PRELIMINARY ASSESSMENT/SITE INSPECTION REPORT
ST. JOE MINERALS CORP.
VIBURNUM SITE
IRON COUNTY, MISSOURI

July 3, 2006

NEWFIELDS

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

Preliminary Assessment/Site Inspection Report
St. Joe Minerals Corp. – Viburnum Site
Iron County, Missouri

1.0 INTRODUCTION

This Preliminary Assessment / Site Inspection (PA/SI) Report summarizes the activities and sampling results conducted at the St. Joe Minerals Corp. - Viburnum Site (the "Site") pursuant to an Administrative Order on Consent, US Environmental Protection Agency (EPA) Docket No. CERCLA-07-2005-0339, effective date September 29, 2005 (referred herein as the PA/SI AOC). This PA/SI Report has been prepared by NewFields on behalf of The Doe Run Resources Corporation doing business as The Doe Run Company (referred to in this report as Doe Run) and is a required deliverable listed in the PA/SI AOC, Section VIII, Paragraph 24.

The Site is defined in section 7(p) of the PA/SI AOC and is graphically depicted on Exhibit A of the Statement of Work (Appendix B of the PA/SI AOC), included as Figure 1. The Site is located in southeastern Missouri, approximately 90 miles southwest of St. Louis. The Site consists of residential properties and child high use areas located, as defined by the PA/SI AOC paragraph 7(p), *"(1) within the City of Viburnum, adjacent to the City of Viburnum or within the cross-hatched area on the map attached as Appendix A to this Order* [Figure 1]*; (2) adjacent to and within 200 feet of either edge of the haul roads from the City of Viburnum to the Viburnum No. 27, No. 29 and Casteel mines; (3) within 1000 feet of the head frames of Viburnum No. 27, No. 29 and Casteel mines; and (4) within the area within 1000 feet from the edge of all Doe Run and St. Joe Minerals-Viburnum mine waste disposal areas."* The Site is located in what is commonly known as the New Lead Belt. The New Lead Belt began producing lead in the early 1960s around Viburnum, Missouri and continues production to this day. Ore from the mines is crushed and milled to form lead concentrate. The lead concentrate is shipped by rail and/or truck to various smelters where it is further processed into lead metal.

The objective of the PA/SI was to identify and characterize all lead-contaminated residential properties and child high use areas within the Site.

2.0 PROGRAM ACTIVITIES

In accordance with the *Work Plan for Removal Preliminary Assessment/Site Inspection* (NewFields 2005), the PA/SI activities included:

- Sampling access
- Soil sampling

- Reporting soil sampling results to homeowners and tenant residents
- Health education program and risk reduction.

The following sections describe these activities.

2.1 Sampling Access

Doe Run used their "best efforts", as defined in Paragraph 29 of the PA/SI AOC, to obtain access for sampling. On February 9, 2006, Doe Run mailed sampling access agreements to all houses within the Site addressed to "Occupant". Signed access agreements were received as early as the next day, February 10, 2006.

Door-to-door canvassing began on February 27, 2006 to acquire sampling access from homeowners where access had yet to be obtained. If no one was home when initial contact was attempted, a copy of the original mailing was left. The letter contained a name and local telephone number to call regarding sampling. Two follow-up contact attempts, if needed, were made during weekday evening hours (6-8 pm) with additional follow-up contact attempts made during the day (prior to 6 pm). A contact log was used to record the address and owner or resident (if different from owner and if given) and each contact attempt, date, means of attempted contact (letter, visit or telephone), and outcome. During the initial visit and any subsequent visits, evidence of children in residence was made on the contact log, as well as asking the owners/residents whether children less than 7 years of age lived at the residence.

Access was attempted at a total of 315 homes. All of these residences were located within the "Viburnum Residential Sampling Area" portion of the Site. No residential properties or child high use areas were identified in the buffer zones around haul roads, head frames, or mine wastes that were not already included in the Residential Sampling Area.

If field personnel were unable to make contact with a property owner after three separate attempts (a minimum of two attempts were made during the weekday evening hours) or a property owner refused sampling, a "best effort" letter requesting sampling access was sent by certified mail. Best effort letters were sent to 15 homeowners (see Table 1). Five of the 15 properties were sent best effort letters due to lack of response to all contact attempts. One homeowner, who received a best effort letter, provided access, and sampling was performed at the yard. A copy of all documentation of the access efforts for the 14 properties where access could not be obtained was provided to EPA on April 11, 2006. Doe Run attempted to deliver by hand any returned best effort letters.

Table 1 Properties that Refused Yard Soil Sampling

Physical Address	Yard ID	Date of Refusal or No Response*	Date of Best Effort Letter	Response to Best Effort Letter
	RR06004	3/7/06	3/29/06	Signed for letter; no response
	RR06002	3/7/06	3/29/06	Not claimed; letter returned by USPS
	RR06011	3/27/06*	3/29/06	Not claimed; letter returned by USPS
	VS06301 (RR06003)	3/6/06	3/29/06	Provided access on 4/4/06, and yard was sampled on 4/10/06
	RR06012	3/27/06*	3/29/06	USPS could not deliver; returned
	RR06013	3/27/06*	3/29/06	Not claimed; letter returned by USPS
	RR06014	3/27/06*	3/29/06	Signed for letter; no response
	RR06015	4/5/06*	4/11/06	Signed for letter; no response
	RR06001	2/2/06	3/29/06	Signed for letter; no response
	RR06010	3/20/06	3/29/06	Signed for letter; no response
	RR06005	3/16/06	3/29/06	Cluster of houses and trailers owned by one homeowner. Owner refused to give mailing address, letters were mailed to "general delivery", and letters returned.
	RR06006	3/16/06	3/29/06	
	RR06007	3/16/06	3/29/06	
	RR06008	3/16/06	3/29/06	
	RR06009	3/16/06	3/29/06	

Notes:

* No response date is typically the date of the third contact attempt.

At the end of the sampling period (April 11, 2006), 96 percent of all residential yards and 100 percent of all child high use areas were sampled. Of the 301 sampled yards, approximately 41 percent of the homeowners provided access via the access letter from the initial mailing. Approximately 36 percent of the homeowners provided access during the door-to-door program, and another 23 percent provided access via a phone conversation or message. Approximately 1 percent of the homeowners returned the access letter after an unsuccessful door-to-door or phone call, where a message was left.

2.2 Soil Sampling

Yard soil sampling was designed and conducted in accordance with the Work Plan with the intent of locating the true mean lead concentration of sampled residential soil, consistent with EPA's Superfund Lead-Contaminated Residential Sites Handbook (EPA 2003). Each yard was divided into four quadrants and a drip zone. Other areas of the yard, if unique in that it is used for a special purpose (e.g., driveways or vegetable gardens) or was a child play area, were sampled separately to assess any areas of the

yard that might be potential hot spots. A composite sample of five aliquots for yard quadrant samples and three to five aliquots for other samples were collected to represent the yard area. During the sampling access process, each residence was surveyed using a Global Positioning System (GPS) at the center of the front yard's property boundary and the yard's GPS coordinates were entered into the project's database. Figure 2 presents the location of all residential yards (sampled and refused) and child high use areas. Table A-1 of Appendix A presents a list of all residential yards and child high use areas identified and the property ID number, as well as the GPS coordinates. All samples were identified using the property ID number and a sample location identifier (see Work Plan for sample location IDs).

Sampling priority was given to any residence where EPA or a State or county agency identified a child under 72 months of age with elevated blood lead (EBL) levels in residence. One property was identified, prior to Work Plan approval, by the Iron County Health Department as potentially having an EBL child in residence, based upon a "finger-stick" blood test. The yard was sampled on November 30, 2005 on an expedited schedule. The parents later had all their children's blood lead levels re-checked in January 2006 by venous testing and the resulting blood lead levels did not confirm that any of the children were EBL.

All other yards were sampled between March 12 and April 11, 2006. All composite samples for each yard quadrant or yard area were analyzed separately by a Niton XLt 795 x-ray fluorescence spectrometer (XRF). Sampling conditions were very wet; therefore, all samples were air dried to approximately 20 percent or less moisture content prior to XRF analysis. Table A-2 of Appendix A presents all the lead concentrations for the 301 residential yards. Table A-3 presents the lead concentrations for samples collected at child high use areas.

Ten (10) percent of the samples were analyzed by XRF and by Severn Trent Laboratory – North Canton, Illinois by EPA SW-846 Method 6010B. These sample pairs were used to assess the replication of XRF analysis by fixed laboratory analysis. Figure B-1 of Appendix B presents the correlation curve between the XRF lead concentrations and the fixed laboratory lead concentrations, and Table B-1 presents the results for the sample pairs. The correlation of the XRF to laboratory analysis was high, with an R^2 of 0.98.

Appendix C presents the data quality assessment report for the XRF and laboratory data. Eight (8) sample pairs were not included in the correlation curve (as noted with an asterisk in Table B-1). The first two samples not used in the correlation curve are believed to have been misidentified (identified backwards or switched) by the laboratory, but the sample identity could not be confirmed as the sample container had been disposed of by the time the mix up was realized. Extra sample was still available in the field office for both of these samples; so field personnel reanalyzed the extra sample, which confirmed the concentrations of the original XRF results. The laboratory results

were then rejected, as they were assessed to be not representative of the sample they were marked or labeled. Six (6) other sample pairs were driveway samples which were assessed to highly heterogeneous. Additional analysis by the XRF on remaining sample at the field office confirmed the precision of XRF ability to reproduce the XRF lead concentrations of these samples. The laboratory did not have enough sample volume to reanalyze the samples, so it was determined that the laboratory analysis and the XRF analysis had identified the heterogeneity of the driveway samples. These driveway samples are believed to be mine waste materials so their heterogeneity was not unexpected.

2.3 Reporting Soil Sampling Results to Homeowners and Tenant Residents

NewFields provided the results of XRF sampling to owners and residents in a "Sampling Results Letter". The EPA-approved education materials (Appendix D) accompanied the letters. These letters were mailed within 30 days from the sampling date. Copies of the letters and the accompanying sample results were sent to EPA.

Summary of sample result mailings is as follows.

- Results for 131 yards sampled on March 12, 13, 15, 16, and 22, 2006 were sent to homeowners on April 10, 2006.
- Results for 81 yards sampled on March 23, 24, 25, 27, 28, 29, and 30, 2006 were sent to homeowners on April 20, 2006.
- Results for 91 yards sampled on March 31 and April 2, 5, 7, 8, 10, and 11, 2006 were sent to homeowners on April 24, 2006.
- Results for the child high use areas sampled on April 10 and 11, 2006 were sent to city and school officials on April 24, 2006.
- Copies of the results for 78 yards were sent to the renter/tenant residents on April 28, 2006.

Doe Run and NewFields received many telephone calls from owners and tenants regarding the sampling results letters. Primarily all the phone calls were asking what the results meant and what might be the future action, if any, for the soil within the yard. Doe Run sent a second mailing to the homeowners on May 26, 2006 to assure the homeowners that the results were being reviewed and what might likely happen in the future in regard to action at the yard, if appropriate. Three different letters were sent as follows (templates of each letter are included in Appendix D).

- For yards where at least one sample was greater than or equal to 1,200 ppm lead, the homeowner was informed that "*Based upon standards used by USEPA at other similar sites in this area, these "yellow" areas* [greater than or equal to 1,200 ppm lead] *should be addressed in an early action*" and that *"Upon completion of further evaluation required by the USEPA, additional action concerning these areas* [between 400 and 1,200 ppm lead] *will likely be recommended in the future."*

- For yards where no sample was greater than or equal to 1,200 ppm lead but at least one sample was greater than or equal to 400 ppm lead, the homeowner was informed that *"At this time, as per the practices followed by USEPA at similar sites in this area, there will be no immediate soil removal action taken in your yard. However, upon completion of further evaluation required by the USEPA, additional action will likely be recommended in the future."*

- For yards where all samples were less than 400 ppm lead, the homeowner was informed that *"Based upon the practices followed by USEPA at other similar sites in this area, no further action will be required in your yard."*

Figure 3 presents the distribution of the three groups of yards. Additionally the child high use areas are also identified separately but by the three groupings.

2.4 Health Education Program and Risk Reduction.

Each homeowner and/or current resident of the sampled yards received a package of EPA-approved educational materials (Appendix D). These materials accompanied the Sampling Results Letter. The EPA-approved educational materials were also sent to any homeowner that refused sampling.

Household vacuum cleaners equipped with high efficiency particulate arresting (HEPA) filters were offered to each resident where yard soils exceed 1,200 ppm lead in any yard quadrant sampled as specified in the PA/SI AOC, as well as voluntarily where yards had any hot spots with lead concentrations exceeding 1,200 ppm (e.g., driveways, play areas, or drip zones). The HEPA filters are capable of removing particles of 0.3 microns or greater from air at 99.97% efficiency or greater. The vacuum cleaners were provided at a community meeting on June 8, 2006, where a representative of the supplier demonstrated how to use the vacuum cleaner. Community participation was not as great at the meeting as anticipated based on sampling access and public interest. Therefore, non-participating owners were called directly to set up a time and place to deliver the vacuum (the homeowner was offered delivery or pick up). Vacuum cleaner delivery continues as of the date of this report.

3.0 SAMPLING RESULTS DISCUSSION

Of the 301 yards sampled, 27 percent or 82 yards did not contain lead concentrations greater than 400 ppm. An additional 32 percent or 96 yards had lead concentrations greater than 400 ppm **only** in identified potential hot spots (e.g., driveways, drip zones, etc). Table 2 presents a brief summary of sample results.

Table 2 Summary of Lead Concentrations in Yard Samples

Area of the Yard	Total Number of Yards	Number of Yards with the Maximum Lead Concentration*		
		Less than 400 ppm	Less than 1,200 ppm but greater than 400 ppm	Greater than 1,200 ppm
Yard Quadrants	301	178 (59%)**	99 (33%)	24 (8%)
Hot Spot	301	101 (34%)	132 (44%)	68 (23%)
Driveways or Graveled areas	138	58 (42%)	36 (26%)	44 (32%)
Drip Zones	301	123 (41%)	145(48%)	33 (11%)
Gardens	53	53 (100%)	0	0
Play Areas	79	74 (94%)	5 (6%)	0

Notes:

* Maximum Lead Concentration indicates that there may be more than one sample in the yard that fits in this category. For example, there are typically four yard quadrant samples. The maximum concentration of these samples is used to classify the yard.

** The percentage is based on the number of yards that have the area identified.

Soil lead concentrations above 1,200 ppm were found in yard quadrants and in identified areas of the yard (potential hot spots like driveways and gravel areas, drip zones and play areas). Distribution of the elevated lead concentration indicates that the lead tends to be localized within the yards. Approximately 23 percent of yards had potential hot spots with soil lead concentrations above 1,200 ppm whereas only 8 percent of yards had one or more yard quadrants with a soil lead concentration greater than 1,200 ppm. Using 400 ppm lead as the comparison cut off, 66 percent of the yards had potential hot spots greater than 400 ppm and 41 percent of the yards had at least one yard quadrant greater than 400 ppm. Table 3 demonstrates where a yard did have an elevated lead yard quadrant (using either 400 ppm or 1,200 ppm), that quadrant tended to be unique to that yard rather than the whole yard having elevated soil concentrations. The five yards that had all four quadrants affected appear to contain visible gravel observed by the sampling teams.

