Environmental Resources Management

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24 July 2003

Mr. Daniel Eaton Engineering Geologist II NYSDEC Albany 625 Broadway 11th Floor Albany, NY 12233-5400



RE: Proposed Remedial Action Plan

Former Banknote Facility

10 Dunnigan Road

ERM Project No.: 58803.00

Dear Mr. Eaton:

In this letter report, Environmental Resource Management, Inc. (ERM) presents the results of recent soil sampling and, as requested, a proposed remedial action plan of the Former Banknote Facility in Suffern (site), New York. ERM collected additional soil samples for total chromium and hexavalent chromium analyses at the site (Figure 1) on 30 May 2003. Based on the results of the additional sampling and data compiled from previous investigations (Figures 2, 3 and 4), ERM proposes a remedial action through excavation or capping of soils with concentrations of chromium greater than 50 mg/kg.

Two environmental media were evaluated at the Site: soil and ground water. Based on previous communications with the NYSDEC, ERM has identified chromium and hexavalent chromium in soil and ground water as the chemicals of potential concern at the site.

Approximately 108 soil samples have been collected at the Site for total chromium and or hexavalent chromium analysis. The samples have been collected from the surface and subsurface throughout the site, but primarily focused in the area of the Chromium Room on the West Side of the building. The Standards Criteria and Guidance (SCGs) for soil at the Site are the generic and site specific New York State Department of Environmental Conservation (NYSDEC) Remedial Site Cleanup Objectives (RSCOs) from NYSDEC Technical and Administrative Guidance Memorandum Number 4046 (TAGM-4046; NYSDEC, 1995) and

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through background sampling.

Tables 1 through 8 present a summary of the all chromium data at the site and compares the detected concentration of chromium in Site soils to TAGM#4046.

ERM evaluated potential exposure pathways at the site. The Site consists of one industrial/commercial building located in a mixed industrial/commercial and residential area. The building is surrounded by paved parking areas, Dunnigan Road, industrial buildings and commercial buildings, a residential housing building is located to the south, and a limited access highway to the north. Currently the western side of the building vacant. The eastern side of the building is used for warehouse activity. The majority of the Site is fenced to restrict access. There are two main gates one on the east and one on the west with access from Dunnigan Road. Surface water bodies at or in the immediate vicinity of the Site were not observed. Therefore, there are no surface water bodies to which Site ground water is expected to discharge.

As typical for this type of area and for areas of former industrial activity, there are three potential exposure pathways at the site: 1) inhalation of constituents (chromium); 2) ingestion; and, 3) dermal contact. Potential exposure pathways are described below.

Inhalation: Chromium is a non-volatile metal. The mechanism for chromium inhalation is airborne in solid form or adsorbed on dust particles. The inhalation pathway can be removed through control mechanisms. The inhalation pathway on the exterior of the building is greatly diminished by the location of the compound of concern (chromium) being primarily present in the subsurface. The inhalation pathway on the interior of the building is greatly limited by the presence of a concrete slab over the soil containing chromium. This pathway can be eliminated through the removal of areas of soil with high concentrations and capping.

Ingestion: All available information indicates there are currently no complete exposure pathways for ingestion of ground water and with the removal of the areas of high concentration in soil and capping, there will be no exposure pathway through soil. Human contact is limited to direct exposure to affected soil during soil disturbance activity such as excavation or trenching. This exposure pathway can be eliminated through the removal of concentrations greater than 50 mg/kg from the ground surface to

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the depth of ground water in the affected area and activity use limitations.

Dermal Contact: Dermal exposure to chromium in soil through dermal contact can be eliminated through an excavation program and capping.

There are three potential exposure populations at the site: 1) general population proximal to the site and casual visitors to the site, 2) building occupants, and 3) workers at the site. Excavation of soil with concentrations of chromium greater than 50 mg/kg can eliminate risk to these populations through contact with soil. The only remaining exposure pathway is surface soil greater than 10 mg/kg. The presence of chromium in surface soil at concentrations greater than 10mg/kg may potentially result in a complete exposure pathway via suspension from surface soil. Baker proposes to eliminate this potential human exposure pathway by placing a soil cap on the areas where soil concentrations are greater than 10 mg/kg.

