



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
11201 Renner Boulevard
Lenexa, Kansas 66219

AUG 20 2014

MEMORANDUM

SUBJECT: Bloomfield Foundry (IAD980688345)
File Review

FROM: Bill Ferguson, Geologist
U.S. Army Corps of Engineers, Kansas City District

TO: Don Lininger, CHMM
Chief, Waste Remediation and Permitting Branch

RCRA Site Sampling Report (Booz Allen Hamilton, 24 Feb 2011)

- Soil samples were collected on December 6 and 7, 2010.
- Groundwater samples were not collected; no groundwater encountered in borings.
- Raw materials: pig iron, scrap iron, steel and limestone aggregate.
- Wastes generated: cupola slag, cupola dusts, cooling tower residue, wheel-a-brator dust, core butts and foundry sand.
- Cupola bag house dust is characteristic for lead (D008) and cadmium (D006). Between 1976 and 1983, it was mixed with molding sand for fill material in the eastern part of the site or it was disposed offsite on leased property (Map 7). It is currently managed and disposed as hazardous waste.
- Cupola slag consists of refractory material, metal oxides, and non-combustible residues. Managed as non-hazardous waste. Prior to 1990, the slag was used as fill in eastern portion of site or disposed in a landfill on leased property. Cupola slag is currently disposed offsite.
- Cooling tower residue consists of dust particles that adhere to walls of cooling tower. Residue is combined with bag house dust and managed/disposed as hazardous waste.
- Wheel-a-brator dust, core butts, foundry sand are considered non-hazardous waste and accumulated in slag pile east of concrete apron.
- Used oil generated from vehicle maintenance. Until 1992, used oil was applied to gravel parking lot as dust suppressant. Since 1992, it has been managed and disposed as used oil.

Investigation History

- January 1985 Sampling (U.S. Environmental Protection Agency Contractor).
- Cupola bag house dust sample had total lead and cadmium concentration of 26,000 mg/kg and 76 mg/kg, respectively.
- Soil samples near foundry had lead concentrations of 22 to 77 mg/kg.
- Soil samples at offsite landfill had lead concentration up to 110 mg/kg.

RCRA



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- Consent Agreement and Consent Order (20 May 1985): facility ordered to cease storage, disposal and treatment of hazardous waste and submit closure plan.
- Closure Plan focused solely on the hazardous waste storage area on the north side of facility.
- Excavation of soil near the former hazardous waste storage and treatment area occurred in April 1990.
- On January 29, 1991, the EPA approved closure at the Bloomfield Foundry facility.
- Groundwater sampling in February 1991.

The following was obtained from the Site Assessment Report dated 01 May 1991.

Five groundwater grab samples were collected from 5 soil borings (B-1 thru B-5) on the facility property. The groundwater samples were analyzed for total metals.

Boring	Cadmium (ug/L) MCL = 5 ug/L	Chromium (ug/L) MCL = 100 ug/L	Lead (ug/L) MCL = 15 ug/L
B-1	5	9	98
B-2	4	3	ND
B-3	1	4	8
B-4	2	2	ND
B-5	4	2	ND

RCRA Facility Assessment (1993)

- The EPA identified 2 SWMUs (SWMUs 8 and 9) and 1 AOC (Parking Area) where additional investigation may be needed:

SWMU 8 (Fill Area): the area on east side of property that was filled with waste material including cupola bag house dust.

- 7 soil samples were collected from fill area during PA (1988): lead was detected at concentrations as high as 340 mg/kg. The fill area deemed to be outside of area subject to RCRA closure.
- One soil boring (B-2, depth of 32 ft.) advanced in fill during groundwater sampling conducted in 1991. Soil and groundwater samples did not reveal concentrations of lead or cadmium above closure standards. Fill material was observed to depth of approximately 5-feet.

SWMU 9 (Offsite Landfill): located north of facility on leased land. Area of disposal of cupola bag house dust and slag.

- Received approximately 900 tons of foundry waste between 1981 and 1985.
- 6 soil samples collected during the preliminary assessment were analyzed for total metals and SVOCs. Highest lead concentration was 110 ppm. Chromium was detected in one sample at 41 ppm. Only 1 SVOC (phenol) was detected above the quantitation limit (710 ppb) in one sample.

AOC A (Parking Lot)

- Used oil used as dust suppressant on gravel parking lot from 1965 to 1992.
- Stained areas were observed during the visual site inspection.

