



**Final
BUILDING 57
SOIL INVESTIGATION AND BUILDING
CHARACTERIZATION PRIOR TO HAZARDOUS
WASTE STORAGE FACILITY USAGE**

SAIC Project 01-1633-00-6220-007

Prepared for:

**Harley-Davidson Motor Company Operations, Inc.
York Vehicle Operations
1425 Eden Road, York PA, 17402**

April 2006



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April 2006

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1.0 BACKGROUND/INTRODUCTION

Under contract to Harley-Davidson Motor Company Operations, Inc (Harley-Davidson), Science Applications International Corporation (SAIC) has performed a soil study in and around Building 57. The Harley-Davidson facility (site) is located near the intersection of U.S. Route 30 and Eden Road in Springettsbury Township, York, Pennsylvania. Building 57 is located just south of Building 51 and north of Building 42 in the northern part of the Harley-Davidson plant (see Figure 1).

Building 57 is currently used as a metal fabrication shop by Harley-Davidson. While the construction date for Building 57 could not be determined, it is shown on several AMF drawings from the 1960's. Figure 2 is a Harley-Davidson CADD drawing which shows the current layout of Building 57. Building 57 currently contains various work areas and metal fabrication equipment. The central part of the building contains sheet metal rollers, band saws, metal punches, welders, a drill press, a metal shear, a metal break, a belt sander, two flammable storage cabinets, and a parts washer. Fork lifts and mobile welders are stored in the alcove to the west. The southeast corner of the building is used as an employee break room and a storage room. A pit described as a utility vault for steam pipes with a sump pump is located in the southwest corner of this storage room. A locker room and restroom facilities are located in the southwest corner of the building, along with an entry way to Building 42.

Building 57 is the proposed location for a future greater than 90 day hazardous waste storage area for Harley-Davidson. Harley-Davidson is proposing to move the current greater than 90 day hazardous waste storage facility from Building 51 to Building 57. Moving the hazardous waste storage area to Building 57 will nearly double the available storage space, and provide needed loading dock facilities.

SAIC reviewed historic information regarding Building 57 to identify potential environmental concerns and to select soil sample locations. SAIC reviewed available historic drawings, conducted interviews of Harley-Davidson employees, and performed a site walk through. Three historic drawings provided information concerning Building 57's history and former uses.

- A 1965 AMF drawing showed the location of a tank and a pit at the exterior southeast corner of the Building 57 (currently within the northern wing of Building 42). The drawing did not indicate the contents or use of the tank or pit.
- A 1975 AMF drawing showed the concrete pit in the southwest corner of the storage room and labels it as an artesian well. That drawing also indicates that air conditioning equipment was stored in the western alcove.
- A 1993 Harley-Davidson drawing of the plant configuration showed Building 57 with a label in the northeast corner indicating paint storage and paint booth areas.

An interview with Harley-Davidson employee, John Landis, on January 11, 2006 indicated that a paint storage area existed in the northeast corner of the building several years ago. According to Mr. Landis, this included storage of paint cans on shelves. Mr. Landis also indicated that the concrete pit contains a sump pump. The sump pump

removes water that collects in the pit during wet weather and discharges it to a storm water trench at the southeast exterior corner of the building.

SAIC conducted a walk through of Building 57 on January 11, 2006. The walk through confirmed the location of work areas and equipment, as shown on Figure 2. Some oil stains were observed on the concrete floor around the two band saws and the parts washer in the north central portion of the building (see Photograph 1 in Appendix A, showing oil stains on the concrete floor around one of the band saws). The pit in the storage room was observed to be constructed of concrete block (painted and sealed) on two sides and poured concrete on the other two sides. The dimensions of the pit were 4 feet by 4 feet and 5½ feet deep. The bottom of the pit was concrete, except for a small recessed area in the northwest corner of the pit measuring 1½ feet by 2 feet and 6 inches deep, where water was observed. The bottom of this recessed area contained some silt covering what looked like a rock structure. Photograph 2 in Appendix A shows the current condition of the sump pit.

The nearest wells to Building 57 are well pair MW-31 S/D (located on the northwest corner of Building 57) and well pair MW-78/84 (located approximately 150 feet northeast of Building 57). Water levels in these wells are generally 15 to 20 feet below ground surface.

