

**CONCRETE SLAB ASSESSMENT PLAN
FORMER DELPHI INTERIOR & LIGHTING SYSTEMS DIVISION
1445 PARKWAY AVENUE
TRENTON, NEW JERSEY**

by

**Haley & Aldrich, Inc.
Parsippany, New Jersey**

for

**General Motors Corporation
Pontiac, Michigan**

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1. INTRODUCTION

This Concrete Slab Assessment Plan provides the number, type, location, and rationale for the samples to be collected from the concrete slabs remaining on the site. This proposed sampling plan is based on the *Guidance for Concrete Sampling and Analysis* (New Jersey Department of Environmental Protection, 20 February 2007, NJDEP Guidance).

Other remedial investigation activities have been performed at the request of General Motors (GM) in connection with GM's closure of the facility and pursuant to the requirements of the State of New Jersey's Industrial Site Recovery Act (ISRA), (N.J.S.A. 13:1K-6 et. seq.). The New Jersey Department of Environmental Protection (NJDEP) has assigned Case No. E97070 to the ISRA-related activities performed at the Site.

The Site has been referred to in the past by several names, including, Turnstead Division of GM, Eastern Aircraft Division, Fisher Body Division, Fisher Guide Division, Inland Fisher Guide Division, Delphi Interior and Lighting Systems and the Old GM Plant. One or more of these names may have been used in previous reports or summaries of previous investigations and all refer to the facility located in Trenton, New Jersey, referred to as the Site in this document.

The former manufacturing facility owned and operated by GM is located at 1445 Parkway Avenue, Trenton, New Jersey (Site). The facility operated as a motor vehicle parts manufacturer for 60 years, from 1938 to 1998. Demolition of Site structures occurred between the fall 2000 and the spring 2002; however, concrete building slabs still exist at the Site.

2. SAMPLING RATIONALE

The sampling described in this plan is intended to provide the data necessary to assess the quality of concrete prior to demolition for reuse or disposal. All sampling will be biased toward visible staining or other indication of potential contamination such as the operations performed at specific areas, coloration or odor.

Because most of the building floor was covered by tile or wooden block, General Motors will not sample areas of the concrete floor that are stained with the mastic or glue used to secure the floor covering to the concrete. This staining is minimal and would likely yield Polycyclic Aromatic Hydrocarbons (PAHs) if tested. However, this material was not due to industrial activity and therefore should not be considered contamination. The floor block had been tested and either disposed of or recycled, depending on analytical results, prior to building demolition. The presence of this floor block minimized the opportunity for contaminants to contact or penetrate the concrete.

Samples will be collected from the following general areas:

- The concrete on the surface at areas above the “hot spots”, previously labeled as such by the NJDEP, in the sub-slab soil sampling program. This yields nine sampling locations. Seven of the locations are in the vicinity of former plater pits and two are near the trench in the former solution storage room.
- Areas where equipment was located that contained liquid hydrocarbons, whether secondarily contained or not. Examples are the location of the former plastic extrusion equipment. The concrete that was under these locations is stained.
- Areas where operations occurred that contained, used, stored, processed, or otherwise utilized liquids containing one or more hazardous substance. The historical use of hazardous substances in these areas suggests possible contamination of the concrete. A representative sample from each area will be collected.
- Areas that are visibly stained, except as noted above for those areas only containing residual mastic or glue for the tile or wood block. Observed staining, not otherwise noted above, includes the solution storage room floor and painted floor.
- Areas representing background. We will target areas known to have been rest rooms, office space, hall ways, kitchens, or other use areas that would not have been expected to use hazardous substances. We will collect samples from four of these locations.

A walk of the slab indicated areas of concrete staining (Figure 1). Appendix A contains photos of the stained areas identified during this walk. Some of these areas, for example Plater Pits 5, 7 & 12, the former scrap metal pit, and the plastic extrusion area have been identified as containing stains and already identified as areas to be sampled because of historical use. These areas will be sampled because of historical use and will not be sampled again because of staining.