RCRA Site Sampling Report - Analytical Results (2010)

- **Onsite Samples (SWMU 8 and AOC A):** soil samples were collected at nine locations on the facility property (Map 6) and analyzed for volatile organic compounds, semi-volatile compounds and RCRA metals. Sample results were compared to May 2014 Regional Screening Levels corresponding to a hazard quotient of 0.1.

VOCs: acetone was only VOC detected. It was detected in 8 samples at concentrations well below the RSL for both residential and industrial scenarios.

SVOCs: numerous constituents were detected at very low concentrations that are well below the associated RSLs for both residential and industrial scenarios.

Metals: detections included arsenic, barium, cadmium, chromium and lead.

Arsenic detected at sample locations 001, 002, 006, 007 and 010 at concentrations above the RSL for industrial soil of 3 mg/kg.

Barium: all detections were below the established RSL.

Cadmium: detected in the 1 to 2-foot sample at sample location 006 at a concentration of 7.3 mg/kg which exceeds the RSL for residential soil of 7 mg/kg.

Chromium: detected in all soil samples at concentrations greater than the industrial RSL for hexavalent chromium but well below the trivalent chromium RSL for both residential and industrial scenarios.

Lead: detected at sample location 006 in 0 to 1-foot sample at concentration of 529 mg/kg which exceeds RSL for residential soil (400 mg/kg). Lead was detected in the 1 to 2-foot sample at sample location 006 at a concentration of 1800 mg/kg; this concentration exceeds the RSL for industrial soil (800 mg/kg).

- **Offsite Landfill Samples (SWMU 9):** Three samples (010, 011 and 012) were collected at the offsite landfill (Map 9) and analyzed for SVOCs and total RCRA metals. Sample 010 was collected at a location south of the landfill; samples 011 and 012 were collected with the fill area. Sample results were compared to May 2014 Regional Screening Levels corresponding to a hazard quotient of 0.1.

SVOCs: No SVOCs were detected in soil samples collected at the 010 location. Very low concentrations of SVOCs were detected in soil samples collected at the 011 and 012 locations.

Metals: detections included arsenic, barium, cadmium, chromium, and lead.

Arsenic: detected at sample location 010 in soil samples collected at depth intervals 1 to 2-feet and 3 to 4-feet at a concentration of 8.5 mg/kg. This lead concentration exceeds the RSL for industrial soil of 3 mg/kg.

Barium: detected in all samples at concentrations well below the established RSLs.

Cadmium: detected in all samples at concentrations below the RSL for both residential and industrial soils.

Chromium: detected in all samples at concentration exceeding the RSL for hexavalent chromium for both residential and industrial soils. Chromium concentrations detected in the soil samples were well below the RSL for trivalent chromium for residential and industrial soils.

Lead: detected in all samples at concentrations below the established RSL for both residential and industrial soils.

Summary

Acetone was the only VOC that was detected in the soil samples; it was detected at very low concentrations that are well below the RSL for both residential and industrial soils.

Numerous SVOCs were detected in soil samples at concentrations that are well below the corresponding RSL value for both residential and industrial soils.

Arsenic was detected at concentrations above the RSL for industrial soil (3 mg/kg) at five sampling locations.

Cadmium was detected in the soil samples at concentrations below the RSL for industrial soils. The soil sample collected at a depth of 1 to 2-feet at sample location 006 had a cadmium concentration of 7.3 mg/kg which is just above the RSL for residential soil (7 mg/kg).

Chromium was detected in all soil samples at concentrations above the RSL for industrial soil for hexavalent chromium (6.3 mg/kg) but well below the RSL for trivalent chromium for both the residential and industrial scenarios. Samples were not analyzed for hexavalent chromium and background samples were not collected; thus, definitive evaluation of the chromium detections is difficult.

Lead was detected in soil at a concentration exceeding the RSL at sample location 006. The lead concentration of 529 mg/kg in the zero to 1-foot sample exceeds the RSL for residential soil of 400 mg/kg. The soil sample collected at a depth of 1 to 2-feet had a lead concentration of 1800 mg/kg which exceeds the RSL for industrial soil (800 mg/kg). These detections of lead are very likely associated with disposal of cupola bag house dust materials; however, the lack of site-specific background metals concentrations prevents a definitive evaluation.