Table 3 Yard Comparison of Number of Yard Quadrants with Elevated Lead Concentrations

Number of Yard Quadrants greater than or equal to 400 ppm lead	Number of Yards
0	178
1	77
2	27
3	14
4	5
Number of Yard Quadrants greater than or equal to 1,200 ppm lead	**Number of Yards**
0	277
1	22
2	1
3	0
4	1

Examination of the hot spots indicate that driveways and graveled areas used for parking or pathways and drip zones tended to contain elevated lead concentrations rather than gardens and identified child play areas, with the exception of four samples collected under swing sets and one sample under a fort. The five samples were greater than 400 ppm but less than 1,200 ppm and gravel was observed in some of the samples. Approximately 32 percent of the gravel driveways were greater than 1,200 ppm and additional 25 percent were measured between 1,200 and 400 ppm lead. Approximately 11 percent of the drip zone samples were greater than or equal to 1,200 ppm lead, with an additional 48 percent between 1,200 and 400 ppm lead.

A high visual correlation appears to exist between quadrants that contain driveways (gravel or paved) and the highest quadrant lead concentration in the yard. Approximately 57% of the yards for which the driveway could be identified within a quadrant (some paved driveways were not always noted in the early site sketches), the quadrant containing the driveway had the highest lead concentration.

Due to this correlation, it was suspected that the elevated concentrations in the yard quadrant containing the gravel driveway, or which had previously contained a gravel driveway, might be due to gravel from the driveway eroding into the yard. Therefore, it was suspected that the elevated concentrations could be isolated to the portion of the yard nearest the driveway (within 3 to 5 feet) and not spread throughout the full yard quadrant.

One yard within the Site presented an opportunity to test the above theory. The house and yard identified as VS06172 (22 Spruce St) was in the process of a property transfer and the lending bank would not allow the transaction to go through given that it was likely a removal action would be required at the property (the driveway sample contained 5,442 ppm lead). Therefore, Doe Run decided to expedite a removal action for the yard. Prior to soil removal, Doe Run resampled any portion of the yard that was above 400 ppm lead. The yard quadrant (front left) that contained the driveway contained 434 ppm lead according to the initial sampling. The portion of the front left quadrant to the left of the driveway (FLL; see Figure 4) was resampled with all aliquots collected within 1 to 1.5 feet from the driveway and was found to contain 1,800 ppm lead. The portion of the front left quadrant to the right of the driveway (FLR) was also resampled with no aliquots collected within 5 feet of the driveway and was found to contain only 296 ppm lead. This sample, collected away from the driveway, was found to be more consistent with the rest of the yard, thus supporting the theory that the elevated lead within the quadrant containing a driveway was limited to the area near the driveway.

The Abney Trailer Court appears to be either the exception to this rule or the prime example. Most of the front yards in the Trailer Court are used for parking and therefore are typically mostly gravel and were identified by the sampling teams as driveways rather than yard quadrants. The rest of the yard had high portions of this gravel visible. Therefore, most of the yards and driveways in the Trailer Court were above 400 ppm and many samples above 1,200 ppm.

The VS06172 yard also allowed Doe Run to test a second theory regarding the Site's drip zone samples. Most houses within the Site contained gutters and downspouts. The aliquots of the drip zone samples were collected at the downspouts, where available, and thus would be more characteristic of a source coming from the roof of the house rather than the sides of the house, such as lead based paint. Some anecdotal comments from the field sampling teams indicated that roofing granules are visible. The theory was that the source of the elevated lead concentrations was the roofing granules used in the asphalt shingles, and if that was the case, the elevated lead concentrations would typically be isolated to the downspout outfall. Therefore, prior to yard soil removal at VS06172, individual grab samples were collected from each of the four downspouts and then a second drip zone sample was collected as a composite sample from aliquots of soil between the downspouts. As shown on table in Figure 4, the downspout samples were distinctly elevated relative to the drip zone sample.

The sampling and the resampling at VS06172 indicate the sources of elevated lead in the yards within the City of Viburnum are typically isolated driveways and downspout outfalls. Where elevated lead concentrations are found in a yard quadrant, it has been shown that the distribution of the lead can be further characterized. This additional characterization should be conducted prior to any soil removal action to limit the impact to the yard and homeowner.

The sampling results also indicate that time-critical removal actions at this Site should be structured differently from time-critical removals conducted at other sites in EPA Region VII. First, at this Site the yard soil samples greater than 400 ppm lead are generally at the lower range of lead levels and, therefore, appear to be amenable to phosphate treatment. In light of statements made by EPA during public meetings in the City of Viburnum, that phosphate amendment may be a viable treatment to render the yards safe, there is some public expectation that phosphate amendment will be used in this area. Consequently, the non-time critical portions of the yards should be eligible for phosphate treatment and not be included in time-critical removals.

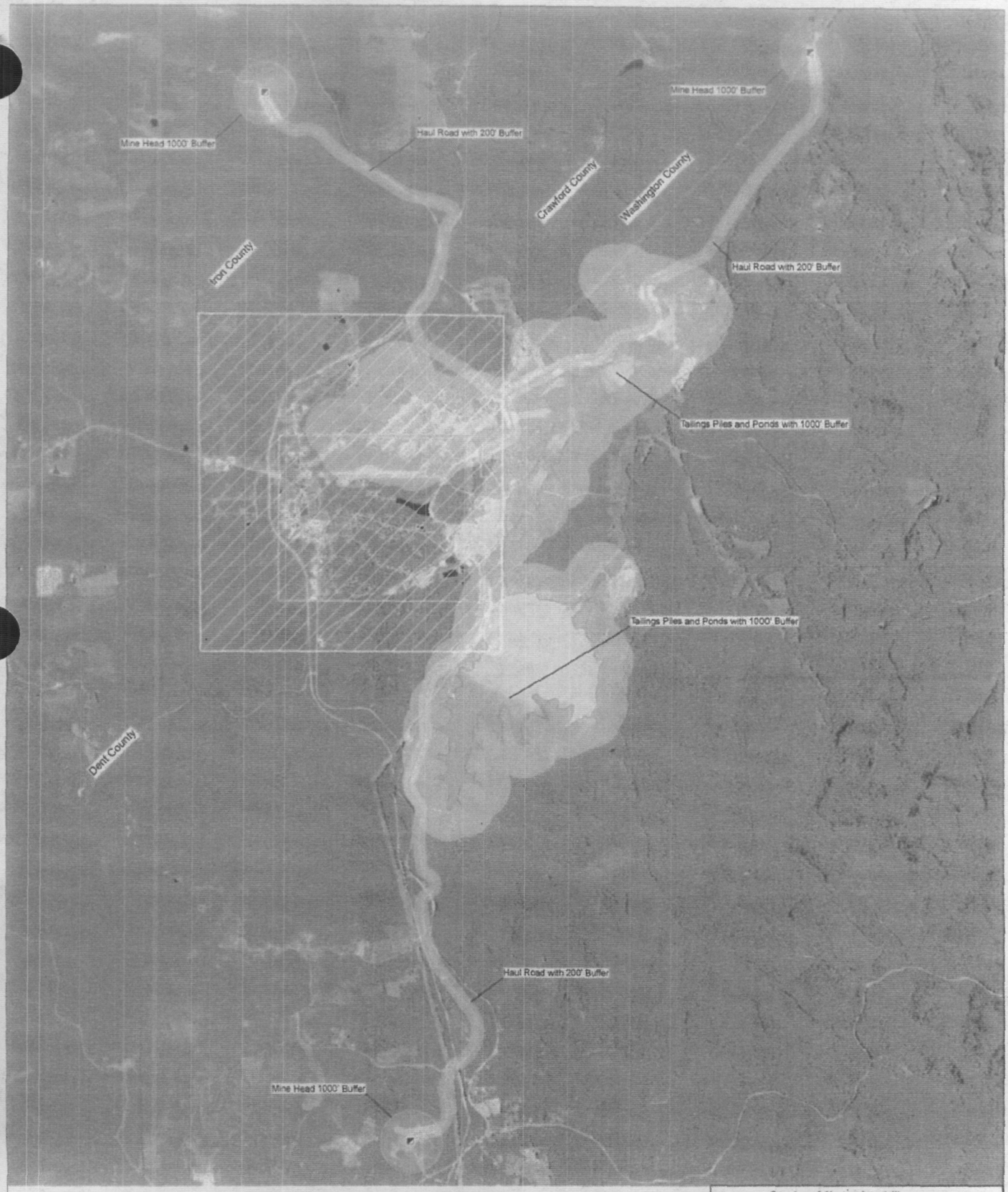
Second, years of experience in attempting to conduct soil remediation in central Missouri has shown that a primary reason for parties refusing to allow any remediation is their reluctance to have well-cared for and mature yards excavated and replaced with new soil that is seeded. The possibility of phosphate treatment may significantly improve the number of acceptances to soil remediation and result in a positive public health impact to the community. Further, because the great majority of the time-critical removals are gravel plus some minimal yard soils adjacent to gravel, removal of the gravels alone (which can be accomplished quickly and with minor inconvenience to the residents) during the time-critical action might increase the number of acceptances of the time-critical removal. Requiring that other parts of the yard with lower levels of contamination be excavated and replaced with new soil might reduce the number of acceptances. Consequently, limiting the time-critical removals to just those areas >1,200 ppm may actually result in improved public health.

Third, the rationale for including yard quadrants between 400 and 1,200 ppm lead in the time-critical removal action given at other sites is not appropriate for this site. The sample results at this site indicate that very few yards would have to be dug up and receive soil replacement if yard soil quadrants between 400 and 1,200 ppm lead were not included. The one rationale given in the past at other sites for remediating all >400 ppm lead quadrants when at least one >1,200 ppm lead quadrant was in the same yard, was that this would avoid having to return to the same yard and dig up the lawn twice. While there may be a few yards at this Site that may require a whole yard soil quadrant to be removed, overall there would be little excavation of lawns if the soils between 400 and 1,200 ppm lead were not included in the time-critical action. Because the gravel removals can be done quickly and with little inconvenience to the residents, addressing the yard soils between 400 and 1,00 ppm lead after the appropriate remedy was selected for such areas ensures that the remedy that is least disruptive to the residents is selected and implemented.

At other sites with more extensive yard soil contamination, EPA has previously required that yard quadrants between 400 and 1,200 ppm lead be removed with the >1,200 ppm lead yard quadrants, the sampling at this site indicates that such is not required and

implementation of this requirement might actually reduce the local acceptance of the program.

FIGURES



Legend

- Mine Head Frame
- Proposed Residential Sampling Area
- Viburnum City Limit
- County Line

N

0 2,000 4,000

Feet

Source: Crawford County, Dent County, Iron County, and Washington County, MO DOQ Tileset, 2003 FSA Imagery

St. Joe Minerals - Viburnum
Viburnum, Missouri

Figure 1
Proposed Sampling Areas

Tetra Tech EM Inc.

Legend

Yard Type

- Residential Yard - Sampled
- Residential Yard - Refused
- Child High Use Area (CHUA)

Figure 2
Location of Yards or
Child High Use Areas

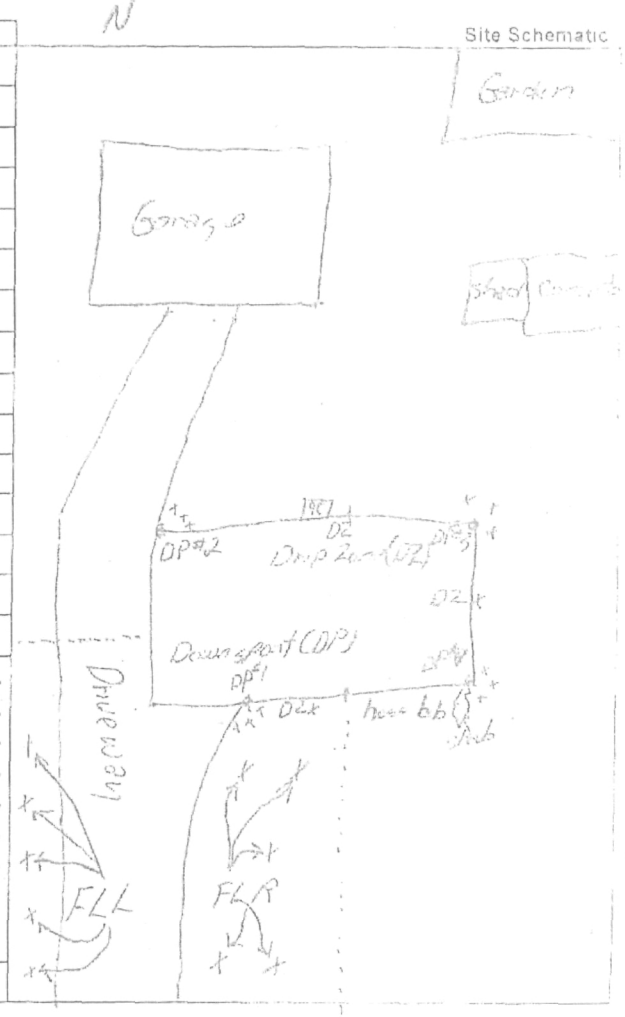
Figure 3
Yards coded by Letter Groups

Sample ID	Sample Description	Sample Result
VS06172FLL	Front Left Left	1800 ppm
VS06172FLR	Front Left Right	296 ppm
VS06172DZ	Drip Zone	321 ppm
VS06172DP#1	Downspout #1	2100 ppm
VS06172DP#2	Downspout #2	665 ppm
VS06172DP#3	Downspout #3	525 ppm
VS06172DP#4	Downspout #4	1390 ppm

Notes:

FLL aliquots taken in area 12"to 18" inside drip DW in FLL
3 aliquots taken approx 12" from each downspout for each DP sample
DZ sample 1 aliquot from each from south, east and north sides of house between downspouts. Driveway runs against west side of house, no aliquot taken west side for DZ
FLR: 5 aliquots >5' from driveway

Sampling Team Initials



Original Sample ID	Sample Location	Result (ppm Lead)
VS06172-FL	Front Left Yard Quadrant	434
VS06172-FR	Front Right Yard Quadrant	169
VS06172-BL	Back Left Yard Quadrant	166
VS06172-BR	Back Right Yard Quadrant	154
VS06172-DW	Driveway	5,443
VS06172-DZ	Drip Zone	2,673
VS06172-GD	Garden	213

Figure 4
Resampling Yard
VS06172

APPENDIX A

SAMPLING RESULTS

Table A-1 St. Joe Minerals - Viburnum Site, Residential Yard Sampling

Yard ID	Sample Date	Address	GPS Longitude	GPS Latitude
VS06002	3/13/06		37.70898	-91.13007
VS06097	3/13/06		37.70880	-91.12993
VS06129	3/13/06		37.70875	-91.12980
VS06003	3/12/06		37.70847	-91.12937
VS06004	3/12/06		37.70842	-91.12945
VS06199	3/23/06		37.70841	-91.12890
VS06005	3/12/06		37.70842	-91.12822
VS06131	3/12/06		37.70833	-91.12867
VS06132	3/12/06		37.70876	-91.12789
VS06098	3/12/06		37.70891	-91.12754
VS06100	3/12/06		37.70923	-91.12704
VS06193	3/12/06		37.70851	-91.12813
VS06099	3/12/06		37.70871	-91.12765
VS06007	3/12/06		37.70895	-91.12716
VS06133	3/12/06		37.70880	-91.12665
VS06134	3/12/06		37.71521	-91.12580
VS06135	3/12/06		37.71524	-91.12557
VS06301	4/10/06		37.71530	-91.12528
VS06008	3/12/06		37.71519	-91.12509
VS06127	3/12/06		37.71529	-91.12488
VS06128	3/12/06		37.71521	-91.12479
VS06009	3/12/06		37.71521	-91.12447
VS06010	3/12/06		37.71512	-91.12429
VS06136	3/12/06		37.71524	-91.12384
VS06137	3/12/06		37.71517	-91.12359
VS06011	3/12/06		37.71496	-91.12358
VS06012	3/12/06		37.71491	-91.12340
VS06101	3/12/06		37.71453	-91.12340
VS06087	3/12/06		37.71430	-91.12321
VS06102	3/12/06		37.71333	-91.12314
VS06103	3/12/06		37.71308	-91.12304

