with the property owner or tenant if the property will not be available. As part of this inspection, the dust cleaning form will be finalized with the property owner, the digital photographic log will be reviewed with the AMEC PM and property owner during the Residential Site walk and the AMEC SM/PM and Property owner will sign off that the work performed is consistent with what was described during the pre-dust cleaning inspection. If the property owner fails to attend or declines to sign the dust cleaning form, the AMEC PM will record the failure of the property owner to attend the inspection or any concerns raised by the owner; how the AMEC PM attempted to address such concerns; include the dust cleaning form and the final digital photographic log (in DVD format) in the Property Dust Cleaning Completion Report (PDCCR).

### **3.1.8 Reporting**

Once dust cleaning activities are complete at a specific property where total yard concentrations exceed 400 mg/kg for lead, a PDCCR will be provided to the property owner and MDNR. The PDCCR will document all dust cleaning activities, the photo-documentation log of the

Residence as detailed in Section 3.1.2, and a final report documenting all disposal manifests (if any), . This report will contain a description of the dust cleaning activities and the photo-documentation results on DVD.

### **3.2 Disposal**

Materials generated from the dust cleaning activities will be disposed of properly at a MDNR approved landfill, if required.. A waste profile will be completed for disposal of bagged solids (i.e. dust rags, HEPA filters, air filters, etc.) that are accumulated for landfill disposal. The bagged solids will be disposed of as residential waste, if possible.

## **4.0 Dust Cleaning Management Considerations**

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This section describes overall management considerations associated with implementing the interior dust cleaning, including sequencing of activities, logistical requirements for various aspects of the work, and health and safety requirements.

### **4.1 Scheduling of Dust Cleaning Activities**

The removal of the impacted soil and the placement of the sod will occur prior to the initiation of interior dust cleaning activities. MW Recycling or its consultant do not anticipate initiating interior work activities until at least several weeks after soil/sod work has been completed in the area and weather conditions are conducive to the commencement of interior work, dependent on site conditions.

In scheduling dust cleaning work activities at the Site, AMEC will attempt to accommodate owners/tenant scheduling needs.

### **4.2 Quality Assurance/Quality Control**

QA/QC and inspection procedures will be implemented to ensure proper dust cleaning and compliance with the dust cleaning plan and specifications as well as with the site-specific QAPP ((AMEC, August 2013)

### **4.3 Health and Safety**

AMEC has prepared a Health and Safety Plan that is protective of the environment and of the health of workers and the public. During all dust cleaning activities, AMEC will have a

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designated Health and Safety Coordinator. AMEC's Health and Safety Coordinator will have authority over all AMEC personnel to enforce all applicable AMEC Health and Safety requirements.

## 5.0 Reporting

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A PDCCR will be prepared for each property where dust cleaning was performed. AMEC will provide an electronic copy of the PDCCR and digital photography log to the property owner once the MDNR representative has reviewed and approved each report for each Parcel requiring interior dust cleaning. Progress reports will be submitted to the MDNR and the client on a bi-weekly basis. Progress reports will include all copies of the PDCCRs electronically delivered to property owners during the reporting period.

## 6.0 References

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EPA, 1995. Residential Sampling for Lead: Protocols for Dust and Soil Sampling Final Report (PA747/R-95-001), March.

EPA, 2003, Superfund Lead-Contaminated Residential Sites Handbook (OSWER Directive 9285.7-50).

HUD, 1995. Guidelines for the Evaluation and Control of Lead-based Paint Hazards in Housing, June.

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MDNR, 2009. Missouri Department of Health and Senior Services, Lead Poison Prevention Manual, 2009. <http://health.mo.gov/living/environment/lead/manual/index.php>

USEPA, 1990. U.S. Environmental Protection Agency Hazard Ranking System, 40 CFR Part 300, Appendix A, 55 FR 51583, December 14, 1990, <http://www.thefederalregister.com/d.p/2007-05-25-E7-10055>.

USEPA, 1992. U.S. Environmental Protection Agency Hazard Ranking System Guidance Manual, EPA/540/R-92/026, November, 1992. <http://www.epa.gov/superfund/sites/npl/hrsres/index.htm>

# Figures



## **Appendix D**

### **Smiles Learning Center Cleanup Plan**

# **Remedial Action Plan/Sampling and Analysis Plan for Voluntary Action at the Smile Learning Center near the MW Recycling, LLC Festus Site**

Prepared for:

MW Recycling

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Mayfield Heights, Ohio 44124

Prepared by:

AMEC Environment & Infrastructure, Inc.  
15933 Clayton Road, Suite 215  
Ballwin, Missouri 63011



September 2013

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## FIGURES

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Figure 1	Smile Learning Center Proposed Excavation Area Map
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## APPENDICIES

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Appendix A	XRF SOP
Appendix B	Field Sample Collection Form
Appendix C	Laboratory Chain of Custody Forms

## ACRONYMS AND ABBREVIATIONS

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cm	centimeter
COC	chain of custody
DHSS	Department of Health and Senior Services
DQO	data quality objectives
DU	decision unit
EU	exposure unit
HRS	Hazard Ranking System
ICS	incremental composite sampling
IDW	investigation derived wastes
MDNR	Missouri Department of Natural Resources
mg/kg	milligrams per kilogram
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyls
PBDE	polychlorinated biphenyl ethers
PPE	personal protection equipment
QAPP	Quality Assurance Project Plan
RAL	Removal Action Levels
RCRA	Resource Conservation and Recovery Act
SAP	Sampling and Analysis Plan
SU	sampling unit
USEPA	U.S. Environmental Protection Agency

## 1.0 Introduction

On behalf of MW Recycling, LLC, AMEC is submitting this Sampling and Analysis Plan (SAP) and Remedial Action Plan (RAP) for proposed voluntary soil sampling and remediation for the Smile Learning Center located at 1302 Kenner Street. This plan follows guidance the Missouri Department of Natural Resources (MDNR) has provided to AMEC and MW Recycling related to the residential lead soil remediation in Festus as well as guidance for this specific action. The scope of the AMEC investigation will include the remediation of impacted soils in focused locations and collection of post remediation soil samples.