Lead, cadmium, and chromium were detected in groundwater grab samples collected from five borings. Lead was detected in the sample collected from boring B-1 at a concentration of 98 ug/L which exceeds the MCL of 15 ug/L. The samples were analyzed for total metals, thus, the elevated concentration of lead may be the result of sample turbidity rather than natural groundwater conditions.

Conclusions and Recommendation

During the December 2010 sampling investigation, soil samples were collected from areas on the facility property and also at the offsite landfill area where foundry wastes including cupola bag house dust were disposed. The cupola bag house dust was determined to be a hazardous waste based on the toxicity characteristic for lead and cadmium. Metals (arsenic, cadmium, chromium and) were the only constituents that were detected at concentrations that exceeded the established RSL.

Groundwater grab samples were collected from five soil borings during the Site Assessment conducted in February 1991. Lead was detected in one sample at a concentration that exceeded the maximum contaminant level.

Arsenic was detected in soil samples at concentrations exceeding the RSL for industrial soil in soil samples collected both onsite and at the offsite landfill. Arsenic does not appear to be related to any facility locations and its presence in soil is attributed to natural background conditions.

Cadmium was detected in one sample collected at one onsite soil sample location at a concentration just above the RSL established for residential soil. None of the other samples collected in the vicinity had cadmium concentrations that exceeded the RSL. The expected future land use for the property is expected to remain industrial. Cadmium does not appear to present an unacceptable risk due to exposure.

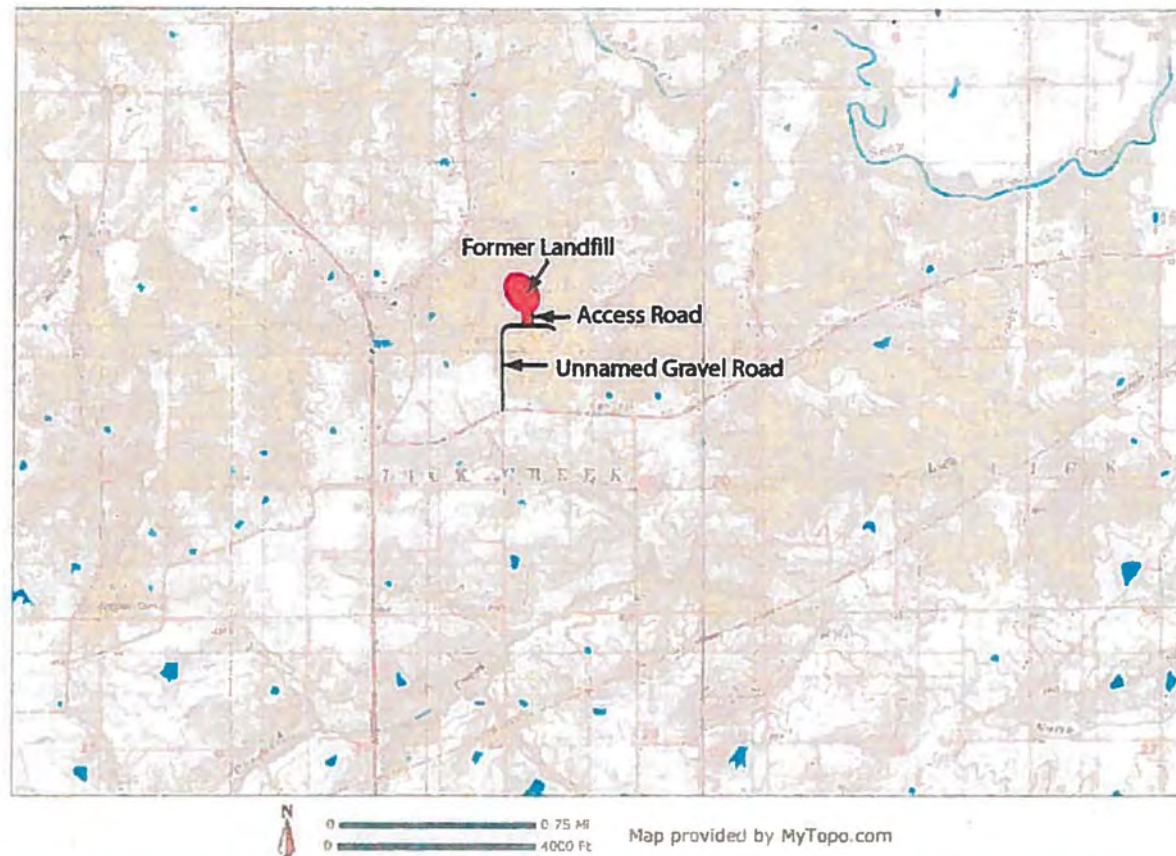
The soil samples were analyzed for total chromium. Chromium does not appear to be associated with any facility activities and its presence in the soil samples is attributed to natural background conditions.