Table A-1 St. Joe Minerals - Viburnum Site, Residential Yard Sampling

Yard ID	Sample Date Address	GPS Longitude	GPS Latitude
VS06138	3/12/06	37.71312	-91.12294
VS06303	4/10/06	37.71276	-91.12289
VS06104	3/12/06	37.71271	-91.12277
VS06197	3/23/06	37.71233	-91.12258
VS06105	3/12/06	37.71234	-91.12252
VS06013	3/12/06	37.71218	-91.12230
VS06014	3/12/06	37.71207	-91.12234
VS06106	3/12/06	37.71204	-91.12217
VS06107	3/12/06	37.71188	-91.12174
VS06139	3/13/06	37.71685	-91.14474
VS06140	3/13/06	37.71609	-91.14467
VS06108	3/13/06	37.71563	-91.14477
VS06141	3/23/06	37.71351	-91.13211
VS06194	3/23/06	37.71553	-91.12741
VS06015	3/13/06	37.71214	-91.13215
VS06088	3/13/06	37.71226	-91.13204
VS06142	3/13/06	37.71262	-91.13200
VS06016	3/13/06	37.71311	-91.13211
VS06017	3/13/06	37.71332	-91.13169
VS06018	3/23/06	37.71360	-91.13163
VS06143	3/13/06	37.71365	-91.13139
VS06144	3/13/06	37.71363	-91.13109
VS06145	3/13/06	37.71371	-91.13115
VS06146	3/13/06	37.71383	-91.13094
VS06019	3/13/06	37.71353	-91.13049
VS06020	3/13/06	37.71363	-91.13056
VS06109	3/13/06	37.71356	-91.13025
VS06021	3/13/06	37.71359	-91.13033
VS06202	3/13/06	37.71355	-91.13003
VS06147	3/13/06	37.71353	-91.12999
VS06148	3/13/06	37.71350	-91.12962

Table A-1 St. Joe Minerals - Viburnum Site, Residential Yard Sampling

Yard ID	Sample Date Address	GPS Longitude	GPS Latitude
VS06023	3/16/06	37.71703	-91.14202
VS06022	3/16/06	37.71704	-91.14414
VS06024	3/23/06	37.71575	-91.13113
VS06025	3/23/06	37.71600	-91.13101
VS06026	3/29/06	37.71612	-91.13106
VS06027	3/29/06	37.71613	-91.13121
VS06149	3/29/06	37.71583	-91.13129
VS06028	3/16/06	37.71187	-91.13249
VS06150	3/16/06	37.71181	-91.13195
VS06029	3/16/06	37.71188	-91.13170
VS06030	3/16/06	37.71181	-91.13167
VS06151	3/16/06	37.71178	-91.13145
VS06031	3/16/06	37.71185	-91.13116
VS06032	3/16/06	37.71174	-91.13102
VS06152	3/16/06	37.71176	-91.13096
VS06033	3/16/06	37.71160	-91.13049
VS06153	3/29/06	37.71179	-91.13044
VS05001	11/30/05	37.71158	-91.13019
VS06154	3/29/06	37.71137	-91.12963
VS06034	3/29/06	37.71156	-91.12977
VS06035	3/29/06	37.71132	-91.12949
VS06195	3/23/06	37.70863	-91.13145
VS06159	3/23/06	37.70910	-91.13160
VS06110	3/23/06	37.70929	-91.13181
VS06200	4/5/06	37.70950	-91.13158
VS06201	4/5/06	37.70941	-91.13168
VS06156	3/23/06	37.70986	-91.13193
VS06279	4/5/06	37.70999	-91.13197
VS06036	3/23/06	37.70987	-91.13186
VS06124	3/23/06	37.71036	-91.13193
VS06037	3/23/06	37.71072	-91.13220

Table A-1 St. Joe Minerals - Viburnum Site, Residential Yard Sampling

Yard ID	Sample Date	Address	GPS Longitude	GPS Latitude
VS06038	3/23/06		37.71006	-91.13122
VS06039	3/23/06		37.71009	-91.13119
VS06040	3/16/06		37.71729	-91.14045
VS06111	3/16/06		37.71659	-91.14046
VS06041	3/16/06		37.71564	-91.14029
VS06042	3/15/06		37.71553	-91.13264
VS06157	3/15/06		37.71554	-91.13229
VS06043	3/15/06		37.71551	-91.13147
VS06044	3/15/06		37.71546	-91.13111
VS06158	3/16/06		37.71544	-91.13077
VS06155	3/16/06		37.71550	-91.13050
VS06196	3/16/06		37.71547	-91.13023
VS06160	3/16/06		37.71560	-91.13017
VS06161	3/16/06		37.71559	-91.12959
VS06006	3/16/06		37.71546	-91.12966
VS06162	3/16/06		37.71550	-91.12935
VS06045	3/16/06		37.71542	-91.12906
VS06046	3/16/06		37.71550	-91.12897
VS06302	4/7/06		37.71536	-91.12879
VS06047	3/16/06		37.71550	-91.12874
VS06163	3/16/06		37.71537	-91.12850
VS06289	3/29/06		37.71546	-91.12835
VS06048	3/16/06		37.71532	-91.12816
VS06164	3/23/06		37.71535	-91.12783
VS06049	3/16/06		37.71526	-91.12788
VS06165	3/16/06		37.71522	-91.12769
VS06166	3/16/06		37.71517	-91.12715
VS06050	3/16/06		37.71513	-91.12727
VS06051	3/16/06		37.71507	-91.12684
VS06298	3/23/06		37.71528	-91.12698
VS06167	3/15/06		37.71489	-91.12645

Table A-1 St. Joe Minerals - Viburnum Site, Residential Yard Sampling

Yard ID	Sample Date	Address	GPS Longitude	GPS Latitude
VS06300	3/29/06		37.71491	-91.12645
VS06168A	3/15/06		37.71480	-91.12649
VS06052	3/15/06		37.71460	-91.12599
VS06053	3/15/06		37.71453	-91.12566
VS06125	3/15/06		37.71442	-91.12543
VS06168B	3/15/06		37.71434	-91.12497
VS06112	3/15/06		37.71420	-91.12443
VS06169	3/15/06		37.71415	-91.12421
VS06170	3/15/06		37.71411	-91.12383
VS06171	3/16/06		37.71463	-91.13199
VS06054	3/16/06		37.71459	-91.13167
VS06113	3/16/06		37.71475	-91.13150
VS06294	3/30/06		37.71459	-91.13134
VS06055	3/16/06		37.71460	-91.13096
VS06114	3/16/06		37.71475	-91.13111
VS06115	3/16/06		37.71460	-91.13054
VS06074	3/16/06		37.71460	-91.13029
VS06056	3/22/06		37.71451	-91.13032
VS06172	3/22/06		37.71462	-91.13009
VS06280	3/30/06		37.71455	-91.13003
VS06290	3/30/06		37.71462	-91.12977
VS06057	3/22/06		37.71448	-91.12958
VS06058	3/22/06		37.71456	-91.12914
VS06173	3/22/06		37.71448	-91.12889
VS06116	3/22/06		37.71454	-91.12862
VS06059	3/22/06		37.71445	-91.12854
VS06060	3/22/06		37.71472	-91.12797
VS06198	3/22/06		37.71434	-91.12791
VS06117	3/22/06		37.71434	-91.12775
VS06174	3/22/06		37.71426	-91.12743
VS06061	3/22/06		37.71401	-91.12691

Table A-1 St. Joe Minerals - Viburnum Site, Residential Yard Sampling

Yard ID	Sample Date	Address	GPS Longitude	GPS Latitude
VS06062	3/22/06		37.71383	-91.12672
VS06284	3/30/06		37.71389	-91.12652
VS06063	3/22/06		37.71375	-91.12638
VS06064	3/22/06		37.71373	-91.12624
VS06065	3/22/06		37.71363	-91.12615
VS06175	3/22/06		37.71363	-91.12584
VS06066	3/22/06		37.71354	-91.12589
VS06067	3/22/06		37.71335	-91.12506
VS06068	3/22/06		37.71326	-91.12527
VS06069	3/23/06		37.71333	-91.12481
VS06070	3/23/06		37.71324	-91.12488
VS06071	3/23/06		37.71322	-91.12441
VS06072	3/23/06		37.71341	-91.12409
VS06073	3/23/06		37.71378	-91.12352
VS06176	3/23/06		37.71393	-91.12337
VS06075	3/13/06		37.71565	-91.14064
VS06076	3/13/06		37.71562	-91.14141
VS06177	3/13/06		37.71580	-91.14202
VS06178	3/13/06		37.71576	-91.14234
VS06281	3/29/06		37.71574	-91.14390
VS06179	3/29/06		37.71381	-91.12955
VS06282	3/24/06		37.71370	-91.12963
VS06077	3/24/06		37.71295	-91.12996
VS06078	3/24/06		37.71331	-91.12928
VS06180	3/24/06		37.71315	-91.12928
VS06118	3/24/06		37.71314	-91.12895
VS06181	3/22/06		37.71314	-91.12905
VS06079	3/24/06		37.71301	-91.12864
VS06182	3/24/06		37.71295	-91.12866
VS06183	3/24/06		37.71290	-91.12839
VS06184	3/24/06		37.71286	-91.12839

Table A-1 St. Joe Minerals - Viburnum Site, Residential Yard Sampling

Yard ID	Sample Date	Address	GPS Longitude	GPS Latitude
VS06295	3/25/06		37.71280	-91.12813
VS06080	3/25/06		37.71263	-91.12815
VS06185	3/25/06		37.71268	-91.12796
VS06119	3/25/06		37.71242	-91.12786
VS06126	3/27/06		37.71247	-91.12774
VS06186	3/27/06		37.71223	-91.12763
VS06081	3/27/06		37.71233	-91.12763
VS06187	3/27/06		37.71209	-91.12754
VS06120	3/27/06		37.71206	-91.12735
VS06188	3/27/06		37.71178	-91.12720
VS06082	3/27/06		37.71175	-91.12733
VS06083	3/27/06		37.71156	-91.12697
VS06189	3/28/06		37.71142	-91.12703
VS06190	3/28/06		37.71127	-91.12687
VS06191	3/28/06		37.71109	-91.12665
VS06192	3/28/06		37.71123	-91.12656
VS06121	3/28/06		37.71102	-91.12629
VS06130	3/28/06		37.71092	-91.12613
VS06283	3/28/06		37.71095	-91.12598
VS06203	3/28/06		37.71086	-91.12563
VS06084	3/28/06		37.71075	-91.12532
VS06204	3/28/06		37.71063	-91.12455
VS06122	3/28/06		37.71067	-91.12423
VS06123	3/29/06		37.71048	-91.12408
VS06085	3/29/06		37.71038	-91.12376
VS06205	3/29/06		37.71043	-91.12367
VS06206	3/29/06		37.71031	-91.12347
VS06086	3/29/06		37.71021	-91.12320
VS06089	3/30/06		37.70847	-91.13255
VS06207	3/30/06		37.70861	-91.13261
VS06090	3/30/06		37.70848	-91.13226

Table A-1 St. Joe Minerals - Viburnum Site, Residential Yard Sampling

Yard ID	Sample Date Address	GPS Longitude	GPS Latitude
VS06091	3/30/06	37.70894	-91.13118
VS06208	3/30/06	37.70911	-91.13130
VS06092	4/5/06	37.70911	-91.13084
VS06093	4/5/06	37.70942	-91.12978
VS06094	4/5/06	37.70929	-91.13034
VS06095	4/5/06	37.70968	-91.12887
VS06209	4/11/06	37.70959	-91.12996
VS06096	4/5/06	37.70970	-91.12960
VS06210	4/11/06	37.71010	-91.12907
VS06291	4/5/06	37.71411	-91.13252
VS06211	4/11/06	37.70713	-91.13335
VS06212	4/10/06	37.72078	-91.13737
VS06292	4/11/06	37.71858	-91.13744
VS06213	4/11/06	37.71907	-91.13746
VS06214	4/11/06	37.71922	-91.13783
VS06215	4/10/06	37.71961	-91.13992
VS06216	4/11/06	37.71982	-91.13938
VS06299	4/10/06	37.72007	-91.14219
VS06217	4/10/06	37.72189	-91.14376
VS06218	4/10/06	37.72104	-91.14681
VS06219	4/10/06	37.71990	-91.13814
VS06220	4/10/06	37.72018	-91.13803
VS06221	4/10/06	37.72041	-91.13820
VS06222	4/11/06	37.71989	-91.13817
VS06223	4/10/06	37.72841	-91.13010
VS06224	3/31/06	37.72637	-91.13548
VS06225	3/31/06	37.72222	-91.13500
VS06226	4/5/06	37.72306	-91.13674
VS06229	3/31/06	37.72267	-91.13522
VS06227	4/2/06	37.72303	-91.13466
VS06228	3/31/06	37.72293	-91.13531

Table A-1 St. Joe Minerals - Viburnum Site, Residential Yard Sampling

Yard ID	Sample Date Address	GPS Longitude	GPS Latitude
VS06230	3/31/06	37.72407	-91.13545
VS06231	3/31/06	37.72631	-91.13548
VS06296	3/31/06	37.72640	-91.13446
VS06232	4/2/06	37.72561	-91.13451
VS06233	4/2/06	37.72704	-91.13423
VS06234	4/2/06	37.72728	-91.13338
VS06235	4/10/06	37.72680	-91.13264
VS06236	4/10/06	37.72741	-91.13164
VS06237	4/10/06	37.72826	-91.13113
VS06238	4/10/06	37.72765	-91.13093
VS06239	4/2/06	37.72917	-91.12911
VS06240	4/2/06	37.72672	-91.13402
VS06242	4/2/06	37.72933	-91.12860
VS06243	4/10/06	37.72494	-91.13667
VS06244	4/10/06	37.72461	-91.13648
VS06245	4/10/06	37.72603	-91.13788
VS06246	4/5/06	37.72401	-91.13646
VS06297	4/5/06	37.72398	-91.13667
VS06293	4/5/06	37.72417	-91.13703
VS06247	4/5/06	37.72301	-91.13627
VS06248	4/5/06	37.72307	-91.13626
VS06249	4/5/06	37.72301	-91.13641
VS06250	4/5/06	37.72306	-91.13694
VS06241	4/10/06	37.72198	-91.13513
VS06251	4/7/06	37.71488	-91.13715
VS06252	4/7/06	37.71465	-91.13716
VS06253	4/7/06	37.71440	-91.13716
VS06254	4/7/06	37.71454	-91.13703
VS06255	4/7/06	37.71436	-91.13683
VS06256	4/7/06	37.71459	-91.13688
VS06257	4/7/06	37.71482	-91.13691