After reviewing the stained areas on the main building slab, we recommend the following 65 samples (Table 1 and Figures 2 and 3:

- **Hot Spots:** Four of the eight “hot spots” are unique locations and will require four samples (SAC-2, 3, 8 and 9). The remaining “hot spots” are also identified because of visible staining (SAC 1, 4, 5, 6 and 7).
- **Oil Equipment:** Two locations known to contain equipment utilizing cutting or cooling oil will be sampled. Because of the size of these areas, we will collect two samples from each of these areas (SAC-10 through SAC-13).
- **Visible Stains:** Of 60 stained areas identified on the slab, we recommend collecting 29 samples from these areas. The remainder are duplicating sample locations selected for other reasons or appear similar enough to locations to be sampled that we consider them to be represented by the samples to be collected (SAC-14 through SAC-34).
- **Brown Stains:** Of 60 stained areas identified, there are approximately 33 stained areas scattered about the slab that appear to be “brown”, “dark brown” or “light brown” in appearance that are not otherwise associated with areas to be sampled. Because these stains appear to be similar in nature, we recommend sampling a subset of these locations. We will select 5 locations, biased towards the darkest stain, and consider these representative of these 32 locations (SAC-35 through SAC-39).
- **Hazardous Substance Areas:** Prior to demolition of the plant, General Motors identified areas containing hazardous substances and sampled the concrete in these areas. Because the sampling methods may not be consistent with current guideline requirements, we recommend resampling these areas as part of this assessment. One location (Chrome Plating Area or Plater Pit 12) is already being sampled because it is identified as one of the “hot spots” (SAC-6 and 7). Twelve additional samples will be collected from these areas (SAC 40 through SAC 51).
- **Background:** Four background samples to be collected from areas known not to have been associated with hazardous material usage (offices, bath rooms, kitchens, and hallways) (SAC-52 through SAC-55).
- **Ancillary Areas:** Ten samples from ancillary concrete slabs (SAC-56 through SAC-65, Figure 3).

3. SAMPLING METHODS

General Motors will utilize core sampling of the in-situ concrete¹ as its method of sampling. Core samples will be collected for the full floor thickness at all locations. The top 1-inch of the core will be removed from the core for further handling to create the required sample. Sampling locations will be recorded and we will use a GPS to determine the location. Sampling logs will be used to record the depth of core samples.

After removing the core, we will inspect the bottom of the cores and the soil adhering to the bottom of the core for discoloration, or other field indicators (e.g. a photoionization reading significantly above background) to determine if bottom-of-core samples should be analyzed also. Although the bottom of the slab is not expected to be contaminated from process operations above the slab, it is possible that causes for soil contamination under the slab have caused concrete contamination on the bottom of the slab.

Coring technique: We will utilize a hand-held drill, drill rig, or other mechanical device with a concrete core bit to drill a 4-inch diameter core through the full thickness of the slab. We will use a concrete saw, hammer and chisel, or other such device as applicable to remove the top 1-inch from the core, and if necessary, as described above, the bottom 1-inch also. The resulting sample should be sufficient to meet or exceed the volume of sample (approximately 4 cubic inches; to yield a minimum of 150 grams of sample) required for the selected analyses.

Crushing: The section of core obtained as described above will be crushed by the laboratory to ¼-inch minus as required by the lab for analysis.

¹ The majority of the concrete to be tested is the slab from the former manufacturing building, out buildings and pads, which are still in place. Some stained concrete from above the former 10,000-gallon underground storage tank was removed to access the tank. This concrete consists of large pieces, broken up to remove the tank. Similar sampling methodology will be used for sampling this material.

4. SAMPLING AREAS AND ANALYSIS

The rationale and locations for the proposed samples is provided above. These locations are depicted on Figures 2 and 3.