Lead was detected in soil at one onsite sample location at concentrations that exceeded both the residential and industrial RSLs. Lead concentrations in soil samples at the surrounding sample locations had lead concentrations well below the RSL values. The elevated lead concentration appears to be localized and is not expected to present an unacceptable risk due to exposure.

Groundwater grab samples were collected from five onsite soil borings. Lead was detected in two samples at concentrations of 8 ug/L and 98 ug/L. Lead was not detected in the remaining three groundwater grab samples. The groundwater samples were analyzed for total metals. The elevated lead concentration detected in the single grab sample is likely the result of high sample turbidity and not representative of natural groundwater conditions.

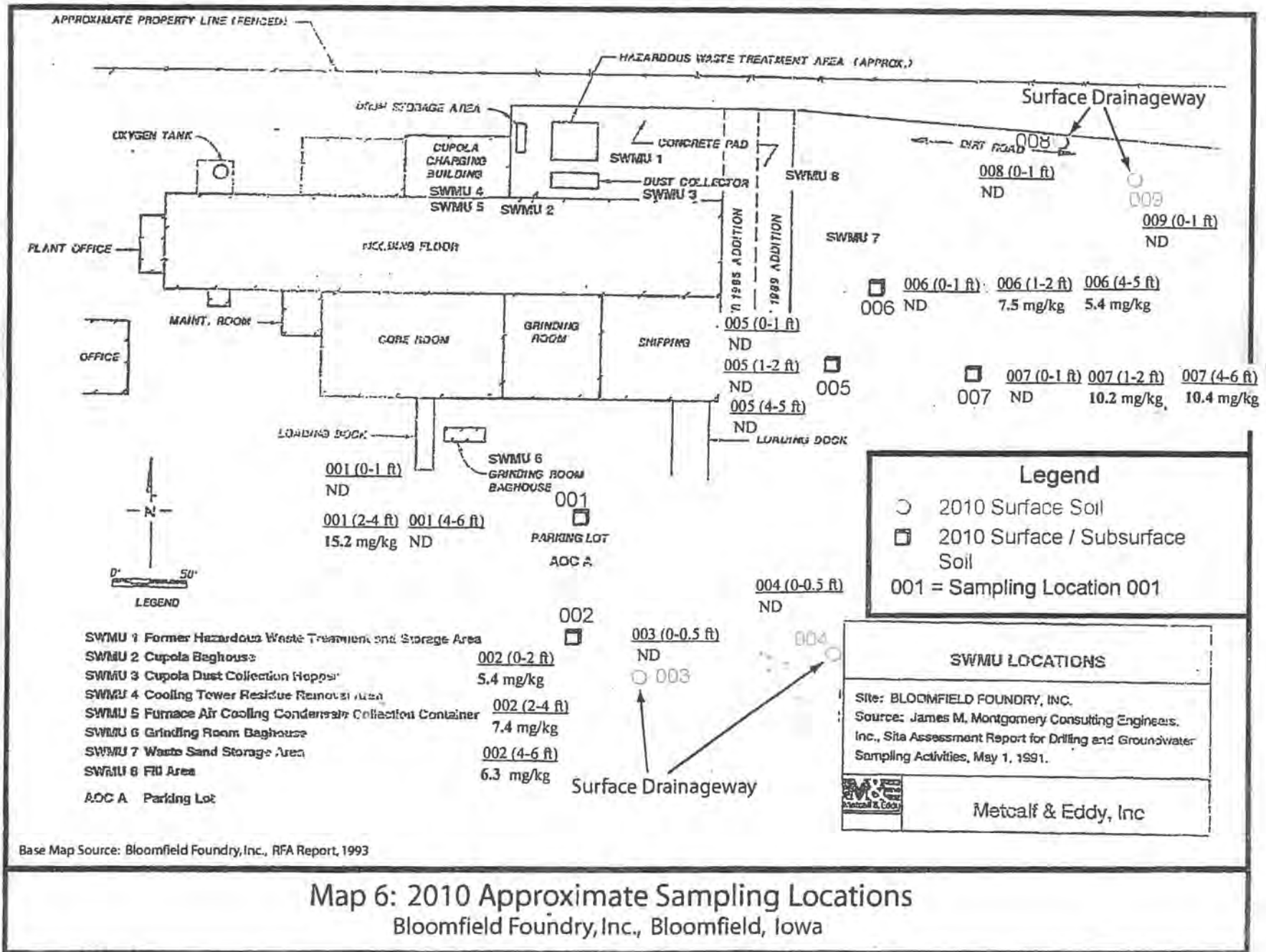
No further RCRA Corrective Action at the Bloomfield Foundry is recommended at this time.