## 2.0 Site Information

### 2.1 Site Location

The Smile Learning Center (hereafter referred to as the "Site") is located a 1302 Kenner Street, approximately 200 feet east of the MW Recycling, LLC facility. The Site consists of an outdoor play area with lead soil remediation in the west portion of the Site (Figure 1). The outdoor play area consists of a pea gravel Sidewalk area along the north side of the Smile Learning Center building, the Play Ground containing play equipment, and Area 2 in southwest corner of the lot adjacent to the concrete pad. These three portions of the play area are shown in Figure 2.

### 2.2 Description

The Smile Learning Center is commercial property approximately 5200 square feet in size and is located approximately 200 feet east of the MW Recycling, LLC Festus yard, which has been used as a metal scrap processing and recycling facility since the 1940s. To the west and south of the Site, residential homes are located across Kenner Street and 13<sup>th</sup> Street respectively. To the north of the Site is a former gas station and the east is commercial property along Highway 61/67.

### 2.3 History/Contaminants of Concern

MDNR performed three (3) sampling events at the Site over a 15 day period from June 13 to June 28. On June 13, 2013, MDNR collected 1 soil sample at Smile Learning Center (Commercial Location ID # 405, no key provided but determined based on data provided) which MDNR reported a Decision Unit UCL of 870 mg/kg. In addition to that, MDNR reported that the fine particulate fraction of the pea gravel cover had an average lead concentration of 190 mg/Kg with a 95% upper confidence limit (UCL) of 330 mg/kg, which should result in the landfill accepting the pea gravel as general construction waste. On June 24, 2013, Department of Health and Senior Services personnel conducted dust wipe sampling on the floor inside the building and on exterior surfaces of the playground

equipment. All dust wipe results were below the HUD clearance criteria for indoor floors of 40ug/ft<sup>2</sup>. On August 22, 2013, MDNR conducted soil sampling in four distinct areas on the property; the three discussed in Section 2.1 plus the narrow strip of soil located between the fence and the curb along Kenner Street. All four of these areas were found to contain mean lead concentrations above 400mg/kg. On August 22, 2013, AMEC with their contractor Environmental Restoration LLC conducted soil sampling in four distinct areas on the property; the three discussed in Section 2.1 plus the narrow strip of soil located between the fence and the curb along Kenner Street. Three of the four of these areas were found to contain mean lead concentrations less than 400mg/kg. The Play Ground, Sidewalk and curb surface had concentrations of lead that were 267 mg/kg, 253 mg/kg and 331 kg/kg respectively. The only result that was greater than 400 mg/kg was the result for the curb core which exhibited a positive XRF result for lead at 477 mg/kg.

### 3.0 DATA QUALITY OBJECTIVES

To help ensure precise, accurate, representative, complete, and comparable data, all field work and analyses will be conducted in general accordance with the approved Residential QAPP included as an appendix to this RAP/SAP, when published. The sampling design used to document the effectiveness of the soil remediation effort at the site will conform with that described in the MDNR Integrated Site Inspection/Removal Site Evaluation Sampling and Analysis Plan to ensure compatibility with data previously generated by MDNR in April 2012.

#### 3.1 Conceptual Site Model and Goal

Based on review of the data from the Site, lead will be the only contaminant of concern. MDNR has indicated that lead-contaminated soil (>400 mg/kg) exists beneath the porous pea gravel cover in all portions of the outdoor play area plus in the area between the fence and the curb. The area between the fence and the curb does not present an exposure issue and therefore, is not included in the Site remediation. The goal of the RAP/SAP is to remove the pea gravel from the Site and replace it with new pea gravel, remove lead contaminated soil in the children's play area in 6" lifts up to one (1) foot beneath ground surface (bgs), perform soil screening/sampling to document performance standards are achieved (<400 mg/kg), and to replace impacted soil with borrow source material (<100 mg/kg lead containing material).

#### 3.2 Study Boundary

Figure 2 shows the three portions of the play area targeted for cleanup as part of this removal activity; pea gravel Sidewalk area, pea gravel Play Ground Area and pea gravel Area 2. Please note that Area 2 will receive a concrete cap after soil removal activities are completed per Section 4.0.

### 3.3 Field Decontamination

The cleaning of remedial equipment such as Bobcat's™, shovels, tillers, and hand tools will be performed prior to remediation activities, prior to the placement of borrow material and before the equipment is removed from the site. Details on decontamination procedures are provided in the QAPP, but generally would adhere to the following guidelines:

- Scraping with putty knife or similar tool to remove soil clumps;
- Brushing with stiff-bristle nylon brush to remove visible soil debris;
- Immersion (if practical) in a 5-gallon bucket of soapy water and further brushing;
- Rinsing tool with deionized water; and
- Wiping dry with clean paper towels.

### 3.4 Quality Assurance/Quality Control Samples

The following samples will be collected as part of the quality control/quality assurance procedures for the investigation.

#### 3.4.1 Equipment Rinsate Blank

An equipment rinsate blank will be collected prior to initial work startup and prior to demobilization. Following decontamination of the equipment/tool, deionized water will be rinsed over the core cylinder and into a sample container, properly preserved with nitric acid in an 8 oz plastic or 250 mL glass bottle, and will travel with the other samples back to the laboratory for analysis.

#### 3.4.2 Laboratory QC

Laboratory precision and accuracy will be assessed as described in the QAPP by a laboratory that has been selected and is an approved National Environmental Laboratory Accreditation Program (NELAP) per the Site specific QAPP.