Based on the results of numerous Site investigations Baker proposes the following remedial action program consistent with the terms of the Voluntary Agreement is proposed for the Site. The proposed remedial action includes mitigation of identified issues to protect human health and the environment.

#### PROPOSED REMEDIAL ACTION PLAN

As presented above, site soil has been affected with chromium at concentrations greater than generic site specific RSCO's of 10 mg/kg. To address the affected soil at the site, Baker proposes to excavate all soil with concentrations greater than 50 mg/kg in the subsurface (including the area in the Chromium Room) to a depth equal to the water table and to cap any surface soil greater than 10 mg/kg. The cap will consist of a geotextile membrane beneath not less than 12-inches of imported topsoil.

ERM does not propose any modifications to the currently proposed site ground water monitoring plan. Site ground water will be monitored as indicated in previously presented documents. All wells will be sampled for compounds of concern and indicators of natural attenuation. At the completion of the ground water monitoring program, a ground water monitoring report will be submitted to the NYSDEC to document site conditions.

The proposed remedial action plan will be completed with the implementation of land use limitation and institutional controls on future ground water use and soil management at the site. Upon completion of the remedial action plan, soil with chromium in concentrations greater than 50 mg/kg will have been removed and concentrations greater than 10 mg/kg will have been capped. Therefore, Baker does not anticipate any use limitations or institutional controls regarding soil at the site.

A detailed remedial design document will be prepared under a separate cover by a Professional Engineer. The Remedial Design Report will contain specific design parameters and engineering details.

Please call me if you have any questions or comments.

Sincerely,

Edward Hinchey, P.G. Operations Manager

C: Doug Grimmer – Baker Properties Marc Baker – Baker Properties

# ATTACHMENT A

TABLE 1
SUMMARY OF INORGANIC METALS ANALYTICAL DATA - SOIL
FORMER BANKNOTE OF AMERICA FACILITY
SUFFERN, ROCKLAND COUNTY, NEW YORK

				TOTAL	HEXAVALENT
SAMPLE	DEPTH	DATE	MATRIX	CHROMIUM	CHROMIUM
CR-W-CR-S	NA NA	12/06/95	SOIL	X	
CR-W-CR-1	NA_	12/06/95	SOIL	X	
CR-W-CR-2	NA	12/06/95	SOIL	X	
CR-NW-CR-CS	NA	12/06/95	SOIL	X	
CR-NW-CR-S	NA	12/06/95	SOIL	X	
CR-NW-CR-1	NA	12/06/95	SOIL	X	
CR-NW-CR-2	NA	12/06/95	SOIL	X	
CR-NE-CR-CS	NA	12/06/95	SOIL	X	
CR-NE-CR-S	NA	12/06/95	SOIL	X	
CR-NE-CR-1	NA	12/06/95	SOIL	X	
ONGR-OS	Surface	12/12/95	SOIL	X	
ONGR-01	1	12/12/95	SOIL	X	
ONGR-02	2	12/12/95	SOIL	X	
OCR1-OS	Surface	12/12/95	SOIL	X	_
OCR1-01	1	12/12/95	SOIL	X	
OCR1-02	2	12/12/95	SOIL	X	
OCR2-OS	Surface	12/12/95	SOIL	X	-
OCR2-01	1	12/12/95	SOIL	X	
OCR2-02	2	12/12/95	SOIL	X	
OCR3-OS	Surface	12/12/95	SOIL	X	_
OCR3-01	1	12/12/95	SOIL	X	-
OCR3-02	2	12/12/95	SOIL	X	
OCR4-OS	Surface	12/12/95	SOIL	X	
OCR4-01	1	12/12/95	SOIL	X	-
OCR4-02	2	12/12/95	SOIL	X	_
OCR5-OS	Surface	12/12/95	SOIL	X	
OCR5-01	1	12/12/95	SOIL	X	-
OCR5-02	2	12/12/95	SOIL	- <del>x</del>	_
SB1/SS1	5	01/96	SOIL	X	
SB1/SS2	10	01/96	SOIL	X	
SB2/SS2	8	01/96	SOIL	X	
SB2	9	01/96	SOIL	x	-
SB3/SS1	7	01/96	SOIL	- x	
SB3/SS2	9	01/96	SOIL	- ^	
SB3/SS3	11	01/96	SOIL	X	
SB3/SS4	12	01/96	SOIL	X	
SB4/SS1	8	01/96	SOIL	X	
SB4/SS2	10	01/96	SOIL	X	-
SB4/SS3	12	01/96	SOIL	X	
3D4/333	12	01/90	JUIL	^	