Depth to bedrock at these wells range from 37 to 63 feet below ground surface, with 17 to 45 feet of saturated overburden above bedrock. The direction of groundwater flow is generally toward the west-southwest. The water level observed in the Building 57 pit was found to be approximately 5 feet below ground surface and is not likely to be an expression of the groundwater table. If water infiltrates the Building 57 pit, it may be from a local perched groundwater condition.

2.0 SOIL INVESTIGATION ACTIVITIES

Twelve (12) soil samples were collected from the eleven (11) soil borings on February 21, 2006. These soil boring locations, seen on Figure 2, coincide with areas of historic or current environmental interest as described below:

- Boring SB-1, area formerly used for air conditioning equipment storage.
- Boring SB-2, area of oil-stained concrete near a band saw.
- Boring SB-3, area near a flammable materials storage cabinet.
- Boring SB-4, area of oil-stained concrete near a band saw and parts washer.
- Boring SB-5, area formerly used for paint storage and a paint booth.
- Boring SB-6 and SB-11, areas under the potential future location of a loading dock.
- Boring SB-7 and SB-8, closest accessible areas to the former tank and pit south of Building 57, and near current welding areas.
- Boring SB-9 and SB-10, between Building 57 and Building 51.

Seven of the boring locations (SB-1, SB-2, SB-3, SB-4, SB-5, SB-7, and SB-8) were located inside the building. A concrete coring machine was used to carve through approximately 6 – 8 inches of concrete at each of these locations. Four of the soil borings (SB-6, SB-9, SB-10, and SB-11) were located outside the building. A jackhammer was used to penetrate through 4 – 6 inches of asphalt at these locations. At all eleven of the boring locations, fill containing cobble-sized stones beneath the concrete and asphalt, ranging from 2 – 19 inches in thickness, was removed by hand until soil was encountered. Following the removal of the fill, a 3 – 10 inch soil core was removed from the boring. A summary of the soil depths and descriptions of the soil samples can be viewed in Table 1. Following sampling, the remaining soil was returned to the borehole along with any removed fill. All boreholes were then compacted and completed to the surface with a concrete or asphalt plug.

Soil samples were labeled in accordance with the naming convention specified in Harley-Davidson's QAPP. The samples were labeled in the attached laboratory analyses using this nomenclature. For example, the soil sample from SB-01 collected from 0-2 feet deep was identified in the report as HD-B57C-SB-001-02-0. SB-12 was a quality assurance blind duplicate of sample SB-01.

Soil samples were sent to Severn Trent Laboratories, Inc. (STL) in Pittsburgh, Pennsylvania to be tested for priority pollutant metals, hexavalent chromium, total and free cyanide as well as volatile organic compounds. The results of these analyses are summarized in Table 2. The full analytical reports are maintained on file at SAIC. These results were compared to the limits set by Pennsylvania Department of Environmental Protection (DEP) Act 2 Medium Specific Concentrations (MSC) and Environmental Protection Agency (EPA) Risk-Based Concentrations (RBCs) as shown in Table 2. Arsenic exceeded the EPA RBCs standard in all 12 samples. PCE was detected in one sample (SB-02) and TCE was detected in detected in another (SB-07), but at concentrations below their respective reporting limits. While methylene chloride was

detected at concentrations below the reporting limit in several soil samples, these results were dismissed due to contamination of methylene chloride in the trip blank. In summary, arsenic is the only tested parameter that exceeded applicable soil quality standards. The presence of arsenic at the detected levels is considered a background condition for the site.