## 4.0 Field Activities

Based on the results of the previous sampling activities, lead impacted areas greater than 400 mg/kg in the children's play area at the Site will follow these remediation goals with performance standards. The performance standards shall mean the cleanup levels (400 mg/kg) shall be attained by the general provisions outlined below:

- Use safety barriers, barrier tape, etc., to demarcate the work area to prevent public access;
- Stage roll-off containers within the exclusion zone;
- Temporarily remove a portion(s) of the south wooden fence;
- All outdoor gym equipment will be wiped down prior to being disassembled and pre-cleaned to insure that cross contamination of the Site warehouse

facility does not occur. The clean equipment will be reassembled after the soil remediation;

- Disassemble and remove the existing gym structure, play equipment, etc. to the locked rear warehouse area of Smile Learning Center. Once the equipment is locked in the building, the door, overhead garage door, and side doors (2) will be sealed with visquene and duct tape prior to the start of remediation activities in the morning and removed at the conclusion of remediation activities prior to the arrival of children in the morning;
- Remove the pea gravel utilizing a small, mechanized front loader (i.e., Bobcat™) in accessible areas and by hand/wheelbarrow methods within inaccessible areas. Previous sampling characterized the pea gravel as containing less than 400 ppm lead. The pea gravel will be placed in roll-offs, removed as construction waste (if acceptable by landfill) and disposed in a sanitary landfill.
- Remove the top 6" of soil in the lead impacted zone (immediately beneath the pea gravel and landscaping fabric) and after removal, acquire XRF readings for the measurement of potential lead impact on the soil floor.
- 15- in-situ XRF readings will be collected equally-spaced across the floor of each excavated portion of the play area. If the average in-situ XRF readings in the soils floor for each area are less than 400 mg/kg, then clean borrow soil and new pea gravel cover will be added to the area to bring the ground surface of the excavated area back to it's original elevation.
- If the average in situ XRF readings in the soil floor of an excavated area are greater than 400 mg/kg, then another 6" lift of impacted soil will be removed from the lead-impacted excavation area. If average in-situ XRF readings in the soils floor are less than 400 mg/kg, then clean borrow soil/pea gravel will be added to the area to bring the ground surface of the lead-impacted excavation area to it's original elevation.
- If average in-situ XRF readings are still greater than 400 mg/kg at the depth of 12" below ground surface (bgs), the performance standard will be met and no further excavation will be required.
- In those area(s) where average in-situ XRF readings are greater than 400 mg/kg at 12" bgs, a witness barrier (i.e. an orange snow fence barrier) will be laid down to identify the extent and vertical boundary of excavated lead-impacted materials for future soil removal activities. Clean borrow soil, defined as borrow source soil with an average lead concentration (as measured by a NELAP approved laboratory) less than 100 mg/kg, will be added to the area to bring the ground surface within three to four inches of the yard. New, clean pea gravel will be added to bring the final grade to the surface of the surrounding yard surface. Approximately 1 soil sample for every 500 cubic yards of borrow fill will be analyzed for Lead, (EPA Method 6010C). This sample will be a composite consisting of 30 increments of soil collected from throughout the fill material.

- If the average in-situ post-excavation soil samples indicate that the mean lead concentration in remaining soil will exceed the EPA remediation action level of 400 ppm, MW Recycling may request the Owner to execute an Environmental Covenant pursuant to the Missouri Environmental Covenants Act. Whether or not the Owner executes an Environmental Covenant, MW Recycling will not undertake any additional action.
- Following excavation and confirmation sampling, the property owner intends to install a concrete surface in the southwest corner portion identified as pea gravel Area 2 as shown in Figure 2. No new pea gravel will be installed in this area and the area will be left in condition ready to receive concrete by the Site owner following this removal action.
- Once borrow material/pea gravel is placed back in the excavation, the gym structure re-assembled, fence reinstalled and barriers/barrier tape removed. Vertical structures (building) in close proximity to the removal area will also be wet wiped as appropriate.

All soil removal, sample locations, descriptions, and field notes will be recorded on field sample collection forms, with a blank field sample collection form included in Appendix B of the QAPP.

Site sketches and in-situ XRF readings will be recorded on the field sample collection form (Appendix B), and all samples collected will be recorded on chain of custody forms (Appendix C, as an addendum to this Plan after a NELAP Laboratory is chosen). The sample locations will be recorded with geospatial software, and photographs will be taken to document the sampling event. All photographs will be recorded and labelled in a photographic log.

#### **4.1 Sampling During Excavation**

The XRF analyzer will be calibrated and standardized per the manufacturer's instruction. Known reference standards containing certified concentrations of lead at various levels will be analyzed prior to initiating field work. Results will be documented on an XRF data field sheet for each residence. The serial number of the analyzer(s) used will be noted on the field sheet. Prior to XRF analysis, the Location ID and analyst will be entered into the XRF analyzer. Excessive soil moisture interferes with XRF. If soil conditions are saturated (>25% moisture), in-situ XRF analyses will not be conducted and field work will stop until conditions are dry enough for work to commence onsite.

15- in-situ XRF readings will be collected equally-spaced across the floor within each of the three (3) excavation areas.. The results will be recorded on the field sheet, and the averages for each excavation area will be calculated.

In-situ XRF precision will be evaluated once per day per XRF analyzer by collecting seven replicate XRF readings at a single location without moving the analyzer. The XRF data will

be downloaded from each analyzer upon returning from the field and will be QC-checked and validated.

## 4.2 Post-Excavation Sampling

One 30-increment ISM sample per excavation area will be collected from the floor of excavated areas, prior to placement of the witness barrier (if necessary) and the clean soil cap/pea gravel to document the lead levels remaining beneath the soil cap. Analysis of the soils will be as follows (see Page 5, Section 4.0, 3<sup>rd</sup> bullet of page):

- Total Lead (EPA Method 6010)

## 4.3 General Remediation Procedures and Guidance

The excavation of lead-impacted soils to facilitate a clean soil cap have been developed in general accordance with the EPA Superfund Lead-Contaminated Residential Site Handbook, August 2003. No changes related to the foundations of built structures or flatwork (sidewalks and driveways) within the Site will occur. No new structures will be constructed. All Procedures and Guidance apply, where applicable.