- Depth is reported in feet below grade, unless otherwise indicated.
- Site specific action level selected at 50 parts-per-million (ppm) or mg/Kg.
- Italicized type indicates site background samples.
- NA Indicates depth of sample collection is not known.

# TABLE 1 (Continued) SUMMARY OF INORGANIC METALS ANALYTICAL DATA - SOIL (cont'd) FORMER BANKNOTE OF AMERICA FACILITY SUFFERN, ROCKLAND COUNTY, NEW YORK

SAMPLE	DEPTH	DATE	MATRIX	TOTAL CHROMIUM	HEXAVALENT CHROMIUM
SB4/SS4	14	01/96	SOIL	X	
SB5/SS2	10	01/96	SOIL	X	
SB5/SS3	12	01/96	SOIL	X	
SB5/SS4	14	01/96	SOIL	X	
B1	2-4	07/02/01	SOIL	X	
B1	4-6	07/02/01	SOIL	X	
B1	6-8	07/02/01	SOIL	X	
B1	8-10	07/02/01	SOIL	X	-
B2	2-4	07/02/01	SOIL	X	
B2	4-6	07/02/01	SOIL	X	
B2	6-8	07/02/01	SOIL	X	
B2	8-10	07/02/01	SOIL	X	
MW2	0-2	07/02/01	SOIL	X	
MW2	2-4	07/02/01	SOIL	X	
MW2	4-6	07/02/01	SOIL	$\frac{x}{x}$	
MW2	6-8	07/02/01	SOIL	X	
MW2	8-10	07/02/01	SOIL	X	
MW2	10-12	07/02/01	SOIL	X	
MW2	12-14	07/02/01	SOIL	X	-
B-3	0-2	07/02/01	SOIL	$\frac{x}{x}$	
B-3	2-4	07/02/01	SOIL	X	
MW-4	3"-9"	07/02/01	SOIL	X	
MW-4	2-4	07/02/01	SOIL	X	
MW-4	4-6	07/02/01	SOIL	<u>x</u>	-
MW-4	6-8	07/02/01	SOIL	X	
B5/MW-5	0-2	07/02/01	SOIL	$\frac{\hat{x}}{x}$	
B-4	0-2	07/02/01	SOIL	$\frac{\hat{x}}{x}$	
B-4	2-4	07/03/01	SOIL	X	
B-4	4-8	07/03/01	SOIL		
BCA-0702-SB1A	NA	07/03/01	SOIL	X	X
BCA-0702-SB1A	NA	07/02	SOIL	×	X
BCA-0702-SB3A	NA	07/02	SOIL	X	- X
BCA-0702-SB3A	NA NA	07/02	SOIL	X	$\frac{\hat{x}}{x}$
BCA-0702-SB5A	NA NA	07/02	SOIL	X	$\frac{\hat{x}}{x}$
BCA-0702-SB5A BCA-0702-SB6A	NA NA	07/02	SOIL	x	$\frac{\hat{x}}{x}$
BCA-0702-SB0A BCA-0702-SB7A	NA NA	07/02	SOIL	X	X
BCA-0702-SB7AD	NA	07/02	SOIL	X	X
BCA-0702-SB8A	NA NA	07/02	SOIL	X	^X
BCA-0702-SB9A	NA NA	07/02	SOIL	X	X
BCA-0702-3B9A BCA BG NW-1	2"-3"	08/02	SOIL	^X	^
BUA BU IVV-I	2 -0	00/02	JUIL	^	

- Depth is reported in feet below grade, unless otherwise indicated.
- Site specific action level selected at 50 parts-per-million (ppm) or mg/Kg.
- Italicized type indicates site background samples.
- NA Indicates depth of sample collection is not known.