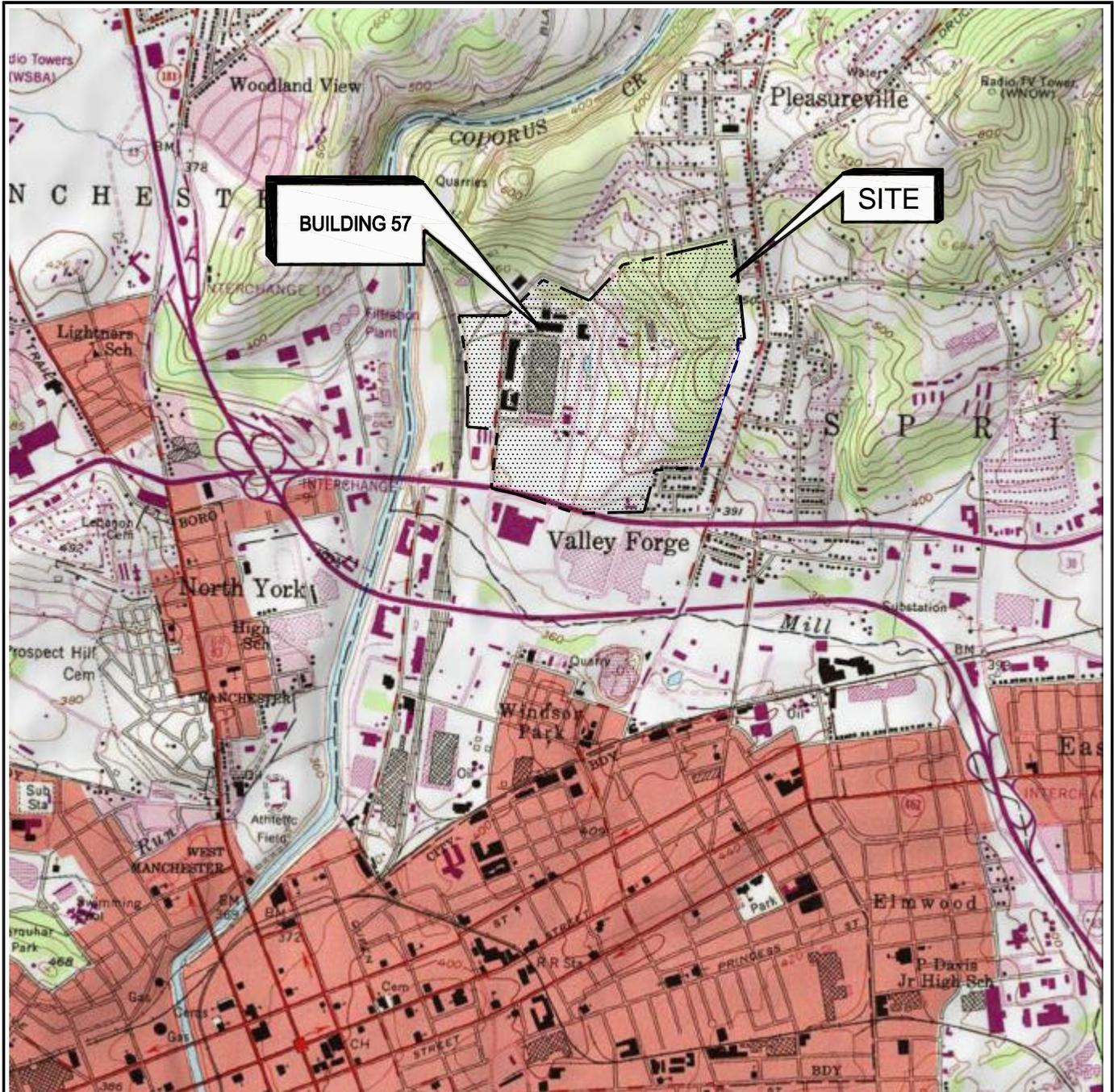
According to the work plan, the original intention was to sample and test water from the pit in the storage room (labeled SW-01 on Figure 2). The water sample could not be collected since the pit was dry on February 21. Originally believed to be bedrock, the bottom of the recessed area appeared to be a concrete base. At this time the source of the intermittent water is unknown.