1. A clean soil cap will be placed over the play areas as described above. The current structures (driveways, sidewalks, and other impenetrable hardscape) will remain in place. Excavations shall start adjacent to all concrete sidewalks, walkways, drives, and other structures and shall extend to the extent of the play area. All excavations that start adjacent to all concrete sidewalks, walkways, drives, and other structures will be excavated by hand as deep and SAFELY as possible and will only employ mechanical means when it is determined by the Site Manager that a safe distance from the concrete structures has been achieved as not to impact the structural integrity or physical appearance of such structures.
2. A qualified and licensed lead remediation contractor (Remediation Contractor) will be contracted to provide all labor, materials, services and equipment necessary for the excavation, relocation, and/or off-site disposal of impacted soil.
3. AMEC will oversee and manage the implementation of the remedial action plan. AMEC will be present during excavation, backfilling and restoration activities in order to closely monitor the work being performed.
4. If applicable, it is currently assumed that all shrubs and bushes will need to be removed and properly disposed offsite. Larger trees will remain in-place undisturbed.
5. Once the excavated material is ready for off-site disposal, the excavated material shall be loaded, hauled, and properly disposed of at a permitted waste disposal facility.
6. When possible, excavated impacted soil will be placed directly into a licensed special waste hauler's trucks or roll-off box. Excess soil and debris will be removed from the

sides of the vehicle, wheels and undercarriage prior to leaving the Site. The load will be transported directly to an approved sanitary landfill permitted to accept special waste. The waste hauler will be required to cover all loads of lead-impacted soil leaving the Site and will be required to ensure that no soil is spilled onto public rights-of-way. As noted above, the pea gravel cover material will be removed and disposed in a sanitary landfill as routine solid waste, if accepted by the landfill as such.

7. Based on the results of testing at the Site, the Contractor may assume that the excavated materials can be handled and disposed as a non-hazardous special waste. The landfill facility shall be permitted by the State of Missouri or Illinois to accept such material. The Contractor will be required to provide documentation of the anticipated landfill with their bid. All truckloads of material shall be properly manifested.
8. If required by the landfill disposal facility, additional samples needed for landfill characterization purposes depending on disposal facility requirements will be collected.
9. Temporary stockpiling of soils may be required. On-site storage methods will consist of stockpiling on 10-mil minimum polyethylene sheeting and securely covered in the same in a manner that will minimize access to the soil and prevent any precipitation infiltration or leaching.
10. If groundwater should be encountered during excavation or if a significant precipitation event should occur during excavation which requires the removal of the water, the water will be sampled and characterized in order to determine appropriate handling and disposal alternatives. Excavations will be conducted in a manner which minimizes the potential for surface run-off. Based on the shallow depths of the excavation, groundwater is not anticipated to be encountered.
11. Project activities requiring the disturbance of the impacted soils will be conducted in a manner that minimizes the potential for airborne lead emissions. Engineering controls will be implemented to minimize the potential for airborne lead emissions. The primary technique will consist of misting the exposed fill material areas with a fine water spray throughout the duration of the project. The misting will not be excessive as to create any surface run-off. If periods of high winds persist that render dust suppressant techniques ineffective, project activities will be temporarily suspended. Perimeter dust particulate monitoring will be performed to document effective dust control measures are employed throughout the duration of the project.
12. Fugitive dust emissions will be monitored in-the-field using a Total Suspended Particulate counter, such as a MiniRam or equivalent instrument. The site-specific action level will be determined by calculating the maximum amount of particulates that can be in the air without exceeding the National Ambient Air Quality Standard (NAAQS) for lead of 0.15 ug/cubic meter measured as an eight-hour Time Weighted Average. A MiniRam or equivalent will provide real-time data, and allow for immediate corrective actions if necessary to adequately protect residents and the general public from the hazards of lead contaminated suspended dusts. If the action level is exceeded, additional engineering controls will be implemented.

13. Throughout the duration of the project, the initial level of safety is assumed to be Level D Modified. Level D Modified protective equipment shall consist of hardhats, coveralls, gloves and boots/shoes (leather or chemical resistant) with steel toe and shank.
14. Tools, machinery, vehicles or other equipment used on Site that comes into direct contact with lead-impacted soils will be wiped clean of any excessive soil or debris upon completion of work activities, prior to the placement of borrow material and prior to leaving the Site. Any resulting lead-impacted soil and debris will be segregated, contained and characterized in order to determine appropriate disposal alternatives. If washing, rinsing or steam cleaning of equipment is deemed necessary, the rinsates will be contained and characterized in order to determine appropriate disposal alternatives.
15. A Site Health and Safety Plan will be developed that addresses all applicable safety precautions associated with the project. All safety precautions in accordance with the project specific Site Health and Safety Plan will be followed during excavation activities.
16. All work shall be performed in a manner that minimizes transfer of lead-impacted soils beyond the excavation areas. Cleanup of any soils or debris that may collect on adjoining surface areas including, but not necessarily limited to, driveways, patios, sidewalks or public right-of-ways will be performed.