Attachments



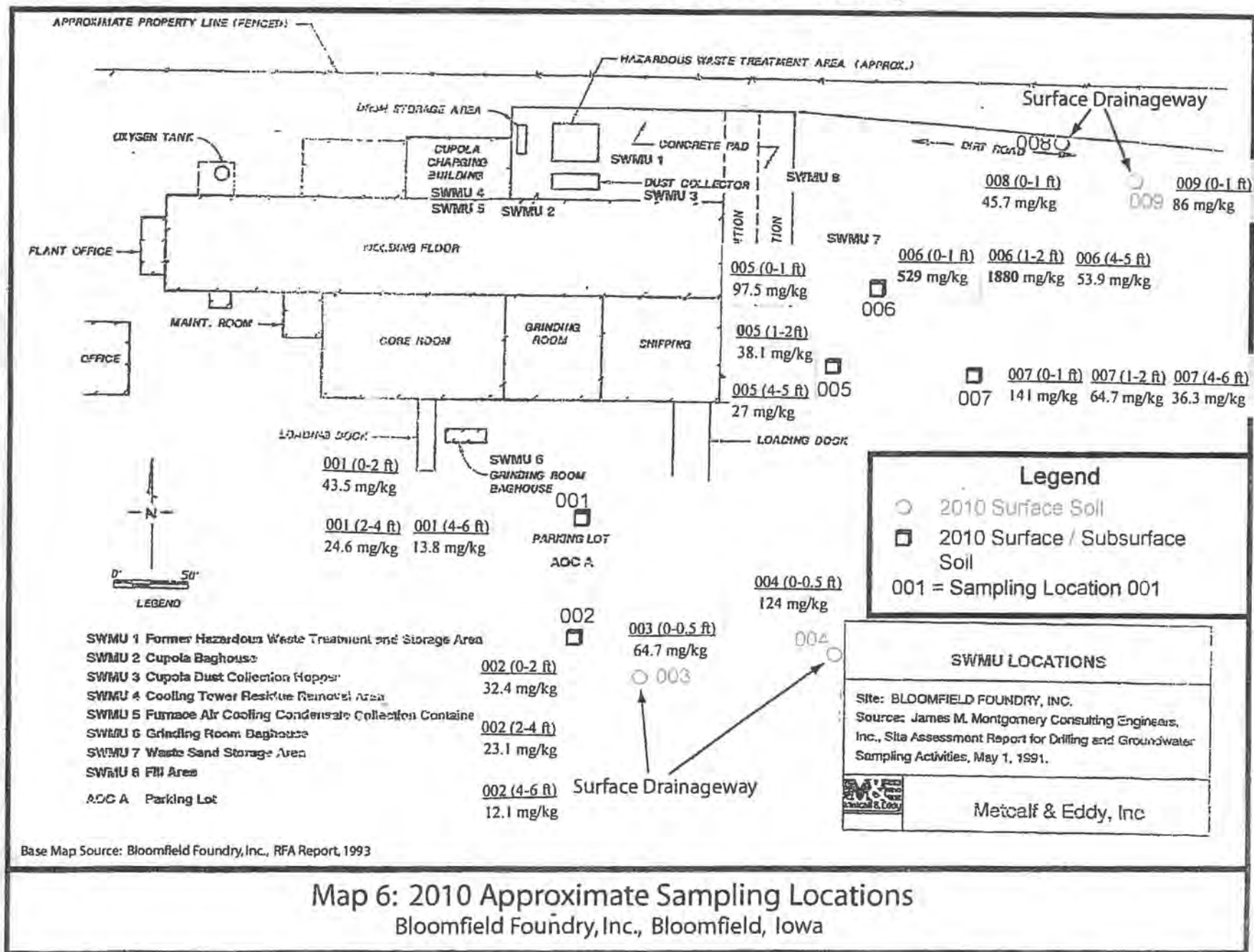
Map 7: Topographic Map of Offsite Landfill Area
Bloomfield Foundry, Inc., Bloomfield, Iowa