3.0 SUMMARY AND RECOMMENDATIONS

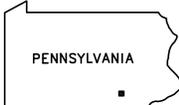
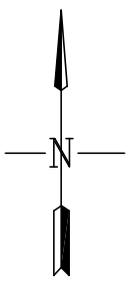
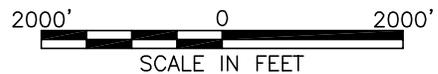
Characterization activities of baseline conditions are have revealed that the soils sampled in and adjacent to Building 57 contain arsenic levels exceeding EPA RBCs but below the Act 2 MSCs. The levels of arsenic found in soil above the U.S. Environmental Protection Agency (EPA) risk-based concentration (RBC) ingestion criteria are generally considered to be within natural site background conditions. In addition, because these levels were not found in concentrations above the Pennsylvania Department of Environmental Protection (PADEP) Act 2 soil-to-groundwater or direct contact medium specific concentration (MSC), arsenic is not considered to be a constituent of concern (COC). All other parameters tested were below DEP Act 2 MSCs and EPA RBC levels. PCE was detected in one sample (SB-02) and TCE was detected in detected in another (SB-07) but at concentrations below the laboratory reporting limit. Based on this data, no remedial efforts are required for Building 57 prior to the retrofitting of this building for use as a less than 90 day hazardous waste storage facility.

The work plan called for the collection of a surface water sample from the pit during this investigation. That sample could not be collected on February 21, 2006 due to the pit being dry. SAIC recommends that this water sample be collected at a future date when water is available in the pit (usually during or directly after a rain event), and the information be included as an Addendum to this report.

FIGURES



NOTE: BASE MAP FROM THE YORK PA., USGS 7 1/2 MIN TOPOGRAPHIC QUADRANGLE (PR 1990).



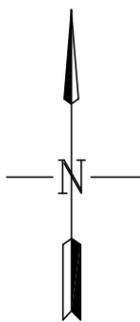
QUADRANGLE LOCATION

HARLEY-DAVIDSON MOTOR COMPANY OPERATIONS, INC.
 YORK VEHICLE OPERATIONS
 1425 EDEN ROAD, YORK PA 17402

SITE LOCATION MAP

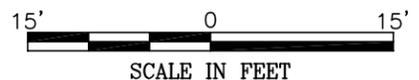
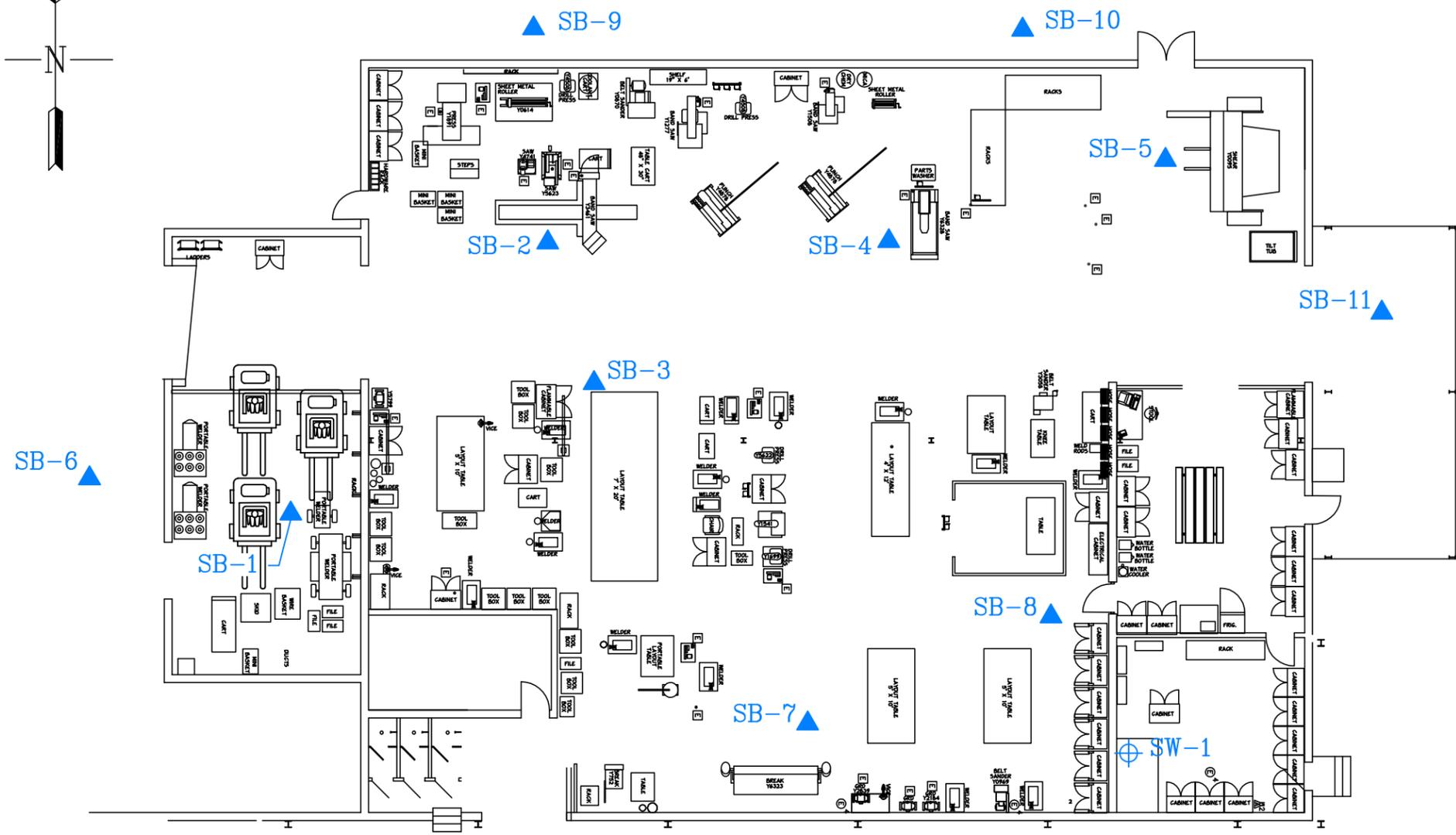
drawn RAM	checked PAE	approved	figure no.
date 03/09/06	date 03/09/06	date	1
job no. 01-1633-00-6220-007	file no. 6220-004.dwg		