#### **4.4 Soil Cap (Backfill) and Witness Barrier**

- 1) Backfilling with borrow fill will commence as soon as possible following removal of impacted soils. Exposed excavations will not be allowed more than 24 hours in duration without prior permission from the Owner. In the event the excavation is exposed for a period greater than 24 hours, the excavation will be cordoned off with orange construction fencing and notifications.
- 2) If the mean lead concentration in excavation floor in any portion of the play area exceeds 400 mg/kg as determined through incremental composite sampling and in-situ XRF analysis, a witness barrier, consisting of orange-mesh plastic webbing will be placed upon completion of excavation and relocation of soils. The fabric will cover the entire excavation not already covered by impermeable surfaces including excavation areas, on-site relocation areas, and areas that will have only the clean soil cap. The cloth will be rolled into place, overlapped at the edges, and anchored into position.
- 3) Backfilling will start adjacent to all concrete sidewalks, walkways, drives, and build structures and shall extend to the excavation boundary, where/when applicable.
- 4) The soil barrier cap shall be a minimum of 6 inches compacted in thickness and after compensating for settling, shall return the Site grade to its previous state in areas around existing structures.
- 5) The fill material used for the barrier soil cap shall come from a clean fill source, and be capable of compaction. The fill material will be free of large rocks, debris,

vegetation, and dirt clumps. The source of the fill material has not been determined. Written documentation will be provided of the source of the clean fill and proof by laboratory analysis. If another fill source is utilized, the frequency and type of analysis required may vary depending upon the source of the fill material and heterogeneous nature of the material. Laboratory analysis will generally be provided on a frequency as follows:

- Approximately 1 soil sample for every 500 cubic yards of borrow fill will be analyzed for Lead, (EPA Method 6010C). This sample will be a composite consisting of 30 increments of soil collected from throughout the fill material.

The backfill will be placed in a manner that is consistent with Site grading plans and should provide for slopes away from building(s).

- 6) Compaction will be performed by tracking and tamping with hand equipment that will effectively eliminate the potential for future settling of materials.
- 7) Fugitive dust control measures will be taken to ensure fugitive dust does not leave the remediation area. If fugitive dust is noted outside the remediation area as designated by MW Recycling, measures will be taken to control the dust.

#### 4.5 Contractor Requirements and O&M Plan

- 1) All work shall be performed in accordance with the project specific OSHA compliant Site Health and Safety Plan in accordance with all applicable local, state and federal laws and regulations.
- 2) To limit access to the Site during project activities, the Remediation Contractor may be required to secure the Site including appropriate fencing (e.g. plastic orange fencing) and warning signs prepared in number and content satisfactory to AMEC placed at regular intervals along the work area perimeter.
- 3) Prior to initiating field activities, the Contractor will be required to furnish the following information:
  - a) Work plan summary describing the manner in which the project will be completed.
  - b) List of all equipment to be used on the project.
  - c) List of off-site disposal facilities to be used.
  - d) List of workers including name, length of service with the company and evidence of participation in a 40-hour Personnel Protection and Safety Course which meets the requirements of Title 29 Code of Federal Regulations (CFR) Section 1910.120 - Occupational Safety and Health Administration's (OSHA) Hazardous Waste Operations and Emergency Response Standard. The workers used on the project shall be skilled and experienced as evidenced by participation in at least two environmental remediation projects of similar scope and scale.

- e) Site specific health and safety plan.
- f) Copies of all necessary permits, insurance certificates, worker certifications, waste hauler certifications and the designated off-site disposal facility.
- g) Solid waste handling, characterization, disposal plan.
- h) The remediation contractor will be responsible for notifying the Missouri One Call System prior to any excavation.

## 5.0 Sample Collection

### 5.1 Post-Excavation Confirmation Sampling

As described above in-situ XRF analysis will be used to document the mean lead concentration in soil remaining on the excavation floor after soil removal. Following excavation of each sub-portion of the play area, 15 in-situ XRF readings will be collected at the surface of the excavation floor from evenly-spaced locations. The mean will be calculated from these 15 readings and used for decision-making as described above.

### 5.2 Clean Fill Sampling

One sample will be collected from the clean fill material to demonstrate the at the mean lead concentration does not exceed 100 mg/kg. This sample will be a composite consisting of 30 increments collected from throughout the volume of clean fill.

### 5.3 Number of Samples, and Container and Preservation

The one clean fill sample will be collected in a certified clean container and submitted to an approved laboratory for lead analysis by USEPA SW-846 Method 6010B. Refer to Table 1 for container and preservation requirements.

**Table 1  
 Preservation Methods**

Soil Samples			
Parameters	Container(s)/Volume	Preservative(s)	Holding Time
Total Metals (Pb)	One or more 8-oz glass jars or a 1-gallon resealable baggie	Cool, 2°C	6 months

#### **5.4 Chain-of-Custody**

The ICS soil samples will be stored in the plastic bags in which they were collected. Each bag will be labelled with a unique DU identifier, date, collector initials, and depth using permanent marker. The samples will be recorded on a separate chain of custody (COC) form (Appendix C). The samples will remain in the custody of AMEC field personnel during sample processing and XRF analysis. Those samples identified for laboratory analysis will be placed into appropriate sample containers and entered onto an NELAP Laboratory Approved COC form to be relinquished to a of sample custodian at the environmental laboratory for analysis. Samples remaining at AMEC for ex-situ analysis will have the COCs completed by AMEC personnel.

Field personnel will attempt to return unused soils to their source immediately after generation. Disposable PPE and disposable sampling equipment will generally be handled as solid waste, containerized, and properly disposed. Wash and rinse waters generated during equipment decontamination will be discharged to the wheel washing station at the MW Recycling, LLC facility.

#### **6.0 Investigation Derived Waste (IDW) Plan**

Efforts will be made to minimize IDW generation. The IDW may include soil, sediment, decontamination fluids, disposable sampling equipment, and disposable personal protective equipment (PPE).

#### **7.0 Site Safety**

A safety tail-gate briefing will be held on-site prior to initiating field activities and field personnel will be required to read and sign the site-specific health and safety plan.

#### **8.0 Reporting**

Pace will provide a copy of the chain of custodies and laboratory result sheets. AMEC will prepare an Investigation Report for the additional sampling results.