Table A-1 St. Joe Minerals - Viburnum Site, Residential Yard Sampling

Yard ID	Sample Date Address	GPS Longitude	GPS Latitude
VS06258	4/11/06	37.71961	-91.13753
VS06259	4/7/06	37.71961	-91.13732
VS06260	4/11/06	37.71963	-91.13704
VS06261	4/11/06	37.71964	-91.13692
VS06262	4/8/06	37.71592	-91.13680
VS06263	4/8/06	37.71590	-91.13700
VS06264	4/8/06	37.71584	-91.13719
VS06265	4/8/06	37.71588	-91.13737
VS06266	4/8/06	37.71586	-91.13752
VS06267	4/8/06	37.71600	-91.13681
VS06268	4/8/06	37.71601	-91.13701
VS06269	4/7/06	37.71641	-91.13684
VS06270	4/7/06	37.71637	-91.13702
VS06271	4/7/06	37.71642	-91.13725
VS06272	4/7/06	37.71639	-91.13743
VS06273	4/7/06	37.71632	-91.13760
VS06274	4/7/06	37.71648	-91.13705
VS06275	4/7/06	37.71648	-91.13728
VS06276	4/8/06	37.71675	-91.13660
VS06277	4/10/06	37.71595	-91.13591
VS06278	4/11/06	37.70819	-91.13374
VS06285	4/10/06	37.72112	-91.13488
VS06286S	4/10/06	37.72027	-91.14461
VS06286N	4/10/06	37.72027	-91.14461
VS06287	4/11/06	37.71679	-91.12566
VS06288	4/11/06	37.71998	-91.13553

Table A-2 St. Joe Minerals - Viburnum Site, Lead (ppm) in Residential Yards, XRF Data

Yard ID	Front Left	Front Right	Back Left	Back Right	Drip Zone	Drive Way(s)		Gravel Areas or Paths	Rock Areas	Garden	Play Area(s)		Sand Box	Swing Set(s)	
VS05001	296	207	344	314	1,170	3,010	--	--	--	--	--	--	77	--	--
VS06002	237	146	185	197	365	--	--	--	--	--	--	--	--	--	--
VS06003	192	101	139	171	1,587	--	--	--	--	--	--	--	--	--	--
VS06004	118	93	197	188	381	--	--	--	--	--	--	--	--	--	--
VS06005	251	113	114	90	329	--	--	--	--	--	--	--	--	--	--
VS06006	137	360	144	127	1,015	2,639	--	--	--	161	--	--	--	--	--
VS06007	141	184	158	214	764	--	--	--	--	225	--	--	--	--	--
VS06008	193	284	201	432	521	--	--	--	--	--	243	--	--	--	--
VS06009	229	670	363	264	317	261	--	--	--	--	--	--	--	--	--
VS06010	286	238	306	231	1,205	--	--	--	--	--	244	--	--	245	--
VS06011	393	156	179	240	706	--	--	--	--	58	398	--	--	--	--
VS06012	999	223	241	325	623	--	--	--	--	22	--	--	--	--	--
VS06013	422	347	309	186	1,077	--	--	--	--	--	--	--	--	--	--
VS06014	550	531	384	403	477	--	--	--	--	--	--	--	--	--	--
VS06015	107	82	117	116	236	291	--	--	--	112	--	--	--	--	--
VS06016	118	120	170	121	282	--	--	--	--	--	133	--	--	--	--
VS06017	313	156	106	59	289	966	--	--	--	--	153	--	--	75	--
VS06018	192	216	148	98	252	--	--	--	--	--	--	--	--	--	--
VS06019	139	340	145	124	488	--	--	--	--	110	--	--	--	--	--
VS06020	387	141	158	86	305	--	--	--	--	122	--	--	--	175	--
VS06021	146	260	132	262	1,030	--	--	--	--	--	--	--	--	--	--
VS06022	78	67	61	67	145	--	--	--	--	--	--	--	--	--	--
VS06023	75	164	64	79	200	--	--	--	--	42	--	--	--	--	--
VS06024	1,117	349	170	425	628	--	--	--	--	--	--	--	--	--	--
VS06025	213	435	167	112	601	--	--	--	--	--	137	--	--	--	--
VS06026	192	479	199	108	885	--	--	--	--	--	--	--	--	--	--
VS06027	1,082	329	443	122	272	--	--	--	--	--	--	--	--	--	--
VS06028	146	402	198	114	220	--	--	--	--	--	--	--	--	--	--
VS06029	561	313	210	178	643	--	--	--	--	--	--	--	--	--	--
VS06030	368	469	186	208	397	22,713	--	--	--	--	--	--	--	--	--
VS06031	240	1,996	236	733	211	--	--	--	--	--	--	--	--	--	--

-- under one of the yard quarters indicates the quarter is paved or rocked; in any other category the area did not exist in the yard.

Table A-2 St. Joe Minerals - Viburnum Site, Lead (ppm) in Residential Yards, XRF Data

Yard ID	Front Left	Front Right	Back Left	Back Right	Drip Zone	Drive Way(s)		Gravel Areas or Paths	Rock Areas	Garden	Play Area(s)		Sand Box	Swing Set(s)	
VS06032	388	563	265	404	698	--	--	--	--	207	--	--	--	--	--
VS06033	234	572	196	280	419	--	--	--	--	128	--	--	--	140	--
VS06034	173	535	385	331	413	102	--	--	--	--	--	--	--	--	--
VS06035	309	334	422	281	466	1,007	--	--	--	--	310	--	--	--	--
VS06036	142	140	107	126	2,041	2,933	--	--	--	--	--	--	--	--	--
VS06037	254	122	183	132	310	122	--	--	--	--	149	--	--	--	--
VS06038	165	126	130	93	274	102	--	--	--	--	--	--	--	--	--
VS06039	184	238	152	278	395	--	--	--	--	--	--	--	--	109	--
VS06040	141	121	57	81	233	--	--	--	--	--	--	--	--	--	--
VS06041	135	203	160	114	582	848	--	--	--	--	--	--	--	--	--
VS06042	255	406	223	189	1,174	2,701	--	--	--	--	--	--	--	--	--
VS06043	180	387	144	346	710	--	--	--	--	121	--	--	--	--	--
VS06044	158	330	116	133	614	--	--	1,441	--	--	179	--	--	--	--
VS06045	396	145	430	165	519	73	--	--	--	352	--	--	--	--	--
VS06046	286	310	102	339	338	--	--	--	--	133	--	--	--	--	--
VS06047	386	646	292	133	602	--	--	--	--	--	--	--	--	144	--
VS06048	149	333	166	228	263	152	--	--	--	179	--	--	--	--	--
VS06049	224	347	171	121	382	--	--	--	--	--	--	--	--	--	--
VS06050	176	441	147	160	875	--	--	--	--	--	--	--	--	--	--
VS06051	301	384	186	187	1,255	1,098	--	--	--	132	--	--	--	--	--
VS06052	312	383	181	151	965	--	--	--	--	--	--	--	--	--	--
VS06053	208	152	157	148	629	--	--	--	--	--	117	--	--	--	--
VS06054	172	6,434	118	166	577	2,128	--	--	--	--	--	--	--	--	--
VS06055	297	1,251	192	133	472	--	--	--	--	93	--	--	--	--	--
VS06056	182	176	114	103	422	95	--	--	--	--	171	--	--	--	--
VS06057	143	226	124	96	208	1,046	--	--	--	--	--	--	--	--	--
VS06058	156	159	150	125	708	--	--	--	--	--	132	--	--	--	--
VS06059	509	169	629	191	244	--	--	--	--	--	--	--	--	--	--
VS06060	354	142	165	146	581	3,084	--	--	--	--	--	--	--	106	--
VS06061	192	147	1,715	404	409	457	--	--	--	--	--	--	--	--	--
VS06062	508	224	325	334	671	3,342	--	--	--	--	--	--	--	--	--

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Table A-2 St. Joe Minerals - Viburnum Site, Lead (ppm) in Residential Yards, XRF Data

Yard ID	Front Left	Front Right	Back Left	Back Right	Drip Zone	Drive Way(s)		Gravel Areas or Paths	Rock Areas	Garden	Play Area(s)		Sand Box	Swing Set(s)	
VS06063	166	139	192	212	336	175	--	--	--	--	--	--	--	--	--
VS06064	140	184	63	138	1,025	--	--	--	--	--	76	--	--	--	--
VS06065	135	369	139	146	356	--	--	--	--	55	--	--	--	--	--
VS06066	242	155	301	183	713	7,379	--	--	--	--	--	--	--	--	--
VS06067	235	258	2,700	255	827	--	--	--	--	--	--	--	--	179	--
VS06068	318	220	410	181	1,188	2,389	--	--	--	--	--	--	--	--	--
VS06069	652	329	532	533	1,048	1,278	--	--	--	--	--	--	--	--	--
VS06070	248	197	285	249	253	3,318	--	--	--	--	--	--	--	--	--
VS06071	214	135	315	185	497	--	--	--	--	231	--	--	--	--	--
VS06072	343	400	233	236	586	39	--	--	--	--	--	--	--	--	--
VS06073	376	268	337	372	1,358	--	--	--	--	--	--	--	--	--	--
VS06074	137	176	327	176	981	--	--	--	--	--	148	--	--	--	--
VS06075	212	305	91	95	266	152	--	--	--	--	135	--	--	130	--
VS06076	48	129	143	155	147	49	--	--	--	77	--	--	--	--	--
VS06077	1,005	250	502	717	1,093	662	--	--	--	--	--	--	--	912	--
VS06078	205	237	131	207	255	--	--	--	--	--	--	--	--	--	--
VS06079	267	179	157	169	525	439	--	--	--	--	--	--	--	146	--
VS06080	224	141	162	117	625	261	--	--	--	--	--	--	--	81	--
VS06081	224	126	486	181	566	1,076	--	--	--	--	--	--	--	--	--
VS06082	152	376	177	158	287	102	--	--	--	--	--	--	--	--	--
VS06083	161	167	134	129	686	--	--	--	--	--	--	--	--	--	--
VS06084	331	174	153	176	551	--	--	--	--	--	--	--	--	--	--
VS06085	592	278	323	318	1,896	--	--	--	--	--	--	--	--	--	--
VS06086	515	1,094	227	579	1,646	586	--	--	--	--	151	239	--	--	--
VS06087	366	772	296	326	5,446	--	--	--	--	168	--	--	--	--	--
VS06088	70	281	208	256	562	1,002	--	--	--	--	247	--	--	--	--
VS06089	417	186	160	118	409	187	--	--	--	--	--	--	--	--	--
VS06090	182	283	214	213	353	94	--	--	--	--	--	--	--	--	--
VS06091	74	110	56	61	94	--	--	--	--	--	--	--	--	--	--
VS06092	171	192	104	196	338	--	--	--	--	109	--	--	--	--	--
VS06093	200	194	219	232	553	--	--	--	--	--	--	--	--	--	--

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Table A-2 St. Joe Minerals - Viburnum Site, Lead (ppm) in Residential Yards, XRF Data

Yard ID	Front Left	Front Right	Back Left	Back Right	Drip Zone	Drive Way(s)		Gravel Areas or Paths	Rock Areas	Garden	Play Area(s)		Sand Box	Swing Set(s)	
VS06094	125	159	156	142	511	--	--	--	--	--	--	--	--	--	--
VS06095	798	176	438	222	1,232	8,989	--	--	--	131	--	--	--	--	--
VS06096	156	115	184	243	347	--	--	--	--	--	--	--	--	--	--
VS06097	126	123	176	135	153	--	--	--	--	--	--	--	--	--	--
VS06098	273	674	184	169	630	--	--	--	--	115	--	--	--	--	--
VS06099	151	244	227	141	457	861	136	--	264	135	--	--	--	262	--
VS06100	164	192	111	146	473	227	--	--	--	--	--	--	--	100	--
VS06101	271	358	298	334	796	--	--	--	--	--	--	--	--	784	--
VS06102	261	179	334	191	2,311	--	--	--	--	--	140	--	--	--	--
VS06103	144	297	217	174	688	--	--	--	--	151	--	--	--	--	--
VS06104	940	662	438	575	848	370	--	--	--	140	--	--	--	--	--
VS06105	302	640	298	415	1,685	--	--	--	--	--	--	--	--	--	--
VS06106	359	616	358	478	243	433	--	--	--	--	--	--	--	349	--
VS06107	526	405	849	608	1,033	--	--	--	--	--	695	--	--	--	--
VS06108	154	96	89	109	125	--	--	--	--	--	95	--	--	100	--
VS06109	156	11,238	133	374	672	--	--	--	--	--	--	--	--	--	--
VS06110	106	271	123	60	298	125	--	--	--	55	--	--	--	--	--
VS06111	105	84	110	102	281	--	--	--	--	82	--	--	--	--	--
VS06112	261	237	198	170	1,242	--	--	--	--	--	--	--	--	--	--
VS06113	178	273	288	128	699	--	--	--	--	--	--	--	--	--	--
VS06114	304	463	160	136	1,051	--	--	--	--	--	--	--	--	--	--
VS06115	889	241	212	150	342	--	--	--	--	--	--	--	--	193	--
VS06116	133	353	89	263	1,192	1,246	--	--	--	--	--	--	--	--	--
VS06117	296	327	141	96	211	--	--	--	--	--	--	--	--	--	--
VS06118	247	212	213	173	237	--	--	--	--	--	--	--	--	--	--
VS06119	150	205	249	182	350	--	--	--	--	--	--	--	--	--	--
VS06120	174	211	212	266	337	--	--	--	--	--	--	--	--	--	--
VS06121	218	132	148	152	114	--	--	--	--	--	--	--	--	--	--
VS06122	393	192	260	227	2,544	922	413	--	--	--	--	--	--	--	--
VS06123	275	324	270	194	1,198	11,711	1,333	--	--	--	--	--	--	--	--
VS06124	202	231	145	126	135	248	--	--	--	--	--	--	--	--	--

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Table A-2 St. Joe Minerals - Viburnum Site, Lead (ppm) in Residential Yards, XRF Data

Yard ID	Front Left	Front Right	Back Left	Back Right	Drip Zone	Drive Way(s)		Gravel Areas or Paths	Rock Areas	Garden	Play Area(s)		Sand Box	Swing Set(s)	
VS06125	165	109	142	113	584	--	--	--	--	--	--	--	--	--	--
VS06126	419	171	286	376	276	--	--	--	--	--	--	--	--	--	--
VS06127	525	203	149	144	224	--	--	--	--	--	--	--	--	--	--
VS06128	3,258	406	1,264	289	662	4,280	--	--	--	--	--	--	--	--	--
VS06129	310	222	144	107	279	--	--	--	--	--	160	--	--	--	--
VS06130	304	355	659	290	1,046	--	--	--	--	--	--	--	--	--	--
VS06131	146	150	142	131	380	486	--	--	--	85	--	--	--	--	--
VS06132	140	171	207	122	453	--	--	--	--	--	--	--	--	--	--
VS06133	198	202	190	185	532	--	--	--	--	166	--	--	--	--	--
VS06134	177	418	176	159	412	--	--	--	--	128	--	--	--	--	--
VS06135	162	188	186	255	329	16	--	--	--	--	--	--	--	--	--
VS06136	268	378	156	430	550	4,143	--	--	--	166	--	--	--	--	--
VS06137	271	1,054	414	909	569	--	--	--	--	151	--	--	--	--	--
VS06138	312	270	166	259	430	--	--	--	--	179	--	--	--	--	--
VS06139	79	27	86	62	58	29	--	--	--	--	109	--	--	76	--
VS06140	135	72	104	78	84	--	--	--	--	87	--	--	--	--	--
VS06141	408	102	253	98	1,237	--	--	--	--	--	--	--	--	--	--
VS06142	149	290	121	103	314	420	--	--	--	--	--	--	--	--	--
VS06143	298	143	120	138	130	--	--	--	--	--	136	--	--	--	--
VS06144	92	153	69	107	309	--	--	--	--	--	--	--	--	--	--
VS06145	264	402	148	118	1,190	--	--	--	--	--	--	--	--	244	--
VS06146	356	545	118	140	969	4,549	--	--	--	89	--	--	--	--	--
VS06147	136	124	335	162	366	--	--	--	--	109	193	--	--	138	--
VS06148	158	275	261	117	854	--	--	38,277	--	--	143	--	--	--	--
VS06149	467	187	298	184	1,028	6,260	--	--	--	--	--	--	--	--	--
VS06150	216	123	136	122	445	108	--	--	97	--	144	--	--	--	--
VS06151	293	313	122	229	621	--	--	--	--	--	--	--	--	--	--
VS06152	309	1,848	209	314	614	--	--	937	--	84	--	--	--	--	--
VS06153	1,038	548	378	204	300	--	--	--	--	--	--	--	--	419	--
VS06154	213	437	334	222	895	--	--	--	--	--	158	--	--	311	--
VS06155	187	489	141	140	1,205	--	--	--	--	101	--	--	--	--	--