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LEGEND

-  SW-1 PROPOSED WATER SAMPLING LOCATION
-  SB-1 SOIL BORING LOCATIONS



		HARLEY-DAVIDSON MOTOR COMPANY OPERATIONS, INC. YORK VEHICLE OPERATIONS 1425 EDEN ROAD, YORK, PA 17402	
BUILDING 57 SAMPLING LOCATIONS			
drawn <i>RAM</i>		approved	figure no.
date 02/15/06		date	2
job no. 01-1633-00-6220-007		file no. 6220-003.dwg	
 Science Applications International Corporation <i>From Science to Solutions™</i>			

TABLES

Table 1
Soil Boring Sample Descriptions
Building 57
Harley-Davidson Motor Companies, Inc.
York Vehicle Operations, 1425 Eden Road, York, PA 17402

Soil Boring ID	SB-01	SB-02	SB-03	SB-04	SB-05	SB-06	SB-07	SB-08	SB-09	SB-10	SB-11
Media encountered/Range Encountered											
Concrete/Asphalt*	0-6	0-6	0-8	0-6	0-7	0-6	0-6	0-6	0-4	0-4	0-4
Cobble Fill*	6-16	6-8	8-14	6-16	7-18	6-18	6-25	6-18	4-12	4-12	4-12
Soil*	16-19	8-12	14-18	16-20	18-22	18-22	25-28	18-22	12-20	12-22	12-22
Soil Color	Light to dark tan with about 30-35 % grey mottling	Grey to light tan	Light tan to light brown	Brown to light brown with some grey mottling	Orange brown to light tan to grey	Light brown to grey	Light brown	Olive grey to dark grey	Light tan with about 30 % grey mottling	Light tan to light orange with some grey mottling	Light to medium tan with some grey mottling
Soil Texture	Clay loam	Clay loam	Clay loam, blocky	Loam	Loamy silt	Wet clay material	Loamy clay	Loamy clay	Loamy clay	Loamy clay	Loamy clay
PID Reading in borehole**	0.0	10.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Depth*	19	12	18	20	22	22	22	22	20	22	22

Note: All soil borings completed on February 21, 2006.