ARSENIC RSL (Residential) = 0.67 mg/kg RSL (Industrial) = 3 mg/kg



LEAD

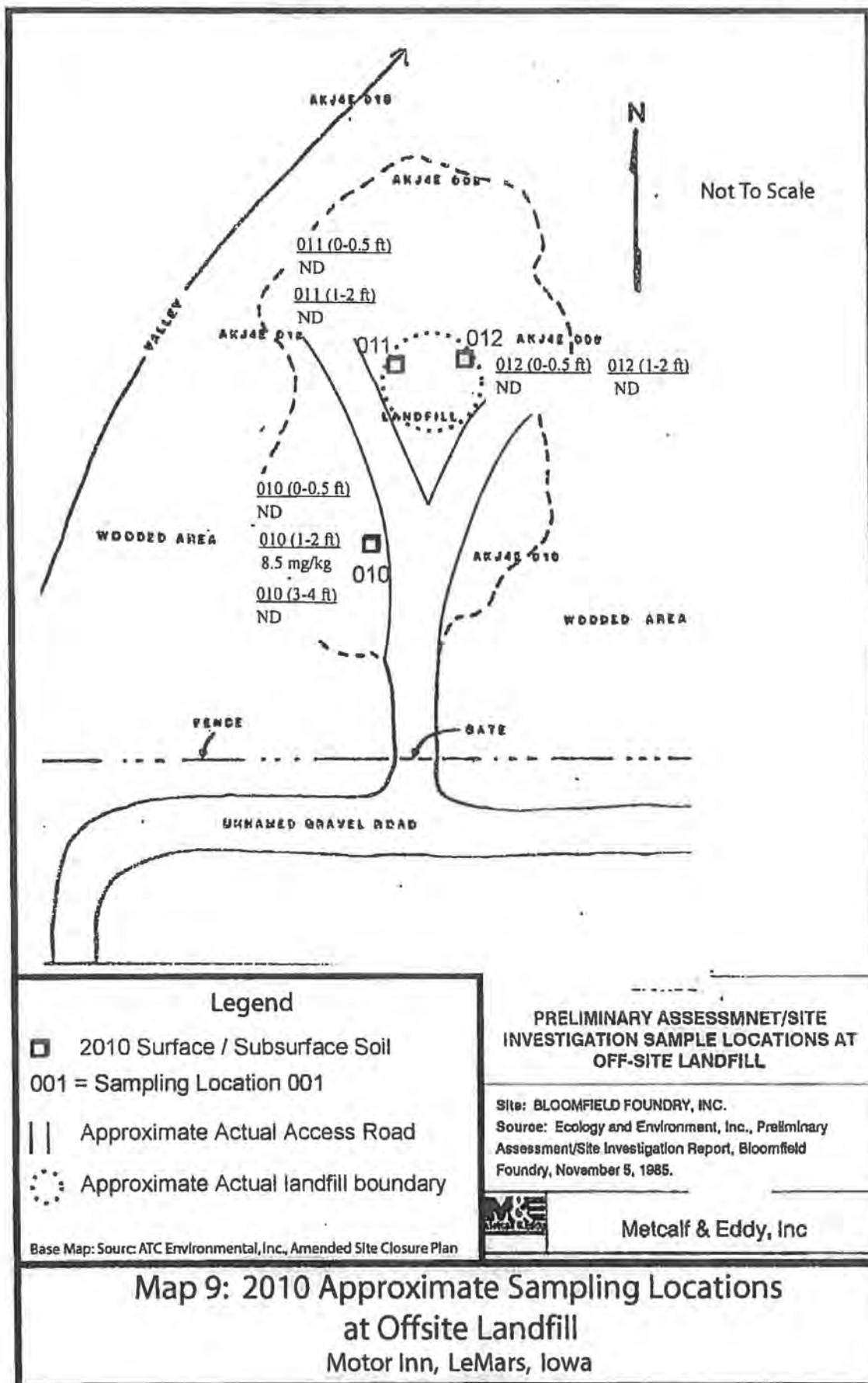
RSL (Residential) = 400 mg/kg RSL (Industrial) = 800 mg/kg



ARSENIC

RSL (Residential) = 0.67 mg/kg

RSL (Industrial) = 3 mg/kg



LEAD

RSL (Residential) = 400 mg/kg

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