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Table A-2 St. Joe Minerals - Viburnum Site, Lead (ppm) in Residential Yards, XRF Data

Yard ID	Front Left	Front Right	Back Left	Back Right	Drip Zone	Drive Way(s)		Gravel Areas or Paths	Rock Areas	Garden	Play Area(s)		Sand Box	Swing Set(s)	
VS06156	91	135	221	172	224	--	--	--	--	--	--	--	--	--	--
VS06157	1,902	277	192	250	450	--	--	170	--	--	--	--	--	--	--
VS06158	215	274	79	86	446	--	--	--	--	--	--	--	--	--	--
VS06159	143	112	220	173	851	--	--	--	--	--	--	--	--	69	--
VS06160	935	525	262	145	632	198	--	--	--	--	--	--	--	--	--
VS06161	431	633	195	100	703	--	--	--	--	--	203	--	--	--	--
VS06162	667	609	896	191	855	--	--	553	--	--	--	--	--	--	--
VS06163	553	1,503	112	96	636	--	--	--	--	--	--	--	--	--	--
VS06164	362	604	264	306	519	--	--	--	--	--	--	--	--	--	--
VS06165	480	483	398	346	378	--	--	--	--	--	--	--	--	--	--
VS06166	380	232	172	168	383	--	--	--	--	--	--	--	--	151	--
VS06167	690	251	210	299	716	--	--	--	--	--	--	--	--	--	--
VS06168A	272	192	135	178	1,236	1,655	--	--	--	--	--	--	--	--	--
VS06168B	313	147	166	88	253	--	--	--	--	--	--	--	--	156	--
VS06169	73	216	184	197	543	--	--	--	--	--	--	--	--	--	--
VS06170	427	268	604	226	1,607	--	--	--	--	--	--	--	--	--	--
VS06171	176	218	546	171	713	--	--	--	--	--	--	--	--	--	--
VS06172	434	169	166	154	2,673	5,443	--	--	--	213	--	--	--	--	--
VS06173	1,414	326	150	155	135	--	--	--	--	--	--	--	--	--	--
VS06174	572	151	314	142	493	--	--	--	--	--	84	--	--	--	--
VS06175	140	106	147	128	456	3,355	--	--	--	--	--	--	--	224	--
VS06176	445	294	289	266	1,633	--	--	--	--	--	--	--	--	--	--
VS06177	78	71	104	98	335	43	--	--	--	--	--	--	--	--	--
VS06178	158	162	117	111	645	--	--	--	--	73	111	--	--	--	--
VS06179	145	114	169	112	1,337	--	--	--	--	--	--	--	--	--	--
VS06180	679	460	151	435	663	--	--	--	--	--	--	--	--	--	--
VS06181	317	355	150	198	679	--	--	--	--	--	--	--	--	159	--
VS06182	211	255	721	456	322	--	--	--	--	--	--	--	--	--	--
VS06183	244	287	308	348	353	--	--	--	--	--	--	--	--	413	429
VS06184	213	294	445	407	364	--	--	--	--	--	--	--	--	243	--
VS06185	365	120	127	162	218	157	--	--	--	--	--	--	--	250	--

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Table A-2 St. Joe Minerals - Viburnum Site, Lead (ppm) in Residential Yards, XRF Data

Yard ID	Front Left	Front Right	Back Left	Back Right	Drip Zone	Drive Way(s)		Gravel Areas or Paths	Rock Areas	Garden	Play Area(s)		Sand Box	Swing Set(s)	
VS06186	196	200	126	173	360	--	--	--	--	--	--	--	--	--	--
VS06187	210	252	241	129	223	230	--	--	--	--	258	--	--	--	--
VS06188	175	219	122	135	469	--	--	--	--	--	--	--	--	188	--
VS06189	369	270	164	324	350	178	--	--	--	--	172	--	--	321	--
VS06190	185	187	206	196	450	--	--	--	--	--	--	--	--	220	--
VS06191	192	176	246	209	468	414	--	--	--	--	--	--	--	--	--
VS06192	238	173	340	313	449	--	--	--	--	170	--	--	--	--	--
VS06193	134	122	213	201	613	--	--	--	--	--	--	--	--	--	--
VS06194	170	442	173	174	997	2,716	--	--	--	--	--	--	--	--	--
VS06195	162	192	667	158	375	722	--	--	--	--	--	--	--	--	--
VS06196	165	687	105	492	420	--	--	--	--	--	131	--	--	--	--
VS06197	288	553	264	339	632	--	--	--	--	--	--	--	--	--	--
VS06198	800	386	336	205	347	6,762	--	--	--	--	--	--	--	--	--
VS06199	136	140	174	163	595	--	--	--	--	224	--	--	--	--	--
VS06200	111	138	200	244	413	--	--	--	--	38	--	--	--	--	--
VS06201	198	246	152	206	462	--	--	--	--	266	--	--	--	--	--
VS06202	512	117	175	118	969	--	--	--	--	127	--	--	--	79	--
VS06203	281	121	146	210	343	--	--	--	--	--	--	--	--	--	--
VS06204	251	193	248	371	828	--	--	--	--	203	--	--	--	--	--
VS06205	287	236	275	395	365	--	--	--	--	--	--	--	--	297	--
VS06206	370	454	350	271	2,469	--	--	--	--	--	219	--	--	--	--
VS06207	101	95	60	81	573	--	--	--	--	59	--	--	--	--	--
VS06208	177	138	143	91	364	--	--	--	--	--	--	--	--	--	--
VS06209	127	116	399	153	328	--	--	--	--	--	--	--	--	--	--
VS06210	238	115	128	125	1,365	2,489	--	--	--	--	--	--	--	--	--
VS06211	274	294	127	210	130	--	--	--	--	--	--	--	--	--	--
VS06212	90	115	75	177	78	21	--	--	--	--	83	--	--	--	--
VS06213	202	130	140	114	593	--	--	--	--	138	--	--	--	229	--
VS06214	440	313	241	276	367	--	--	--	--	--	--	--	--	--	--
VS06215	132	202	85	89	209	272	--	--	--	--	--	--	--	--	--
VS06216	75	123	52	77	97	--	--	--	--	--	--	--	--	--	--

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Table A-2 St. Joe Minerals - Viburnum Site, Lead (ppm) in Residential Yards, XRF Data

Yard ID	Front Left	Front Right	Back Left	Back Right	Drip Zone	Drive Way(s)		Gravel Areas or Paths	Rock Areas	Garden	Play Area(s)		Sand Box	Swing Set(s)	
VS06217	92	60	86	81	56	54	--	--	--	--	149	--	--	--	--
VS06218	46	70	74	41	80	55	44	--	--	--	--	--	--	--	--
VS06219	100	373	131	398	567	1,677	--	--	--	--	--	--	--	--	--
VS06220	130	147	97	120	256	588	--	--	--	--	--	--	--	--	--
VS06221	382	310	101	100	220	412	--	--	--	--	--	--	--	--	--
VS06222	488	1,201	154	247	418	189	--	--	--	--	--	--	--	--	--
VS06223	142	169	229	363	751	238	--	--	--	--	--	--	--	--	--
VS06224	104	127	59	50	182	417	--	--	--	--	--	--	--	--	--
VS06225	92	121	99	79	323	97	--	--	--	--	--	--	--	--	--
VS06226	201	601	97	124	477	604	810	--	--	--	--	--	--	--	--
VS06227	130	172	72	126	70	1,213	--	--	--	--	--	--	--	--	--
VS06228	394	931	119	112	420	919	--	--	--	--	--	--	--	--	--
VS06229	506	326	140	81	259	69	--	--	--	--	--	--	--	--	--
VS06230	556	1,057	113	88	405	155	--	--	--	--	--	--	--	--	--
VS06231	142	491	116	132	307	610	--	--	--	--	--	--	--	256	--
VS06232	81	118	132	1,622	240	320	--	272	--	--	--	--	--	--	--
VS06233	159	114	141	90	96	321	--	--	--	--	102	--	--	--	--
VS06234	114	110	61	71	330	58	--	--	--	--	--	--	--	--	--
VS06235	215	179	128	107	413	2,595	--	--	--	144	177	228	--	--	--
VS06236	156	114	746	96	588	--	--	--	--	--	262	--	--	--	--
VS06237	128	99	98	216	870	1,276	--	--	--	--	117	--	--	--	--
VS06238	132	165	147	142	311	240	--	--	--	97	--	--	--	--	--
VS06239	125	134	156	118	822	2,049	--	--	--	--	--	--	--	--	--
VS06240	182	138	76	162	173	80	--	--	--	--	213	--	--	116	--
VS06241	85	286	104	48	292	922	--	--	--	--	--	--	--	--	--
VS06242	150	270	285	133	574	785	--	--	--	136	--	--	--	--	--
VS06243	511	233	157	98	298	1,278	281	--	--	--	--	--	--	--	--
VS06244	76	145	84	128	115	--	--	--	--	--	--	--	--	--	--
VS06245	101	105	78	114	213	150	--	--	--	--	--	--	--	--	--
VS06246	246	187	103	136	354	822	--	--	--	--	--	--	--	89	--
VS06247	162	483	130	280	433	--	--	--	--	--	--	--	--	--	--

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Table A-2 St. Joe Minerals - Viburnum Site, Lead (ppm) in Residential Yards, XRF Data

Yard ID	Front Left	Front Right	Back Left	Back Right	Drip Zone	Drive Way(s)		Gravel Areas or Paths	Rock Areas	Garden	Play Area(s)		Sand Box	Swing Set(s)	
VS06248	324	435	126	92	211	246	--	--	--	--	--	--	--	--	--
VS06249	193	191	110	78	365	136	831	--	--	--	55	--	--	74	--
VS06250	253	143	82	115	303	358	--	--	--	--	--	--	--	--	--
VS06251	333	708	108	581	1,013	--	--	--	--	--	--	--	--	--	--
VS06252	909	278	219	224	553	--	--	--	--	--	--	--	--	--	--
VS06253	87	244	360	191	392	--	--	--	--	--	--	--	--	--	--
VS06254	389	872	186	178	377	--	--	--	--	--	--	--	--	--	--
VS06255	150	189	77	152	336	--	--	--	--	--	--	--	--	--	--
VS06256	178	476	173	147	567	--	--	--	--	--	--	--	--	--	--
VS06257	287	168	310	102	542	--	--	--	--	--	--	--	--	--	--
VS06258	133	1,461	97	127	507	808	--	--	--	--	345	--	--	--	--
VS06259	579	710	672	1,505	2,324	5,738	--	--	--	--	--	--	--	--	--
VS06260	174	175	1,044	988	1,374	2,539	--	--	--	--	--	--	--	--	--
VS06261	109	1,291	1,032	424	142	--	--	--	--	--	--	--	--	--	--
VS06262	--	--	1,223	608	744	2,091	--	--	--	--	--	--	--	--	--
VS06263	--	--	448	476	1,569	452	--	--	--	--	--	--	--	--	--
VS06264	--	1,758	997	792	1,296	194	--	--	--	--	--	--	--	--	--
VS06265	--	--	1,392	774	2,045	837	--	--	--	--	--	--	--	--	--
VS06266	--	905	897	555	626	5,578	--	--	--	--	--	--	--	--	--
VS06267	965	--	1,037	766	1,240	1,426	--	--	--	--	--	--	--	--	--
VS06268	--	4,484	599	385	898	934	--	--	--	--	--	--	--	--	--
VS06269	766	1,772	438	485	3,158	280	--	--	--	--	--	--	--	--	--
VS06270	1,074	255	354	100	5,458	2,229	--	--	--	--	--	--	--	--	--
VS06271	81	160	480	309	471	121	--	--	--	--	--	--	--	--	--
VS06272	--	294	230	91	135	164	--	--	--	--	--	--	--	--	--
VS06273	--	152	153	285	136	163	--	--	--	--	--	--	--	--	--
VS06274	824	305	121	156	443	625	--	--	--	--	--	--	--	76	--
VS06275	360	337	140	71	442	151	--	--	--	--	--	--	--	--	--
VS06276	90	205	149	137	233	124	--	--	--	--	--	--	--	--	--
VS06277	642	828	157	628	346	--	--	--	--	--	--	--	--	--	--
VS06278	3,397	1,339	2,628	1,312	740	--	--	--	--	--	--	--	--	--	--

-- under one of the yard quarters indicates the quarter is paved or rocked; in any other category the area did not exist in the yard.

Table A-2 St. Joe Minerals - Viburnum Site, Lead (ppm) in Residential Yards, XRF Data

Yard ID	Front Left	Front Right	Back Left	Back Right	Drip Zone	Drive Way(s)		Gravel Areas or Paths	Rock Areas	Garden	Play Area(s)		Sand Box	Swing Set(s)	
VS06279	202	106	92	180	210	22	--	190	--	71	--	--	--	--	--
VS06280	124	260	115	112	531	--	--	--	--	--	--	--	--	--	--
VS06281	69	127	45	138	145	--	--	--	--	--	--	--	--	--	--
VS06282	134	265	149	174	1,206	--	--	--	--	--	--	--	--	--	--
VS06283	120	192	180	207	897	--	--	--	--	--	--	--	--	--	--
VS06284	138	153	136	166	347	205	--	--	--	--	178	--	--	--	--
VS06285	303	224	54	78	239	226	--	--	--	--	--	--	--	--	--
VS06289	341	243	136	151	322	--	--	--	--	--	--	--	--	--	--
VS06290	255	306	764	137	811	1,659	--	--	--	--	--	--	--	--	--
VS06291	302	264	167	99	255	--	--	--	--	--	--	--	--	77	--
VS06292	282	419	184	137	624	206	--	--	--	--	--	--	--	--	--
VS06293	344	121	132	72	105	998	--	--	--	--	--	--	--	--	--
VS06294	107	274	118	185	773	4,529	--	--	--	--	--	--	--	--	--
VS06295	175	148	173	286	417	--	--	--	--	--	--	--	--	--	--
VS06296	128	574	92	111	174	1,464	--	--	--	--	113	--	--	--	--
VS06297	1,402	511	151	178	414	3,177	--	--	--	--	--	--	--	--	--
VS06298	295	282	153	238	1,443	--	--	--	--	--	--	--	--	--	--
VS06299	498	49	86	49	14,169	170	--	--	--	--	--	--	--	--	--
VS06300	186	309	139	123	178	--	--	--	--	--	--	--	--	--	--
VS06301	195	319	247	245	309	--	--	--	--	--	--	--	--	--	--
VS06302	183	159	169	74	882	--	--	--	--	--	--	--	--	--	--
VS06303	1,613	612	273	603	986	2,278	--	--	--	--	--	--	--	--	--

-- under one of the yard quarters indicates the quarter is paved or rocked; in any other category the area did not exist in the yard.