*Values in inches

**Values in parts per million above background

Table 2
Characterization Soil Sampling Summary - Inorganics and Volatile Organic Compounds
Building 57
Harley-Davidson Motor Company Operations, Inc.
York Vehicle Operations, 1425 Eden Road, York, PA 17402

Location/ID Depth (ft.) Sample Date STL Laboratory ID *	SB-01 0-2 2/21/2006 C6B220109-001	SB-01 Dup 0-2 2/21/2006 C6B220109-012	SB-02 0-2 2/21/2006 C6B220109-002	SB-03 0-2 2/21/2006 C6B220109-003	SB-04 0-2 2/21/2006 C6B220109-004	SB-05 0-2 2/21/2006 C6B220109-005	ACT 2 NON-RESIDENTIAL MEDIUM-SPECIFIC CONCENTRATIONS				EPA RISK-BASED CONCENTRATIONS Industrial Soil [Ingestion]	EPA RISK-BASED CONCENTRATIONS Residential Soil [Ingestion]
							Direct Contact, Surface Soil (0 - 2 Feet)	Direct Contact, Subsurface Soil (2 - 15 Feet)	SOIL TO GW - USED AQUIFER			
									100 x GW MSC	Generic		
Metals/Inorganics (mg/kg)												
Antimony	<1.2	<1.2	<1.2	<1.2	<1.1	<1.2	1,100	190,000	0.6	27	410	31
Arsenic **	7.5	10	3.4	5.6	3.4	2.5	53	190,000	5	150	1.9	0.43
Beryllium	0.61	0.63	0.61	0.6	0.71	0.75	5,600	190,000	0.4	320	2,000	160
Cadmium	0.46 J	0.65	0.32 J	0.50 J	0.31 J	0.22 J	210	190,000	0.5	38	510/1,000	39/78
Chromium, total	16	17.6	13.5	18.3	9.5	16.3	190,000	190,000	10	190,000	1,500,000	120,000
Chromium, hexavalent	<0.47	<0.48	<0.47	<0.48	<0.45	<0.47	420	190,000	10	190	3,100	230
Copper	9	9.7	8.8	8.8	9	8.3	100,000	190,000	100	36,000	41,000	3,100
Cyanide, total	<0.59	<0.60	<0.59	<0.60	0.77	<0.58	NR	NR	NR	NR	NR	NR
Cyanide, free	<0.59	<0.60	<0.59	<0.60	<0.57	<0.58	56,000	190,000	20	200	20,000	1,600
Lead	8.7	9.2	10.1	9.6	10.1	8.5	1,000	190,000	0.5	450	NR	NR
Mercury	0.057	0.04	0.051	0.047	0.029 J	0.026 J	840	190,000	0.2	10	NR	NR
Nickel	4.8	5.1	5.5	5.3	6.6	6.6	56,000	190,000	10	650	20,000	1,600
Selenium	1.3	1.5	0.89	1.7	0.7	0.31 J	14,000	190,000	5	26	5,100	390
Silver	<0.59	<0.60	<0.59	<0.60	<0.57	<0.58	14,000	190,000	10	84	5,100	390
Thallium	0.62 J	<1.2	<1.2	<1.2	<1.1	<1.2	200	190,000	0.2	14	72	5.5
Zinc	15.4	17	18.9	17.5	15.8	20	190,000	190,000	200	12,000	310,000	23,000

Detected Organics (mg/kg)												
Methylene Chloride	<0.0073	0.0029 JB	<0.0076	0.0031 JB	<0.0081	<0.0056	3,500	4,000	0.5	0.076	380	85
Tetrachloroethene (PCE)	<0.0073	<0.0078	0.0026 J	<0.0065	<0.0081	<0.0056	1,500	3,300	0.5	0.43	5.3	32
Trichloroethene (TCE)	<0.0073	<0.0078	<0.0076	<0.0065	<0.0081	<0.0056	970	1,100	0.5	0.17	7.2	1.6
Percent Solids (%)	84.9%	83.6%	84.7%	83.4%	88.1%	86.0%						

(*) - All analyses performed by Severn Trent Labs, Inc. (STL) of Pittsburgh, Pennsylvania
(**) - These concentrations of arsenic are considered to be background levels for the site and are not above the Act 2 MSCs.
< - less than the reporting limit shown. NR = Not Reported
J = Estimated value, below reporting limit B = Result affected by blank contamination