## 9.0 References

- MDNR, 2012. Missouri Department of Natural Resources, Data from August 2013 Sampling Event: Commercial Properties – Crystal City, Missouri (not yet published)
- MDNR, 2012. Missouri Department of Natural Resources, Data from August 2013 Sampling Event: Commercial Properties – Crystal City, Missouri, email from Dennis Stinson to Eugene M. Watson, Draft Analytical Results for Review only, July 16, 2013
- Festus, 2011. St. Louis Testing Laboratory, Report of Test Results – Street Sweepings Sample, City of Festus, August 12, 2011.
- MDNR, 2007. Missouri Department of Natural Resources, QAPP for Pre-Remedial, Pre-Removal and Targeted Brownfields Assessments, December 7, 2007.
- MDNR, 2009. Missouri Department of Health and Senior Services, Lead Poison Prevention Manual, 2009. <http://health.mo.gov/living/environment/lead/manual/index.php>
- MDNR, 2011a. Missouri Department of Natural Resources, RCRA Site Investigation Report, September 14, 2011.
- MDNR, 2011b. Missouri Department of Natural Resources, Report of Compliance Inspection November 23, 2011.
- MDNR, 2011c. Missouri Department of Natural Resources, RCRA and Missouri Hazardous Waste Management Law Compliance Evaluation Inspection Report, November 22, 2011.
- MDNR, 2012. Missouri Department of Natural Resources, Data from January 2012 Sampling Event (not yet published).
- NPN, 2011. Letter to Mr. Greg Shapiro, MW Recycling, LLC/MW Recycling, from David B. Rowe, NPN Environmental, December 12, 2011.
- USEPA, 1990. U.S. Environmental Protection Agency Hazard Ranking System, 40 CFR Part 300, Appendix A, 55 FR 51583, December 14, 1990, <http://www.thefederalregister.com/d.p/2007-05-25-E7-10055>.
- USEPA, 1992. U.S. Environmental Protection Agency Hazard Ranking System Guidance Manual, EPA/540/R-92/026, November, 1992. <http://www.epa.gov/superfund/sites/npl/hrsres/index.htm>

# Appendix A

	Employee Health and Safety Policy Manual	Procedure #:	HS-25
		Page:	1 of 4
	Subject: X-Ray Radiation Protection Program	Revision:	02
		Issue Date:	March 18, 2011

## 1. Purpose

The purpose of this Radiation Protection Program (RPP) is to keep radiation exposures to workers using a portable, X-Ray Tube based Thermo NITON Analyzer XL3t at Environmental Restoration to levels that are as low as reasonably achievable (ALARA), and

Ensure that use of the NITON Analyzers is in compliance with all applicable State and Federal regulations.

## 2. Scope

This RPP applies to any use of NITON Analyzers at Environmental Restoration, LLC.

## 3. Responsibilities

Luke Wisniewski shall be designated as the individual in charge of the RPP. Luke Wisniewski will be responsible for maintaining and implementing the RPP which will minimize the risks associated with using portable X-Ray producing machines and which will ensure compliance with the regulations of the Nebraska.

The specific actions to be performed by the individual in charge are as follows:

- Receive Radiation Safety Training at a one day course provided by Thermo NITON Analyzers or by a qualified expert. This will be documented by a certificate of completion which is to be kept on file with other RPP documents
- Maintain a list of authorized users and ensure that only authorized users operate the Analyzers.
- *Notify staff of additions to or subtractions from the authorized user list.*
- Schedule and/or conduct training for employees prior to authorizing their use of the NITON Analyzer without direct supervision. Maintain records of training including a copy or a summary of the training material. Training shall include Radiation Safety, Operational, and Emergency Procedures.
- *If personal exposure monitoring (dosimetry) is part of the RPP, then the Individual in charge will be responsible for maintaining dosimetry records.*
- Ensure that all users are following appropriate operating procedures while using Analyzers.
- Maintain manufacturer provided instruction manuals, and operations and maintenance records.
- Ensure proper disposal of unneeded Analyzers.
- Ensure that labels on Analyzers are intact and legible. Notify NITON for assistance with labeling that is damaged or illegible.
- *Review, as needed, the RPP content, implementation, and effectiveness.*

Authorized Workers are responsible for using only approved safe techniques and procedures in operations involving the Analyzer. The specific actions to be performed are as follows:

- Follow proper operating procedures as described in training and ensure other individuals also adhere to these requirements.
- Ensure that the label on the Analyzer is in tact and legible.
- *Ensure proper use of dosimetry, if dosimetry is issued.*
- Be familiar with emergency procedures and know how to recognize and terminate unsafe operations.

## 4. Safe Operating Procedures

A copy of the Users Manual or Operating and Emergency Procedures shall be made available to all workers using the NITON Analyzer. A copy will be kept with the Analyzer and another copy shall be kept on file with other RPP records.

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Only authorized personnel with training on state regulations, operating and emergency procedures shall be allowed to operate the NITON Analyzer. All authorized personnel are responsible for complying with the requirements of this RPP and will report any and all incidents involving the NITON Analyzer to the individual in charge.

The operator is responsible for ensuring that no part of a person's body is at or near the measurement point, and no closer than one foot during a measurement (trigger finger excluded).

The operator must be aware that the NITON Analyzer is emitting radiation when lights are flashing.

The operator must be aware that radiation in the primary beam could eventually cause physical harm if the device is used improperly and must be able to recognize the symptoms which would begin with skin reddening in the exposed area and at higher doses would appear as a burn or localized tissue damage.

Prior to each use:

- The operator will inspect and maintain the Kapton window and all labels on the NITON Analyzer
- The operator will fill out the utilization log (if required)

*Environmental Restoration will maintain a log documenting use of the Analyzer that contains, at a minimum, the unit serial number, date/time removed, date/time returned, and responsible individual. At the front of this log will also be a list of authorized users. Refer to Appendix A for example.*

## 5. Emergency Procedures

In any case where one suspects that the x-ray tube remains on when the measurement is terminated:

- Disconnect the battery pack immediately to turn off the x-ray tube, and
- Call Thermo Electron Corporation's Service Department in the United States, toll free, at (800) 875-1578.

Suspect accidental exposure to primary beam

Notify the Individual in Charge and RSO at 314 280-8328

Individual in charge will assess impact and call NITON RSO for assistance if necessary

Severe Physical Damage

There is no radioactive material so a fire or severe damage poses no radiation hazard.