Table A-3 St. Joe Minerals - Viburnum Site, Lead (ppm) in Child High Use Areas, XRF Data

Site ID	Sample Location ID and Description		Lead Conc.
City Ballfields (North)			
VS06286N	1BB	First base bleachers & dugout	69
	3BB	Third base bleachers & dugout	71
	DW	Gravel driveway	178
	I	Infield	43
	O	Outfield	164
City Ballfields (South)			
VS06286S	B	Bleachers	1,273
	GP	Gravel parking	14 U
	GR	Gravel road	1,964
	I	Infield	33
	O	Outfield	78
City Park			
VS06287	A	Left playground & surrounding	161
	B	Picnic tables at end of road	318
	C	Right playground & surrounding	287
	D	Gravel road at end	464
	E	Mid left playground	93
	F	Gravel road to basketball/tennis courts	3,810
	G	Basketball area	16,415
	H	Tennis area	348
	I	Mid picnic tables	268
	J	Gravel road loop to tables	86
	K	Gravel road Picnic tables	143
	L	North bench area	137
	M	Entrance bench area	192
Viburnum Lower Elementary School			
VS06288	BL	Back Left Yard Quadrant	1,152
	BR	Back Right Yard Quadrant	102
	DZ	Drip Zone	653
	FL	Front Left Yard Quadrant	200
	FR	Front Right Yard Quadrant	228
	PA	Play Area	84
	PA2	Play Area	46
	PA3	Play area by separate classroom	494
	SS	Swing Set area	123

U Not detected at the stated detection limit

APPENDIX B

XRF AND LABORATORY CALIBRATION MODEL

Figure B-1 XRF Calibration Curve
St. Joe Minerals - Viburnum Site

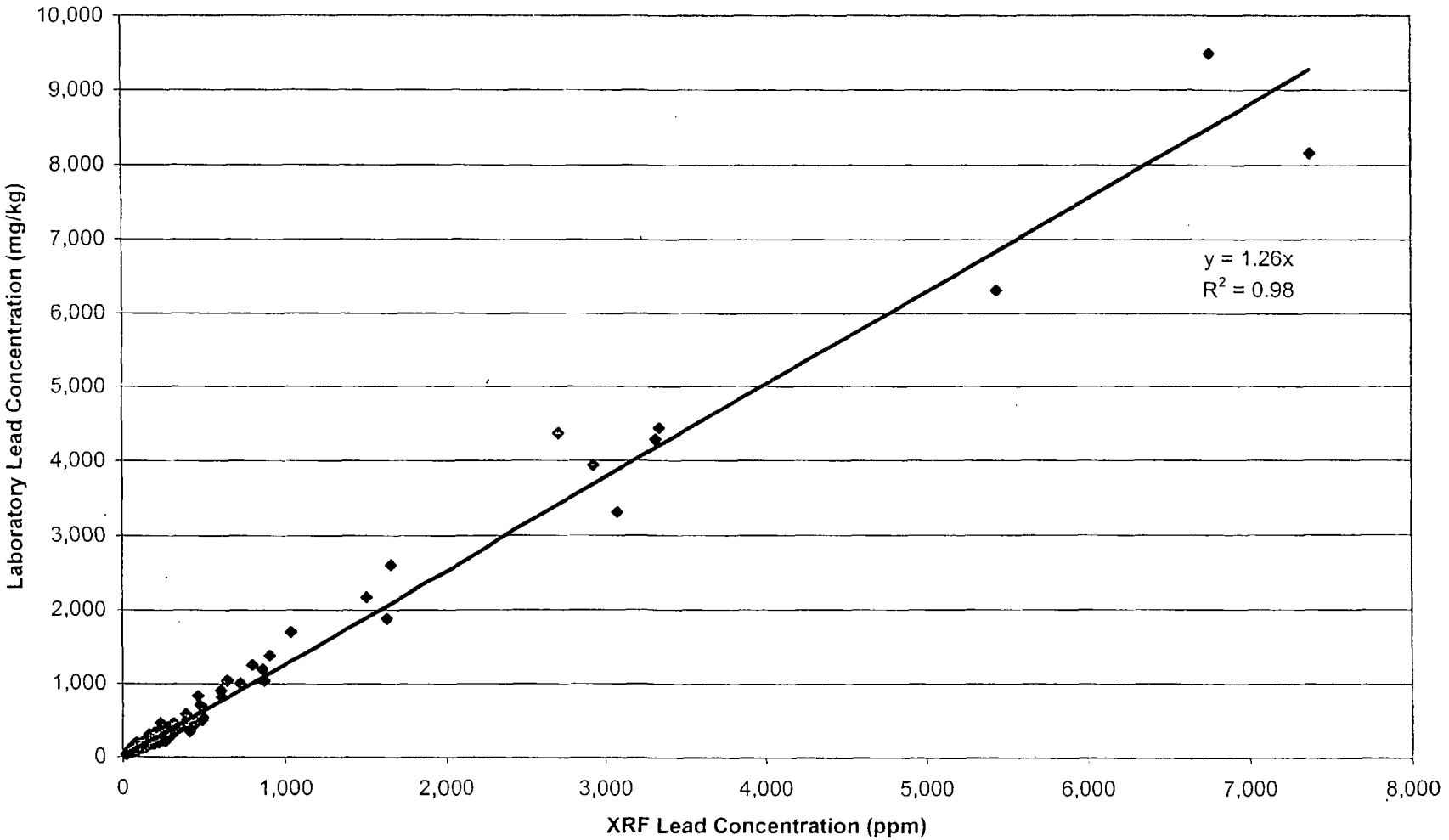


Table B-1 XRF and Laboratory Calibration Data

St. Joe Minerals - Viburnum Site

Yard ID and Sample Location	XRF Lead Concentration (ppm)	Laboratory Lead Concentration (mg/kg) [a]
VS06133 BL	190	254
VS06099 BR	141	213
VS06099 DWF	861	1,190
VS06102 BR	191	226
VS06102 PA	140	214
VS06138 FR	270	318
VS06010 BR	231	215
VS06103 GD	151	243
VS06102 FR	179	208
VS06133 BR	185	182
VS06012 GD	22	27
VS06013 FL	422	458
VS06103 BL	217	246
VS06102 FL	261	207
VS06133 FL	198	198
VS06011 BL	179	288
VS06138 BR	259	392
VS06105 FL	302	295
VS06007 BL	158	147
VS06103 FR	297	314
VS06098 GD	115	162
VS06103 BR	174	192
VS06103 FL	144	145
VS06133 FR	202	219
VS06138 BL	166	179
VS06138 GD	179	194
VS06019 FL	139	155
VS06142 FR	290	325
VS06075 BR	95	95
VS06147 SS	138	173
VS06139 DW	29	34
VS06002 BL	185	211
VS06108 FR	96	111
VS06097 FL	126	143
VS06004 FL	118	148
VS06178 FR	162	184
VS06021 BR	262	308
VS06134 GD	128	129
VS06144 FR	153	162
VS06148 PA	143	163
VS06132 BR	122	114
VS06088 BL	208	219

a - Laboratory Concentrations are on a dry weight basis. XRF Concentrations are as received.
* Data not used in the Calibration Model (see App. C)
J - Estimated (see App. C)
R - Rejected (see App. C)

Table B-1 XRF and Laboratory Calibration Data

St. Joe Minerals - Viburnum Site

Yard ID and Sample Location	XRF Lead Concentration (ppm)	Laboratory Lead Concentration (mg/kg) [a]
VS06008 BL	201	227
VS06131 BR	131	134
VS06009 FL	229	236
VS06136 BL	156	164
VS06127 BR	144	161
VS06100 SS	100	106
VS06107 FR	405	419
VS06076 BR	155	171
VS06145 BR	118	166
VS06152 FL	309	333
VS06040 FL	141	187
VS06155 BR	140	120
VS06044 FR	330	394
VS06170 BR	226	312
VS06162 FR	609	812
VS06045 GD	352	389
VS06161 BR	100	110
VS06022 BL	61	135
VS06030 BR	208	261
VS06006 FR	360	406
VS06168B SS	156	183
VS06202 GD	127	136
VS06168A FR	192	246
VS06151 BR	229	257
VS06053 BR	148	164
VS06125 BL	142	161
VS06017 BL	106	122
VS06049 BR	121	185
VS06043 FR	387	577
VS06020 BR	86	187
VS06048 GD	179	232
VS06051 BR	187	299
VS06032 BL	265	275
VS06196 FL	165	232
VS06042 FR	406	406
VS06074 FL	137	187
VS06115 SS	193	174
VS06171 FR	218	289
VS06111 BL	110	116
VS06113 BR	128	123
VS06041 FL	135	148
VS06054 BR	166	179

a - Laboratory Concentrations are on a dry weight basis. XRF Concentrations are as received.
* Data not used in the Calibration Model (see App. C)
J - Estimated (see App. C)
R - Rejected (see App. C)

Table B-1 XRF and Laboratory Calibration Data

St. Joe Minerals - Viburnum Site

Yard ID and Sample Location	XRF Lead Concentration (ppm)	Laboratory Lead Concentration (mg/kg) [a]
VS06023 GD	42	49
VS06057 BL	124	153
VS06060 DW	3,084	3,310
VS06061 DW	457	486
VS06062 DW	3,342	4,430
VS06065 FL	135	151
VS06066 DW	7,379	8,160
VS06116 FL	133	190
VS06117 BR	96	134
VS06172 DW	5,443	6,310
VS06174 PA	84	110
VS06198 DW	6,762	9,480
VS06037 FL	254	265
VS06071 BR	185	254
VS06070 DW	3,318	4,280
VS06039 BR	278	246
VS06159 SS	69	87
VS06110 FR	271	320
VS06176 BL	289	375
VS06072 BR	236	238
VS06156 FL	91	84
VS06195 DW	722	998
VS06176 DZ	1,633	1,880
VS06194 DW	2,716	4,360
VS06295 BL	173	173
VS06182 BR	456	539
VS06078 FL	205	237
VS06185 DW	157	186
VS06180 BL	151	195
VS06036 DW	2,933	3,930
VS06282 FR	265	247
VS06080 FL	224	249
VS06118 BL	213	243
VS06283 FL	120	125
VS06191 DW	414	445
VS06189 SS	321	338
VS06203 FR	121	119
VS06035 FL	309	456
VS06190 SS	220	185
VS06084 BL	153	166
VS06086 BL	227	268
VS06154 BR	222	295

a - Laboratory Concentrations are on a dry weight basis. XRF Concentrations are as received.
* Data not used in the Calibration Model (see App. C)
J - Estimated (see App. C)
R - Rejected (see App. C)

Table B-1 XRF and Laboratory Calibration Data

St. Joe Minerals - Viburnum Site

Yard ID and Sample Location	XRF Lead Concentration (ppm)		Laboratory Lead Concentration (mg/kg) [a]
VS06082 BR	158		206
VS06120 FR	211	J	235
VS06122 DW2	413		342
VS06187 DW	230		456
VS06186 FR	200		231
VS06046 BL	102		142
VS06141 FR	102		153
VS06153 SS	419		459
VS06205 FR	236		390
VS06206 PA	219		331
VS06300 BL	139		180
VS06281 BL	45		66
VS06298 FR	282		335
VS06090 FL	182		300
VS06091 BR	61		56
VS06208 BL	143		161
VS06284 FR	153		161
VS06290 DW	1,659		2,600
VS06224 BL	59		69
VS06228 FL	394		500
VS06229 BR	81		110
VS06231 FR	491		536
VS06296 BR	111		165
VS06232 FL	81		94
VS06233 BR	90		122
VS06234 DW	58		73
VS06240 BR	162		181
VS06242 GD	136		161
VS06093 FR	194		264
VS06095 FL	798		1,250
VS06096 BR	243		245
VS06201 FR	246		290
VS06226 DW	604		904
VS06247 FL	162		303
VS06249 FL	193		246
VS06249 PA	55		64
VS06279 BR	180		246
VS06291 SS	77		93
VS06297 BL	151		185
VS06273 FR	152		198
VS06271 FL	81		179
VS06275 BR	71	J	119

a - Laboratory Concentrations are on a dry weight basis. XRF Concentrations are as received.
* Data not used in the Calibration Model (see App. C)
J - Estimated (see App. C)
R - Rejected (see App. C)

Table B-1 XRF and Laboratory Calibration Data

St. Joe Minerals - Viburnum Site

Yard ID and Sample Location	XRF Lead Concentration (ppm)		Laboratory Lead Concentration (mg/kg) [a]	
VS06252 BL	219		240	
VS06254 FR	872		1,040	
VS06257 FR	168		222	
VS06259 BR	1,505		2,170	
VS06210 BR	125		127	
VS06211 BL	127		176	
VS06212 PA	83		88	
VS06214 FL	440		433	
VS06215 FR	202		302	
VS06216 FL	75		112	
VS06217 BR	81		118	
VS06218 FL	46		52	
VS06219 FL	100		166	
VS06220 BR	120		181	
VS06222 FL	488		497	
VS06235 FR	179		186	
VS06236 BR	96		138	
VS06237 BL	98		156	
VS06241 BR	48		103	
VS06244 BL	84		118	
VS06258 BR	127		209	
VS06260 FL	174		216	
VS06263 BR	476		701	
VS06266 FR	905		1,380	
VS06267 BL	1,037		1,700	
VS06270 BR	100		147	
VS06274 SS	76		130	
VS06277 FL	642		1,040	
VS06285 BR	78		98	
VS06286S O	78		89	
VS06287 D	464		831	
VS06287 M	192		326	
VS06288 FL	200		275	
VS06302 BR	74		117	
VS06303 BL	273		399	
VS06138 FL*	312		176	R
VS06133 GD*	166		382	R
VS06146 DW*	4,549	J	12,100	J
VS06057 DW*	1,046	J	3,710	J
VS06068 DW*	2,389	J	10,200	J
VS06077 DW*	662	J	2,240	J
VS06227 DW*	1,213	J	227	J
VS06123 DW*	11,711	J	62,000	J

a - Laboratory Concentrations are on a dry weight basis. XRF Concentrations are as received.
* Data not used in the Calibration Model (see App. C)
J - Estimated (see App. C)
R - Rejected (see App. C)

APPENDIX C

DATA ASSESSMENT REPORT

NEWFIELDS

PA/SI, ST JOE MINERALS CORP – VIBURNUM SITE

DATA QUALITY ASSESSMENT MEMORANDUM

TO: ST JOE MINERALS CORP – VIBURNUM SITE FILES

FROM: KERRI SITLER

SUBJECT: XRF AND LABORATORY PA/SI DATA
COLLECTED MARCH 12 THROUGH APRIL 11, 2006

DATE: JUNE 13, 2006

LABORATORY DATA PACKAGES: STL A6C160241, A6C200121, A6C220319, A6C230302, A6C280278, A6C310127, A6D030139, A6D050144, A6D060171, A6D110152, A6D140311

This memorandum summarizes the review of 1,813 XRF soil bulk samples and accompanying quality assurance measurements and the review of the laboratory analytical data for 211 soil calibration samples. The laboratory samples are the original XRF cups sent to the laboratory after XRF analysis and are used to establish a correlation between the XRF measurement and the laboratory analysis result. All samples were collected between March 12 and April 11, 2006 as part of the Preliminary Assessment / Site Inspection being conducted at the St. Joe Minerals – Viburnum Site. Samples were collected by Entrix, Inc. and submitted to Severn Trent Laboratories (STL) of North Canton, Illinois.