Location/ID Depth (ft.) Sample Date STL Laboratory ID *	SB-06 0-2 2/21/2006 C6B220109-006	SB-07 0-2 2/21/2006 C6B220109-007	SB-08 0-2 2/21/2006 C6B220109-008	SB-09 0-2 2/21/2006 C6B220109-009	SB-10 0-2 2/21/2006 C6B220109-010	SB-11 0-2 2/21/2006 C6B220109-011	ACT 2 NON-RESIDENTIAL MEDIUM-SPECIFIC CONCENTRATIONS				EPA RISK-BASED CONCENTRATIONS Industrial Soil [Ingestion]	EPA RISK-BASED CONCENTRATIONS Residential Soil [Ingestion]
							Direct Contact, Surface Soil (0 - 2 Feet)	Direct Contact, Subsurface Soil (2 - 15 Feet)	SOIL TO GW - USED AQUIFER			
									100 x GW MSC	Generic		
Metals/Inorganics (mg/kg)												
Antimony	0.68 J	<1.2	<1.2	<1.1	<1.1	<1.1	1,100	190,000	0.6	27	410	31
Arsenic **	4.7	3.8	6	5.2	2.8	7.6	53	190,000	5	150	1.9	0.43
Beryllium	0.51	0.64	0.56	0.74	0.84	0.74	5,600	190,000	0.4	320	2,000	160
Cadmium	0.51 J	0.30 J	0.56 J	0.44 J	0.36 J	0.62	210	190,000	0.5	38	510/1,000	39/78
Chromium, total	10.3	10.7	9.4	15	13.7	9.4	190,000	190,000	10	190,000	1,500,000	120,000
Chromium, hexavalent	<0.48	<0.46	<0.47	<0.46	<0.45	<0.46	420	190,000	10	190	3,100	230
Copper	27.1	6.5	17	9.2	8.6	7.8	100,000	190,000	100	36,000	41,000	3,100
Cyanide, total	<0.60	<0.58	<0.58	<0.57	<0.56	<0.57	NR	NR	NR	NR	NR	NR
Cyanide, free	<0.60	0.10 J	<0.58	<0.57	<0.56	<0.57	56,000	190,000	20	200	20,000	1,600
Lead	9.2	16.8	23.1	8.8	8.7	9.1	1,000	190,000	0.5	450	NR	NR
Mercury	0.056	0.031 J	0.043	0.033 J	0.04	0.04	840	190,000	0.2	10	NR	NR
Nickel	6.5	5.4	7.1	5.5	5.6	4 J	56,000	190,000	10	650	20,000	1,600
Selenium	0.7	0.72	0.99	0.94	1	1.4	14,000	190,000	5	26	5,100	390
Silver	<0.60	<0.58	0.055 J	<0.57	<0.56	<0.57	14,000	190,000	10	84	5,100	390
Thallium	<1.2	<1.2	<1.2	<1.1	<1.1	<1.1	200	190,000	0.2	14	72	5.5
Zinc	20.8	14.9	68.1	15.3	14.9	11.1	190,000	190,000	200	12,000	310,000	23,000

Detected Organics (mg/kg)												
Methylene Chloride	<0.0061	0.0019 JB	0.0033 JB	<0.0061	<0.0057	0.0025 JB	3,500	4,000	0.5	0.076	380	85
Tetrachloroethene (PCE)	<0.0061	<0.0059	<0.0063	<0.0061	<0.0057	<0.0052	1,500	3,300	0.5	0.43	5.3	32
Trichloroethene (TCE)	<0.0061	0.0036 J	<0.0063	<0.0061	<0.0057	<0.0052	970	1,100	0.5	0.17	7.2	1.6
Percent Solids (%)	82.8%	86.8%	85.9%	87.5%	88.8%	87.8%						

(*) - All analyses performed by Severn Trent Labs, Inc. (STL) of Pittsburgh, Pennsylvania
(**) - These concentrations of arsenic are considered to be background levels for the site and are not above the Act 2 MSCs.
< - less than the reporting limit shown. NR = Not Reported
J = Estimated value, below reporting limit B = Result affected by blank contamination

APPENDIX A

Photographs



Photograph 1 – Oil stains on concrete under metal fabrication equipment in Building 57.



Photograph 2 – Concrete pit and sump pump in the southeast corner of Building 57.