## 6. Radiation Safety Training

The Individual in charge will be responsible for receiving Radiation Safety Training from Thermo NITON Analyzer LLC 1 day training, or a qualified expert. It will then be this individual's responsibility to train the rest of the workers, whether the workers are trained by the individual in charge, Thermo NITON Analyzer LLC, or by a qualified expert. This training will be documented by a sign-off sheet that includes the topics covered in the radiation safety training which is to be kept with all the RPP documents.

## 7. Personnel Monitoring

*Personal exposure levels may, as determined by the responsible individual or as required by state regulations, be monitored utilizing dosimetry providers accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). Badges are not transferable. The following are a few examples of NVLAP accredited labs:*

- *Environmental Restoration will use AEIL, 9251 Kirby Drive, Houston, TX 77054*
- *Dosimeters shall only be worn by the individuals they are issued to and shall only be worn during occupational hours.*
- *Never wear the badge during non-occupational exposures such as during medical x-rays or any medical procedures involving radiation.*
- *Dosimeters should be protected from extremes of heat, moisture, and pressure.*
- *Dosimeters shall be stored in a protected area to prevent loss, damage, and other sources of radiation.*

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## 8. Posting and Labeling

There is a relatively low radiation hazard associated with the Analyzer, and because the authorized user will be with the Analyzer at all times it is operational, posting radiation area signs will not be necessary. A copy of the Nebraska Notice to Employees will be kept in the Analyzer case as well as on file with other RPP documents and will be available for review at any time.

The label on the Analyzer will be checked periodically by the Individual in charge as well as the workers using the Analyzer. The label will be checked for integrity and legibility. If the label becomes faded, worn, damaged, or defaced, the Analyzer will be promptly returned to Thermo NITON Analyzers LLC for relabeling.

## 9. Record Keeping

The individual in charge will be responsible for all the records associated with the RPP. These records will be kept in an identified location and will be made available for review by any worker or state official upon request. The following is a list of records that will be kept at minimum:

- Personnel training records
- Manufacturer provided instruction manuals and service & maintenance records
- Authorized Users
- State Analytical X-Ray Regulations and Notice to Radiation Workers
- *Analyzer usage log*
- *Personnel Dosimetry Records, if dosimetry is required*

## 10. Quality Assurance / Annual Review

*At the minimum, items on the following list will be done annually:*

- *Radiation Safety Review for all workers*
- *Operational & Emergency Procedures Review for all workers*
- *Audit of the RPP content, implementation, and effectiveness*

## 11. References:

- DOE G 441.1-5 "Radiation-Generating Devices Guide"
- Thermo NITON Analyzers Sample Radiation Safety Program
- NBS Handbook 111, Revised 1977
- Radiation Safety Topics "Writing a Radiation Protection Program For the Industrial X-Ray Program For a Facility with Cabinet Radiographic or Analytical X-Ray Machines"
- Table 11.4.9 "Good Work Practice for X-Ray Diffraction and X-Ray Fluorescence Units" The Health Physics and Radiological Health Handbook



# Appendix B

**DESIGN MEMORANDUM**

Client: \_\_\_\_\_ Sheet \_\_\_\_\_ Of \_\_\_\_\_

Project: \_\_\_\_\_ Date: \_\_\_\_\_

Data For: \_\_\_\_\_ Work Order: \_\_\_\_\_

Prepared By: \_\_\_\_\_ Checked By: \_\_\_\_\_ File No: \_\_\_\_\_



**Note: This form must be used for project calculations and original filed in project files**

A large rectangular area filled with a fine grid of small squares, intended for handwritten calculations and notes.