The data were reviewed in accordance with the Quality Assurance Project Plan (QAPP), Work Plan for Removal Preliminary Assessment and Site Inspection, St. Joe Minerals Corp – Viburnum Site, November 10, 2005. The QAPP procedures are based on the principles given in the USEPA National Functional Guidelines for Inorganic Data Review (EPA 2004). The qualifiers used to identify data are listed in Table 1.

TABLE 1 DATA QUALIFIER DEFINITIONS

Qualifier	Definition
U	The analyte was analyzed for but was not detected above the reported sample quantitation limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

730 17th Street, Suite 925
Denver, CO 80202
303-294-0950 *tel* ~ 303-294-9220 *fax*

A list of the data review parameters is presented in the sections that follow. A leading check mark (✓) indicates that all data were acceptable. A preceding ✗ signifies that issues were raised during the course of the validation review, issues that should be considered when evaluating data quality and usability.

XRF Data Review

For the project, 1,813 XRF bulk soil samples were analyzed using a Niton XLt 795 x-ray fluorescence spectrometer (XRF).

- ✓ Data Completeness
- ✓ Precision checks
- ✓ Accuracy checks
- ✓ Blanks
- ✗ Duplicate data

DATA COMPLETENESS

All sample results were measured and reported in parts per million (ppm) lead. Each sample was measured using a 60-second measurement period. Results from a less than 60-second measurement were rejected by the field XRF operator, and the sample was re-analyzed with the XRF. Samples were typically measured in the collection Ziploc bag. One sample for every ten samples was placed into an XRF analysis cup and analyzed by SW-846 Method 6010B (see laboratory data discussion below). Additionally, one sample in every 20 samples was analyzed twice or duplicated in the field by the XRF. Just as in laboratory duplication, the first measurement of a sample was identified as the sample result and the duplicate was used only as a measurement of precision. A Daily XRF Log was used to record the XRF result as well as identify the sample ID to the XRF's internal sample number. XRF results were downloaded daily to a computer. The downloaded data and the Daily XRF Log were then crosschecked to identify and correct any transcription errors.

Each sample's individual detection limit was calculated based on instrument response. Per the Niton users manual, the detection limit for each sample was calculated at 1.5 times one standard deviation of the measurement. If the reported measurement was found to be less than the calculated detection limit, the sample was reported as "not detected" at the calculated detection limit ("U" flagged). Only three samples had non-detectable concentrations of lead using the Niton XLt-795 XRF.

PRECISION

Two site samples were selected as high and low precision samples, SSS-H and SSS-L. SSS-H was greater than the potential action level of 400 ppm lead, and SSS-L was lower than the level. Each sample was analyzed seven consecutive times at the beginning and end of each day to assess the precision of the XRF instrument, per the Standard Operating Procedure. All precision analyses were within the 20% Relative Percent Difference (RPD) quality control criterion.

ACCURACY

Three NIST standards were provided with the instrument and used to assess accuracy. The standards were measured at the beginning and end of each day as well as after every batch of 20 sample measurements. Each standard has a "known" concentration, which was compared to the instruments reading. The control criterion (%D) was ±20%. In general, the XLt-795 met control criteria. Occasionally one of three standards would be out of control, but following the Standard Operating Procedure, the standard was reanalyzed and typically passed. The Low Standard was typically the

standard that was out of control. The lead concentration in the Low NIST standard is 18.9 ppm. This concentration is within two times (2x) the instrument detection limit of 12 ppm (average calculated detection limit of the blanks). However, using the typical Functional Guideline criterion where the standard analysis must fall within the control limits of ±2x the required quantification limit (12 ppm) or ±20% of the true value, whichever is greater, the Low Standard passed the control criterion. Early in the sampling/analysis program the field XRF operators rejected the preceding 20 sample results when one standard was out of control. Review of the method SW-846 6200 and the SOP allowed the operator to reanalyze the standard and only reject the preceding results if two different standards were out of control after the reanalysis of the standards. No data were qualified based on the accuracy testing of the NIST standards. The XRF instrument was found to be accurate for site soil testing.

BLANKS

A blank is provided with the instrument and was used to assess contamination within the instrument or operating environment or the potential for instrument baseline drift. The blank was measured at the beginning and end of each day as well as after every batch of twenty sample measurements. No lead was detected in any blank measurements using the calculated detection limits.

DUPLICATION

XRF duplicates of the bulk soil samples were conducted on a 5% frequency. Once the sample was measured, the instrument was used again to "shoot" or measure the sample. A 20% control criterion was used to assess accuracy of the sample result duplication. All but two sample pairs met the criterion. The samples (VS06120-FR and VS06275-BR), as well as all the other samples from the corresponding yards, were "J" flagged as an estimated concentration due to the potential for either matrix interference or sample non-homogeneity.

Six samples (VS06146-DW, VS06057-DW, VS06068-DW, VS06077-DW, VS06227-DW, and VS0606123-DW) were identified in the laboratory data review (see below in Laboratory Data Completeness) as having high heterogeneity, such that the sample result and its corresponding XRF sample result were not used for the calibration model. The corresponding XRF sample results were flagged ("J") as estimated in the sample database.

LABORATORY DATA REVIEW

The laboratory samples were analyzed for total lead by EPA Method 6010B and were reported in mg/kg (or ppm) on a dry weight basis. The samples are listed by laboratory package on Table 2. Each sample corresponds to a XRF sample by the same name, excluding the ending "C" on the sample ID.

Table 2 List of Samples by Laboratory Package

Laboratory Package ID	Calibration Samples	Sampling Dates
A6C160241	VS06133-BLC	3/12/06
	VS06099-BRC	3/12/06
	VS06099-DWC	3/12/06
	VS06102-BRC	3/12/06
	VS06102-PAC	3/12/06
A6C160241 (cont.)	VS06138-FRC	3/12/06
	VS06010-BRC	3/12/06
	VS06103-GDC	3/12/06
	VS06102-FRC	3/12/06
	VS06133-BRC	3/12/06
A6C160241	VS06012-GDC	3/12/06
	VS06013-FLC	3/12/06
	VS06103-BLC	3/12/06
(cont.)	VS06102-FLC	3/12/06
	VS06133-FLC	3/12/06
	VS06011-BLC	3/12/06
	VS06138-BRC	3/12/06
	VS06138-FLC [R]	3/12/06
	VS06133-GDC [R]	3/12/06
	VS06105-FLC	3/12/06
	VS06007-BLC	3/12/06
	VS06103-FRC	3/12/06
	VS06098-GDC	3/12/06
	VS06103-BRC	3/12/06
	VS06103-FLC	3/12/06
	VS06133-FRC	3/12/06

Table 2 List of Samples by Laboratory Package (cont.)

Laboratory Package ID	Calibration Samples	Sampling Dates
	VS06138-BLC	3/12/06
	VS06138-GDC	3/12/06
A6C200121	VS06019-FLC	3/13/06
	VS06142-FRC	3/13/06
	VS06075-BRC	3/13/06
	VS06147-SSC	3/13/06
	VS06139-DWC	3/13/06
	VS06146-DWC [1]	3/13/06
	VS06002-BLC	3/13/06
	VS06108-FRC	3/13/06
	VS06097-FLC	3/13/06
	VS06004-FLC	3/12/06
	VS06178-FRC	3/13/06
	VS06021-BRC	3/13/06
	VS06134-GDC	3/12/06
	VS06144-FRC	3/13/06
	VS06148-PAC	3/13/06
	VS06132-BRC	3/12/06
	VS06088-BLC	3/13/06
	VS06008-BLC	3/12/06
	VS06131-BRC	3/12/06
	VS06009-FLC	3/12/06
	VS06136-BLC	3/12/06
	VS06127-BRC	3/12/06
	VS06100-SSC	3/12/06
	VS06107-FRC	3/12/06
	VS06076-BRC	3/13/06
	VS06145-BRC	3/13/06
A6C220319	VS06152-FLC	3/16/06
	VS06040-FLC	3/16/06
	VS06155-BRC	3/16/06
	VS06044-FRC	3/15/06
	VS06170-BRC	3/15/06
	VS06162-FRC	3/16/06
	VS06045-GDC	3/16/06
	VS06161-BRC	3/16/06
	VS06022-BLC	3/16/06
	VS06030-BRC	3/16/06
	VS06006-FRC	3/16/06
	VS06168B-SSC	3/15/06
	VS06202-GDC	3/13/06
	VS06168A-FRC	3/15/06
	VS06151-BRC	3/16/06
A6C220319 (cont.)	VS06053-BRC	3/15/06
	VS06125-BLC	3/15/06
	VS06017-BLC	3/13/06
	VS06049-BRC	3/16/06
	VS06043-FRC	3/15/06
	VS06020-BRC	3/13/06
	VS06048-GDC	3/16/06
	VS06051-BRC	3/16/06
	VS06032-BLC	3/16/06
	VS06196-FLC	3/16/06
	VS06042-FRC	3/15/06
	VS06074-FLC	3/16/06
A6C230302	VS06115-SSC	3/16/06
	VS06171-FRC	3/16/06
	VS06111-BLC	3/16/06
	VS06113-BRC	3/16/06

Laboratory Package ID	Calibration Samples	Sampling Dates
	VS06041-FLC	3/16/06
	VS06054-BRC	3/16/06
	VS06023-GDC	3/16/06
A6C280278	VS06057-DWC [1]	3/22/06
	VS06057-BLC	3/22/06
	VS06060-DWC	3/22/06
	VS06061-DWC	3/22/06
	VS06062-DWC	3/22/06
	VS06065-FLC	3/22/06
	VS06066-DWC	3/22/06
	VS06068-DWC [1]	3/22/06
	VS06116-FLC	3/22/06
	VS06117-BRC	3/22/06
	VS06172-DWC	3/22/06
	VS06174-PAC	3/22/06
	VS06198-DWC	3/22/06
	VS06037-FLC	3/23/06
	VS06071-BRC	3/23/06
	VS06070-DWC	3/23/06
	VS06039-BRC	3/23/06
	VS06159-SSC	3/23/06
	VS06110-FRC	3/23/06
	VS06176-BLC	3/23/06
A6C310127	VS06072-BRC	3/23/06
	VS06156-FLC	3/23/06
	VS06195-DWC	3/23/06
	VS06176-DZC	3/23/06
	VS06194-DWC	3/23/06
	VS06295-BLC	3/25/06
	VS06182-BRC	3/24/06
	VS06078-FLC	3/24/06
	VS06185-DWC	3/25/06
	VS06180-BLC	3/24/06
	VS06036-DWC	3/23/06
	VS06077-DWC [1]	3/24/06
	VS06282-FRC	3/24/06
	VS06080-FLC	3/24/06
	VS06118-BLC	3/24/06
A6D030139	VS06283-FLC	3/28/06
	VS06191-DWC	3/28/06
	VS06189-SSC	3/28/06
	VS06203-FRC	3/28/06
	VS06035-FLC	3/29/06
A6D030139 (cont.)	VS06190-SSC	3/28/06
	VS06084-BLC	3/28/06
	VS06086-BLC	3/29/06
	VS06154-BRC	3/29/06
	VS06082-BRC	3/27/06
	VS06120-FRC	3/27/06
	VS06122-DW2C	3/28/06
	VS06187-DWC	3/27/06
	VS06186-FRC	3/27/06
A6D050144	VS06123-DWC [1]	3/29/06
	VS06141-FRC	3/23/06
	VS06153-SSC	3/29/06
	VS06205-FRC	3/29/06
	VS06206-PAC	3/29/06
	VS06281-BLC	3/29/06
	VS06298-FRC	3/23/06

Table 2 List of Samples by Laboratory Package (cont.)

Laboratory Package ID	Calibration Samples	Sampling Dates
	VS06300-BLC	3/29/06
	VS06090-FLC	3/30/06
	VS06091-BRC	3/30/06
A6D060171	VS06208-BLC	3/30/06
	VS06284-FRC	3/30/06
	VS06290-DWC	3/30/06
	VS06231-FRC	3/31/06
	VS06224-BLC	3/31/06
	VS06229-BRC	3/31/06
	VS06228-FLC	3/31/06
	VS06296-BRC *[VS063296-BRC]*	3/31/06
A6D110152)	VS06046-BLC	3/16/06
	VS06227-DWC [J]	4/2/06
	VS06232-FLC	4/2/06
	VS06233-BRC	4/2/06
	VS06234-DWC	4/2/06
	VS06240-BRC	4/2/06
	VS06242-GDC	4/2/06
	VS06093-FRC	4/5/06
	VS06095-FLC	4/5/06
	VS06096-BRC	4/5/06
	VS06201-FRC	4/5/06
	VS06226-DWC	4/5/06
	VS06247-FLC	4/5/06
	VS06249-FLC	4/5/06
	VS06249-PAC	4/5/06
	VS06279-BRC	4/5/06
	VS06291-SSC	4/5/06
A6D110152 (cont.)	VS06297-BLC	4/5/06
	VS06252-BLC	4/7/06
	VS06254-FRC	4/7/06
	VS06257-FRC	4/7/06
	VS06259-BRC	4/7/06
	VS06271-FLC	4/7/06
	VS06273-FRC	4/7/06
	VS06275-BRC	4/7/06
A6D140311	VS06210-BRC	4/11/06
	VS06211-BLC	4/11/06
	VS06212-PAC	4/10/06
	VS06214-FLC	4/11/06
	VS06215-FRC	4/10/06
	VS06216-FLC	4/11/06
	VS06217-BRC	4/10/06
	VS06218-FLC	4/10/06
	VS06219-FLC	4/10/06
	VS06220-BRC	4/10/06
	VS06222-FLC	4/11/06
	VS06235-FRC	4/10/06
	VS06237-BLC	4/10/06
	VS06236-BRC	4/10/06
	VS06241-BRC	4/10/06
	VS06244-BLC	4/10/06
	VS06258-BRC	4/11/06
	VS06260-FLC	4/11/06
	VS06263-BRC	4/8/06
	VS06266-FRC	4/8/06
	VS06267-BLC	4/8/06
	VS06270-BRC	4/7/06
	VS06274-SSC	4/7/06
	VS06277-FLC	4/10/06
	VS06285-BRC	4/10/06
	VS06286S-OC	4/10/06
	VS06287-DC	4/11/06
	VS06287-MC	4/11/06
	VS06288-FLC	4/11/06
	VS06302-BRC	4/7/06
	VS06303-BLC	4/10/06

Notes

[J] or [R] indicates the lead result was flagged based on the validation process.

[VS06...] provides the name of the sample on the final laboratory report if different than what is included in the Site database.

METALS (METHOD 6010B)

- ✗ Data Completeness
- ✓ Holding Times
- ✓ Calibration and Interference and Linearity checks
- ✓ Blanks
- ✓ Analytical Duplicate data
- ✗ Matrix Spike / Matrix Spike Duplicate (MS/MSD)
- ✓ Laboratory Control Sample (LCS)

DATA COMPLETENESS

The analyses were performed as requested on the chain of custody (COC). The reported laboratory detection limits were well below the 10 mg/kg listed in the QAPP.