# TABLE 1 (Continued) SUMMARY OF INORGANIC METALS ANALYTICAL DATA - SOIL (cont'd) FORMER BANKNOTE OF AMERICA FACILITY SUFFERN, ROCKLAND COUNTY, NEW YORK

SAMPLE	DEPTH	DATE	MATRIX	TOTAL CHROMIUM	HEXAVALENT CHROMIUM
BCA BG NE-1	2"-3"	08/02	SOIL	X	CHAOMIOM
BCA BG SE-1	2"-3"	08/02	SOIL	X	
BCA BG SW-1	2"-3"	08/02	SOIL	X	
BCA BG NW-2	2"-3"	08/02	SOIL	X	
BCA BG NE-2	2"-3"	08/02	SOIL	X	
BSB-1	1.5	05/29/03	SOIL	X	
BSB-1	3.0	05/29/03	SOIL	X	
BSB-1	4.0	05/29/03	SOIL	X	
BSB-2	1.0	05/29/03	SOIL	X	
BSB-2	2.0	05/29/03	SOIL	X	
BSB-2	3.0	05/29/03	SOIL	X	
BSB-3	3.5	05/29/03	SOIL	X	
BSB-4	4.0	05/29/03	SOIL	X	
BSB-5	4.0	05/29/03	SOIL	X	
BSB-6	0.5	05/29/03	SOIL	- X	
BSB-6	1.0	05/29/03	SOIL	X	
BSB-6	2.0	05/29/03	SOIL	X	
CRB-1	0.0	05/30/03	SOIL	X	X
CRB-1	1.5	05/30/03	SOIL	X	X
CRB-2	0.0	05/30/03	SOIL	X	X
CRB-2	1.0	05/30/03	SOIL	X	X
CRB-3	0.0	05/30/03	SOIL	X	X
CRB-3	1.0	05/30/03	SOIL	X	X
CRB-4	0.0	05/30/03	SOIL	X	X
CRB-5	0.0	05/30/03	SOIL	X	X
CRB-6	1.0	05/30/03	SOIL	X	X
CRB-7	0.0	05/30/03	SOIL	X	X
CRB-7	1.0	05/30/03	SOIL	- X	$\frac{x}{x}$
BSB-DUPE		05/29/03	SOIL	X	

- Depth is reported in feet below grade, unless otherwise indicated.
- Site specific action level selected at 50 parts-per-million (ppm) or mg/Kg.
- Italicized type indicates site background samples.
- NA Indicates depth of sample collection is not known.

TABLE 2
SUMMARY OF SOIL SAMPLE RESULTS
FORMER BANKNOTE CORPORATION OF AMERICA FACILITY
SUFFERN, ROCKLAND COUNTY, NEW YORK
29-30 May 2003

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8	GENERIC	TOTAL	HEXAVALENT
SAMPLE ID	RSCO	CHROMIUM	CHROMIUM
40 10		UNITS - mg/Kg	1
BSB-1 (1.5)	10	415	NS
BSB-1 (3.0)	10	184	NS
BSB-1 (4.0)	10	118	NS
BSB-2 (1.0)	10	10.4	NS
BSB-2 (2.0)	10	11.3	NS
BSB-2 (3.0)	10	10.7	NS
BSB-3 (3.5)	10	12.0	NS
BSB-4 (3.0)	10	354	NS
BSB-5 (4.0)	10	19.7	NS
BSB-6 (0.5)*	10	15.5	NS
BSB-6 (1.0)	10	11.9	NS
BSB-6 (2.0)	10	12.9	NS
BSB-DUPE*	10	25.7	NS
CRB-1 (0.0)	10	291	86
CRB-1 (1.5)	10	9.31	ND
CRB-2 (0.0)	10	77.4	26
CRB-2 (1.0)	10	16.5	ND
CRB-3 (0.0)	10	120	22
CRB-3 (1.0)	10	11.5	ND
CRB-4 (0.0)	10	641	59
CRB-5 (0.0)	10	342	100
CRB-6 (1.0)	10	10.2	ND
CRB-7 (0.0)	10	20.1	ND
CRB-7 (1.0)	10	23.9	ND

ND - analyte was not detected in the sample at a concentration above the method detection limit.