# Appendix C



# Figures

Figure 1. Smile Learning Center Proposed Excavation Area Map

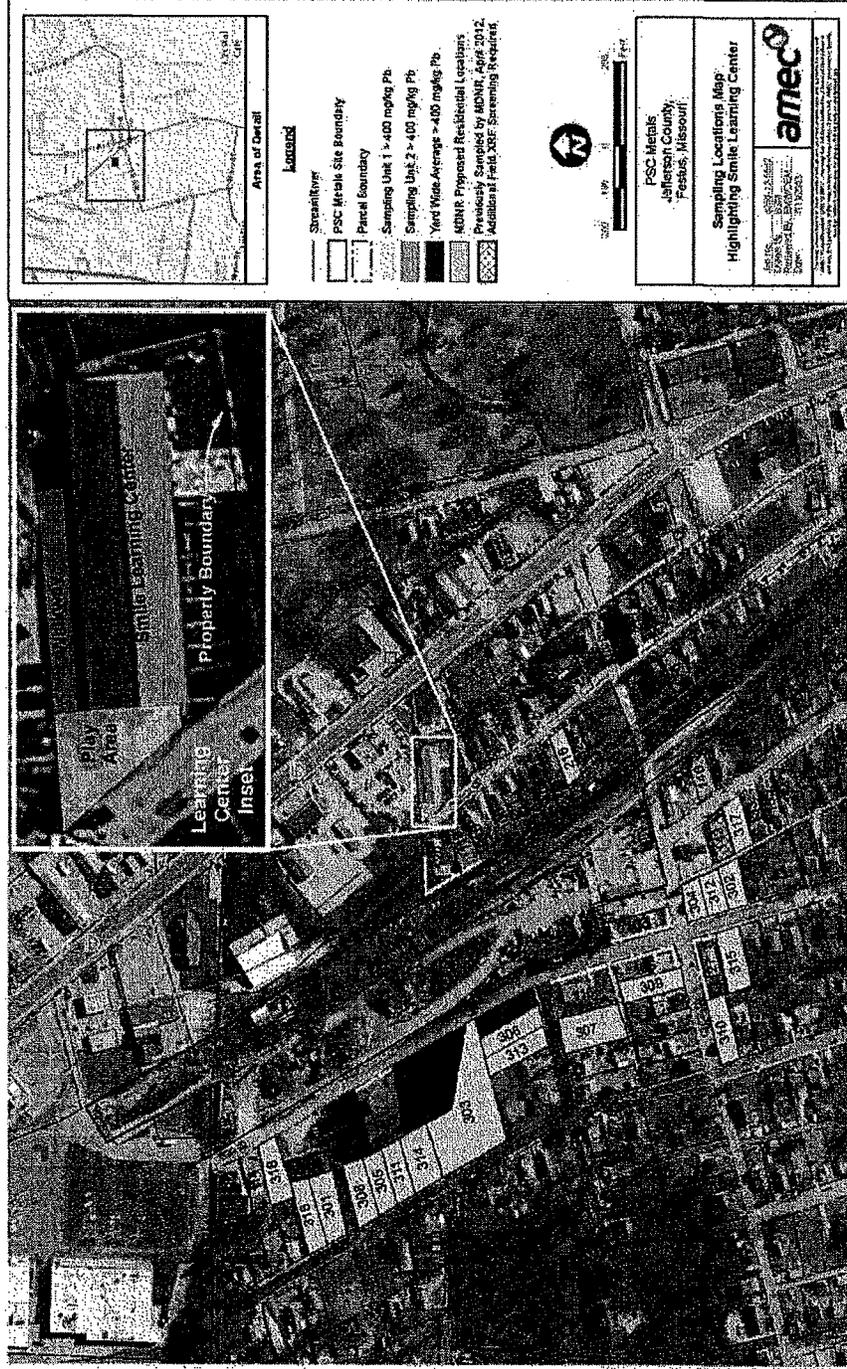
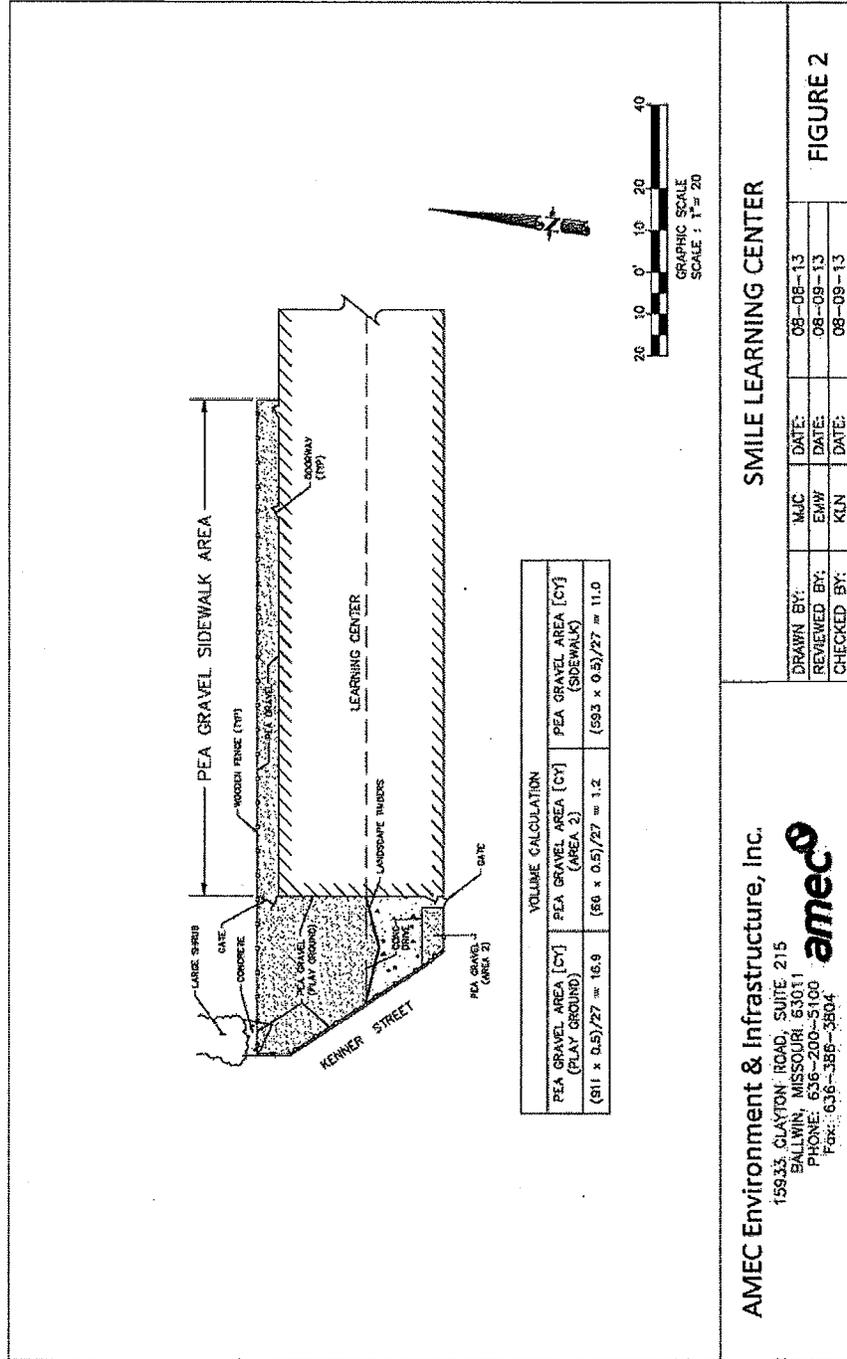


Figure 2. Smile Learning Center – Site Plan of Play Area



AMEC Environment & Infrastructure, Inc.

159.33 CLAYTON ROAD, SUITE 215  
 BALLWIN, MISSOURI 63011  
 PHONE: 636-200-5100  
 Fax: 636-386-3804



SMILE LEARNING CENTER

DRAWN BY:	MJC	DATE:	08-08-13
REVIEWED BY:	EMW	DATE:	08-09-13
CHECKED BY:	KLN	DATE:	08-09-13

FIGURE 2