Two samples (VS06138-FLC [A6C160241-18] and VS06133-GDC [A6C160241-019]) appear to have been misidentified at the laboratory. Laboratory lead concentrations, compared to the XRF concentrations, appeared switched. When the laboratory was asked to verify the identification on the sample containers, it was unable to do so as the sample containers had been emptied and discarded. Therefore the remaining sample in the field for both samples was then reanalyzed using the XRF. Each sample was analyzed seven times and the precision evaluated. Then the average of the seven measurements were compared to the original XRF sample result. The original XRF results were confirmed and the laboratory results were rejected ("R" flagged), as their identification could not be confirmed but is strongly assumed to be switched.

Sample VS06139-DWC was mislabeled on the chain-of-custody (COC) as VS0613-DWC. While the laboratory noted the discrepancy with the sample label, they originally used the sample ID from the COC in the preliminary results but corrected the error in the final report.

Sample VS06296-BRC was also mislabeled on the COC as VS063296-BRC. The laboratory noted the discrepancy but used the COC identification. The correction was not made before the final laboratory report was issued. The database sample ID was corrected, thus, it does not match the laboratory report.

Six samples were found to have high non-homogeneity such that the laboratory analytical result was suspected to exhibit a "nugget" effect. The first sample for which this was identified was VS06146-DWC [A6C200121-006]. The laboratory was requested to reanalyze the sample while the field operators also reanalyzed the remaining sample with the XRF. The XRF reanalysis confirmed the original XRF result. However, the laboratory was unable to reanalyze the original sample due to lack of sample volume. Therefore, the laboratory sample was qualified as estimated due to non-homogeneity or high bias ("J" flagged) and was not used in the calibration model.

The other five samples, exhibiting non-homogeneity were: VS06057-DWC [A6C280278-001], VS06068-DWC [A6C280278-008], VS06077-DWC [A6C310127-012], VS06227-DWC [A6D110152-002], and VS0606123-DWC [A6D050144-001]. VS06057-DWC [A6C280278-001] was used as the lab batch's MS/MSD, which confirmed the sample's homogeneity. The nugget effect in the calibration pair for VS06227-DW [laboratory sample ID A6D110152-002] was probably in the XRF rather than the laboratory as the XRF sample was six times greater than the laboratory sample (or the laboratory measured an unmineralized piece of sample). These laboratory results were flagged ("J") as estimated and were not used in the calibration model. It is noted that all of the samples were driveway (DW) samples and likely to be mine waste rock, supporting the conclusion of their heterogeneity characteristics.

HOLDING TIMES

All samples were analyzed within the method stated holding time of 180 days.

CALIBRATION AND INTERFERENCE AND LINEARITY CHECKS

Laboratory instrument was calibrated in accordance with the guidelines specified in the methods and verified as required. All initial calibrations were within 5% and continuing calibrations within 10% of the calibration standards. Laboratory checks for interference and linearity were within guidelines.

BLANKS

Lead was not detected in any method blank above the reported detection limit.

ANALYTICAL DUPLICATE DATA

Laboratory did not report laboratory duplicates for the samples. The lack of sample volume could be the reason for the lack of project specific duplication analysis. However, using the reported MS/MSD results, the duplicates met a control limit of 35% for the RPD between duplicate results.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS/MSD)

MS/MSD analyses are conducted to assess analytical accuracy. Control limits for MS recovery are 75 to 125 percent. Many MS/MSD RPD values were not reported, as the original sample result was greater than four times the spike concentration (50 mg/kg). Calculated RPDs are inside the control limit for the pair but the ability to identify the spike was lost with the original sample concentrations (>200 mg/kg). When MS/MSD spike recovery was reported, the recovery was out of the laboratory control limits for at least one of the spikes in laboratory packages A6C200121, A6D110152, and A6D140311. As the LCS (see below) and other laboratory control samples for the corresponding packages were performing within specification, the poor recovery was attributed to matrix interference and/or more likely sample non-homogeneity. No sample results were qualified.

LABORATORY CONTROL SAMPLE (LCS)

All laboratory control samples were within control limits for LCS recovery.

APPENDIX D

HEALTH EDUCATION PROGRAM AND SOIL SAMPLING RESULT MAILING

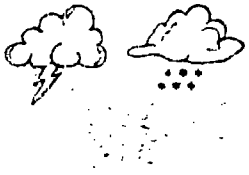
APPENDIX D-1

HEALTH EDUCATION MATERIALS

being swallowed or breathed in.

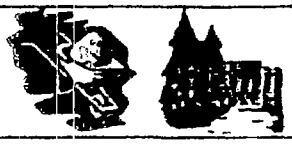
Rocks that contain lead are mined out of the ground. The form of lead found in this rock is galena or lead sulfide. Lead sulfide has low bioavailability which means that the body does not absorb it easily.

The milling process separates the lead concentrate from mill wastes (tailings and chat) by breaking down the mined rock into small pieces. As a result, these small pieces have more area exposed to the atmosphere (water, air, soil, etc.). This speeds the process that changes lead to more harmful forms.



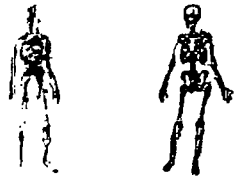
Now that mining and milling have exposed the lead sulfide to the atmosphere, it begins to react and change chemically. The lead sulfide changes to lead sulfate, lead carbonate, lead oxide and other forms. These forms of lead are more easily dissolved and more bioavailable than lead sulfide.

Over time, with increased exposure to the atmosphere and as lead becomes even more broken down by vehicles and other means, lead becomes all the more bioavailable making it more dangerous to people than when it was first mined.



So, if lead contaminated soil, chat, or tailings are present or moved into yards or into areas where children play, there is an increased chance of lead exposure.

Because children (particularly those under six) often put toys, dirt, or their fingers into their mouths, they are more likely to be exposed to the lead-contaminated dust that sticks to them. In addition, children are more vulnerable to lead poisoning because their bodies are still developing.



As you swallow or breathe in higher bioavailable lead dust, the body absorbs it into the blood and organ systems where it may damage the central nervous system, reproductive system, kidneys and other organs and systems. It eventually replaces calcium in bone and teeth or is eliminated from the body.

Low Bioavailability

High Bioavailability

Missouri Department of Natural Resources
Hazardous Waste Program
P.O. Box 176
Jefferson City, MO 65102-0176
1-800-361-4827
www.dnr.mo.gov

August 2003 v2

Missouri Department of Health and Senior Services

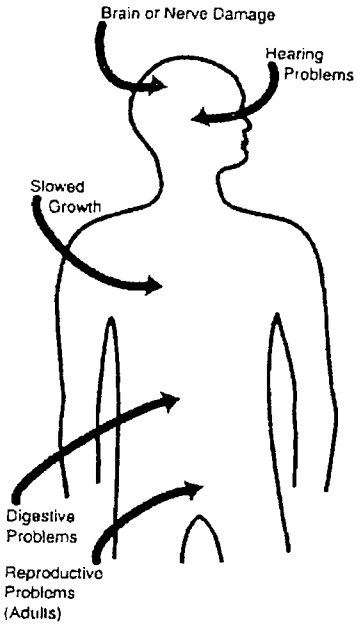
How can lead affect my health?

The effects of lead are the same whether it enters the body through breathing or swallowing. The main target for lead toxicity is the nervous system, both in adults and in children.

Children

Children are more sensitive to the effects of lead than adults. Health effects in children include:

- Slowed physical growth
- Hearing problems
- Nervous system damage (including the brain)
- Learning difficulties (trouble in school)
- Behavior problems including hyperactivity (easily excitable or upset, unable to concentrate, short attention span, etc.)
- Decreased intelligence (I.Q.) scores



Adults

Long-term exposure of adults to lead at work has resulted in decreased performance in some tests that measure functions of the nervous system. Lead exposure may:

- cause weakness in fingers, wrists, or ankles.
- increase blood pressure
- cause anemia (low number of blood cells)
- at low levels of exposure to lead, the connection between the occurrence of some of these effects (e.g., increased blood pressure, altered function of the nervous system) is not certain.

At high levels of exposure, lead can severely damage the brain and kidneys in adults or children. In pregnant women, lead can cross the placenta and result in exposure to the fetus. Fetuses exposed to lead in the womb, because their mothers had a lot of lead in their bodies, may be born prematurely and have lower weights at birth. High levels of exposure to lead may cause miscarriage. High-level exposure in men can damage the organs responsible for sperm production. Lead may cause cancer in humans based on animal studies. However, there is inadequate evidence from human studies to make that determination.

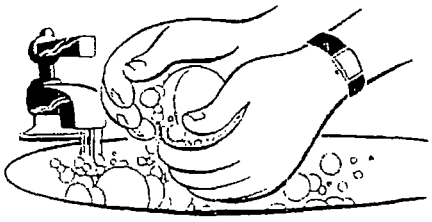
For more information, call your physician, local health department, or the Missouri Department of Health and Senior Services toll-free at (866) 628-9891.

Ways to Reduce Your Child's Exposure to Lead

MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES

Often children are lead poisoned by swallowing dust, dirt, or paint containing lead. Children up to 6 years old are most at risk for developing ill health effects from exposure to lead. Therefore, the Missouri Department of Health and Senior Services advises the following actions to reduce your child's exposure to lead:

- Have your child up to 6 years old tested for lead yearly. It's the only way to know if your child has elevated blood lead levels. Lead comes from many sources so knowing your child's blood lead level is important.
- Wash your child's hands frequently, especially before eating, after playing outside, after handling possible lead-contaminated objects, or after playing with pets. Make sure your child puts only safe, clean objects in his/her mouth (e.g. hands, food, toys, pacifiers, etc).



- Try to keep dust to a minimum in the house (house dust may contain lead). Wet-clean floors, windowsills, cabinets, toys, and other places where children play using a general all-purpose cleaner and warm water. For carpets, wet shampoo or use HEPA vacuums to remove lead dust.
- Do not let your child play on mine tailings.
- Because dirt may contain lead, have children play on solid grass cover.
- Provide your family with a healthy diet that is rich in iron, and calcium and that is low in fats and oils (this will decrease the body's absorption of lead).

- Keep your child away from areas of chipping and flaking paint.
- Keep your child away from areas where lead-related hobbies are practiced (ammunition reloading, lead bullet or sinker making, stained glass with leaded joints, furniture refinishing, etc., all of which can release high lead levels into the home).

Free

Blood Lead Testing!

Lead poisoning can harm children!

Lead poisoning can cause:

- **damage to the nervous system,**
- **behavioral problems,**
- **slowed growth, and**
- **hearing problems.**

Lead poisoning can be prevented!

The only way to tell if someone has lead poisoning is through a blood test.

Please call your local health department to set up an appointment for you or your child to receive a free blood lead test.

Iron County Health Department
573-546-7121

Reynolds County Health Center
573-648-2498

Questions? Missouri Department of Health and Senior Services 573-751-6160 or Toll Free 1-866-628-9891

APPENDIX D-2

TEMPLATE LETTERS FOR DOE RUN'S SECOND SAMPLE RESULT MAILING

Letter Template for owners with results less than 400 ppm lead

THE DOE RUN COMPANY

Southeast Missouri Mining and Milling Division

May 26, 2006

«ContactName»
«OwnerAddress»
«OwnerTown»

RE: Soil Sample Results
«SmpAdd»
«Soil_Sample_ID»

Dear «ContactName»

As you are aware, The Doe Run Company has conducted sampling of residential yard soil and driveway gravel in and around the City of Viburnum under an agreement with the U.S. Environmental Protection Agency (USEPA) to determine lead levels in the residential yards. Test results for the soil/gravel from your residential property, at the above referenced address, show that all areas of your yard/driveway measured lead levels below 400 parts per million lead. Based upon the practices followed by USEPA at other similar sites in this area, no further action will be required in your yard.

As stated in the Access Agreement, the soil/gravel analyses were shared with the USEPA and the Missouri Department of Natural Resources. Either of these government agencies may elect to take confirmatory samples from your yard/driveway as part of their oversight process.

Thank you for your cooperation and support during our sampling effort. Should you have further questions, feel free to call and leave a message at 573-244-8404.

Sincerely,
The Doe Run Company

John E. Carter, Project Manager

XC: Jeff Weatherford, USEPA
John Webb, MDNR
Louis Marucheau, TDRC
Robert Roscoe, TDRC

Letter Template for owners with results greater than 400 ppm and less than 1200 ppm lead

THE DOE RUN COMPANY

Southeast Missouri Mining and Milling Division

May 26, 2006

«ContactName»
«OwnerAddress»
«OwnerTown»

RE: Soil Sample Results
«SmpAdd»
«Soil_Sample_ID»

Dear «ContactName»

As you are aware, The Doe Run Company has conducted sampling of residential yard soil and driveway gravel in and around the City of Viburnum under an agreement with the U.S. Environmental Protection Agency (USEPA) to determine lead levels in residential yards. The test results for the soil/gravel from your residential property, at the above referenced address, show that some areas of your property contain soil or gravel that measure between 400 and 1,200 parts per million (ppm) lead.

At this time, as per the practices followed by USEPA at similar sites in this area, there will be no immediate soil removal action taken in your yard. However, upon completion of further evaluation required by the USEPA, additional action will likely be recommended in the future.

As stated in the sampling Access Agreement, the soil analyses were shared with the USEPA and the Missouri Department of Natural Resources. Either of these government agencies may elect to take confirmatory samples from your yard/driveway as part of their oversight process.

Thank you for your cooperation and support during our soil sampling effort. Should you have further questions, feel free to call and leave a message at 573-244-8404.

Sincerely,
The Doe Run Company

John E. Carter, Project Manager

XC: Jeff Weatherford, USEPA
John Webb, MDNR
Louis Marucheau, TDRC
Robert Roscoe, TDRC

Letter Template for owners with results greater than 1200 ppm lead

THE DOE RUN COMPANY

Southeast Missouri Mining and Milling Division

May 26, 2006

«ContactName»
«OwnerAddress»
«OwnerTown»

RE: Soil Sample Results
«SmpAdd»
«Soil_Sample_ID»

Dear «ContactName»:

As you aware, The Doe Run Company has conducted sampling of residential yard soil and driveway gravel in and around the City of Viburnum under an agreement with the U.S. Environmental Protection Agency (USEPA) to determine the lead levels in these yards. Test results of the soil/gravel from your residential property, at the above reference address, indicate that some areas in your yard/driveway contain soil or gravel that measure at or above 1,200 parts per million (ppm) lead. The attached sketch shows those areas highlighted in yellow (coded as «Great1200» on the site sketch).

Based upon standards used by USEPA at other similar sites in this area, these "yellow" areas should be addressed in an early action. This action will be conducted pursuant to specific procedures and requirements issued under authority of the USEPA. Doe Run will advise you when the requirements of this action have been established by USEPA. At that time, Doe Run will forward you an Access Agreement for Soil and Gravel Replacement that will include a generalized work plan that will describe what will be done. A final work plan applicable to your property will be developed prior to start-up of the project to further detail the specific work to be done.

The test results for the soil/gravel from your residential property also show that there may be other areas of your yard/driveway that contain soils or gravel that measured between 400 and 1,200 ppm lead. The attached sketch of your property has those areas highlighted in orange (coded as «Great400» on the site sketch). Upon completion of further evaluation required by the USEPA, additional action concerning these areas will likely be recommended in the future.

As stated in the sampling Access Agreement, these results have been furnished to the USEPA and the Missouri Department of Natural Resources. They may take confirmatory samples from your yard/driveway as part of their oversight of our sampling effort.

Your cooperation in the soil sampling effort is appreciated. If you have further questions, feel free to call and leave a message at 573-244-8404.

Sincerely,
The Doe Run Company

John E. Carter, Project Manager

XC: Jeff Weatherford, USEPA
John Webb, MDNR
Louis Marucheau, TDRC
Robert Roscoe, TDRC