- Bold face type indicates analytical value greater than site specific generic RSCO.
- Site specific generic RSCO selected at 10 parts-per-million (ppm) or mg/Kg.

NS - indicates sample was not analyzed for this method.

\* - Duplicate sample collected at soil boring BSB-6 at 0.5 foot interval.

TABLE 3
SUMMARY OF BACKGROUND SOIL SAMPLE RESULTS
FORMER BANKNOTE CORPORATION OF AMERICA FACILITY
SUFFERN, ROCKLAND COUNTY, NEW YORK
August 2002

SAMPLE ID	GENERIC RSCO	TOTAL CHROMIUM	HEXAVALENT CHROMIUM
		UNITS - mg/Kg	
BCA BG NW-1	10	8.51	NS
BCA BG NE-1	10	10.8	NS
BCA BG SE-1	10	9.67	NS
BCA BG SW-1	10	7.58	NS
BCA BG NW-2	10	7.53	NS
BCA BG NE-2	10	7.47	NS

ND< - analyte was not detected in the sample at a concentration above the method detection limit.

- Bold face type indicates analytical value greater than site specific action level.
- Site specific generic RSCO selected at 10 parts-per-million (ppm) or mg/Kg

TABLE 4
SUMMARY OF SOIL SAMPLE RESULTS - Peach Tree Environmental
FORMER BANKNOTE CORPORATION OF AMERICA FACILITY
SUFFERN, ROCKLAND COUNTY, NEW YORK
July 2002

SAMPLE ID	GENERIC RSCO	TOTAL CHROMIUM	HEXAVALENT CHROMIUM
		UNITS - mg/Kg	
BCA-0702-SB1A	10	12	ND<0.010
BCA-0702-SB2A	10	24	ND<0.010
BCA-0702-SB3A	10	15	ND<0.010
BCA-0702-SB4A	10	39	ND<0.010
BCA-0702-SB5A	10	72	ND<0.010
BCA-0702-SB6A	10	94	ND<0.010
BCA-0702-SB7A	10	23	ND<0.010
BCA-0702-SB7AD	10	<b>2</b> 7	ND<0.010
BCA-0702-SB8A	10	14	ND<0.010
BCA-0702-SB9A	10	19	ND<0.010

- ND< analyte was not detected in the sample at a concentration above the method detection limit.
  - Bold face type indicates analytical value greater than site specific action level.
  - Site specific generic RSCO selected at 10 parts-per-million (ppm) or mg/Kg
- NS indicates sample was not analyzed for this method.

TABLE 5
SUMMARY OF SOIL SAMPLE RESULTS
FORMER BANKNOTE CORPORATION OF AMERICA FACILITY
SUFFERN, ROCKLAND COUNTY, NEW YORK
2-3 July 2001

4,	0-11-10			
0.1.1.01.5.10	GENERIC	TOTAL	HEXAVALENT	
SAMPLE ID	RSCO	CHROMIUM	CHROMIUM	
		UNITS - mg/Kg		
B1 (2-4)	10	175	NS _	
B1 (4-6)	_ 10	8.99	NS	
B1 (6-8)	10	11.1	NS	
B1 (8-10)	10	7.71	NS	
B2 (2-4)	10	60.6	NS	
B2 (4-6)	10	23.3	NS	
B2 (6-8)	10	4.5	NS	
B2 (8-10)	10	26.5	NS	
MW2 (0-2)	10	12.3	NS	
MW2 (2-4)	10	11.7	NS	
MW2 (4-6)	10	5.8	NS	
MW2 (6-8)	10	8.4	NS	
MW2 (8-10)	10	11.3	NS	
MW2 (10-12)	10	10.3	NS	
MW2 (12-14)	10	4.38	NS	
B-3 (0-2)	10	22.6	NS	
B-3 (2-4)	10	7.84	NS	
MW-4 (3"-9")	10	15.2	NS	
MW-4 (2-4)	10	6.93	NS	
MW-4 (4-6)	10	9.95	NS _	
MW-4 (6-8)	10	3.2	NS	
.B5/MW-5 (0-2)	10	7.69	NS	
B-4 (0-2)	10	11.8	NS	
B-4 (2-4)	10	8.84	NS	
B-4 (4-6)	10	6.02	NS	

ND< - analyte was not detected in the sample at a concentration above the method detection limit.

- Bold face type indicates analytical value greater than site specific generic RSCO.
- Site specific generic RSCO selected at 10 parts-per-million (ppm) or mg/Kg

TABLE 6
SUMMARY OF SOIL SAMPLE RESULTS - Kiber
FORMER BANKNOTE CORPORATION OF AMERICA FACILITY
SUFFERN, ROCKLAND COUNTY, NEW YORK
January 1996

SAMPLE ID	GENERIC RSCO	TOTAL CHROMIUM	HEXAVALENT CHROMIUM
96		UNITS - mg/Kg	
SB1/SS1	10	8	NS
SB1/SS2	10	5.6	NS
SB2/SS2	10	10	NS
SB2	10	16.1	NS
SB3/SS1	10	12.3	NS
SB3/SS2	10	8.7	NS
SB3/SS3	10	23	NS
SB3/SS4	10	11	NS
SB4/SS1	10	11.1	NS
SB4/SS2	10	10.3	NS
SB4/SS3	10	14.3	NS
SB4/SS4	10	7.2	NS
SB5/SS2	10	9.6	NS
SB5/SS3	10	11.2	NS
SB5/SS4	10	9.3	NS

ND< - analyte was not detected in the sample at a concentration above the method detection limit.

- Bold face type indicates analytical value greater than site specific generic RSCO.
- Site specific generic RSCO selected at 10 parts-per-million (ppm) or mg/Kg.

TABLE 7
SUMMARY OF SOIL SAMPLE RESULTS - Kiber
FORMER BANKNOTE CORPORATION OF AMERICA FACILITY
SUFFERN, ROCKLAND COUNTY, NEW YORK
12 December 1995

	T'		1
SAMPLE ID	GENERIC RSCO	TOTAL CHROMIUM	HEXAVALENT CHROMIUM
		UNITS - mg/Kg	1
ONGR-OS	10	53	NS
ONGR-01	10	ND<	NS
ONGR-02	10	ND<	NS
OCR1-OS	10	160	NS
OCR1-01	10	47	NS
OCR1-02	10	27	NS
OCR2-OS	10	900	NS
OCR2-01	10	79	NS
OCR2-02	10	140	NS
OCR3-OS	10	44	NS
OCR3-01	10	43	NS
OCR3-02	10	33	NS
OCR4-OS	10	950	NS
OCR4-01	10	290	NS
OCR4-02	10	500	NS
OCR5-OS	10	300	NS
OCR5-01	10	35	NS
OCR5-02	10	26	NS

ND< - analyte was not detected in the sample at a concentration above the method detection limit.

- Bold face type indicates analytical value greater than site specific generic RSCO.
- Site specific generic RSCO selected at 10 parts-per-million (ppm) or mg/Kg.

TABLE 8
SUMMARY OF SOIL SAMPLE RESULTS - Kiber
FORMER BANKNOTE CORPORATION OF AMERICA FACILITY
SUFFERN, ROCKLAND COUNTY, NEW YORK
6 December 1995

SAMPLE ID	GENERIC RSCO	TOTAL CHROMIUM	HEXAVALENT CHROMIUM
(A)		UNITS - mg/Kg	
CR-W-CR-S	10	564	NS
CR-W-CR-1	10	340	NS
CR-W-CR-2	10	490	NS
CR-NW-CR-CS	10	930	NS
CR-NW-CR-S	10	683	NS
CR-NW-CR-1	10	760	NS
CR-NW-CR-2	10	790	NS
CR-NE-CR-CS	10	560	NS
CR-NE-CR-S	10	7.4	NS
CR-NE-CR-1	10	22	NS

ND< - analyte was not detected in the sample at a concentration above the method detection limit.

- Bold face type indicates analytical value greater than site specific generic RSCO.
- Site specific generic RSCO selected at 10 parts-per-million (ppm) or mg/Kg.

## ATTACHMENT B