Table 1 provides a summary of the sample locations and the analyses to be performed at each location. Each area to be sampled is referenced to a “grid location” defined by the former roof-support columns. Some corners of the sample location are interpolated between columns. For example, each column in a row of columns was numbered 2, 4, 6, ...; and a sample location may be referenced to grid coordinate 3. A column 3 did not exist, but for purposes of identifying the sample location we reference an interpolated coordinate.

Analysis on all samples will include polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs), as required by the NJDEP Guidance. In addition, some locations have additional analytical parameters that the sample will be analyzed for. We have used the following criteria to determine if a sample will be analyzed for more than the standard PAHs and PCBs:

- NJDEP identified other analytes in soil below a location to be sampled;
- Known activities at a location to be sampled included storage or use of a hazardous material, for example storage of chrome or nickel solutions, chrome plating, and storage of paint; and,
- Coloration of visible stain suggests additional analyses are required.

We have not included volatile organic compounds (VOCs) in any of the samples because the slab has been exposed to the elements for at least 8 years and any VOCs that may have been spilled on the wood block and made it to the concrete is expected to have long ago volatilized and no longer be present.

This approach adds specific metals; Site metals (as defined in ongoing soil and groundwater investigation), hexavalent chromium, or some combination of these to the PAH and PCB analyses at specific locations.

5. NUMBER OF SAMPLES

In situ sampling frequency is dependent on the number of areas of biased sampling. The number of samples to be collected for analysis as part of this assessment is 65.

Material used for samples shall not exceed 1-inch maximum in depth. If additional material is needed for a sample, additional sample(s) will be collocated in the same vicinity as the original sampling point. Only discrete samples will be collected for analysis.

Draft

REFERENCES

1. New Jersey Department of Environmental Protection, Site Remediation and Waste Management Program, Guidance for the Sampling and Analysis of Concrete Designated for Recycling, 20 February 2007.

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TABLE 1
Concrete Assessment Plan Summary
General Motors Corporation
Former Delphi Interior and Lighting Systems
Trenton, New Jersey
ISRA Case No. E97070

Location Name	Grid Location (Figure 2)	Proposed Sample Name	Analyses	Rationale
Hot Spots				
Plater Pit 5 - 03	K36 - S38	SAC-1	BNs & PCB, Site Metals, CN	These are "hot spots" as defined by NJDEP in the August 2006 NJDEP letter. The analyses selected are the parameters NJDEP used to define these as "hot spots" plus PAH and PCB.
Plater Pit 6 - 02	V36 - Y38	SAC-2	PAH & PCB, Site Metals, Cr ⁺⁶ , TPH	
Plater Pit 6 - 03	V36 - Y38	SAC-3	PAH & PCB, Site Metals, Cr ⁺⁶	
Plater Pit 7 - 02	V50 - Y51	SAC-4 & 5	PAH & PCB, Cu, Ni, Total Cr, Cr ⁺⁶	
Plater Pit 12 - 06	I45 - U48	SAC 6	PAH & PCB, Ba, Pb, Ni, Cu, Total Cr, Cr ⁺⁶	
Plater Pit 12 - 08	I45 - U48	SAC 7	PAH & PCB, Ba, Pb, Ni, Cu, Total Cr, Cr ⁺⁶	
Pit 268 - 1	EE56 - JJ56	SAC-8	PAH & PCB, Pb, Ni, Zn	
Pit 268 - 2	EE56 - JJ56	SAC-9	PAH & PCB, Pb, Ni, Zn	
Oil Equipment				
Plastic Extrusion	B3 - D16	SAC-10 & 11	PAH & PCB	Oil staining on concrete
Scrap Metal Storage Bins	AY51- AY54	SAC-12 & 13	PAH & PCB	Oily scrap metal transferred in and out of subslab bins
Visible Stains				
Plater Solution Storage Room	DD55 - JJ57	SAC-14	PAH & PCB, Cu, Cr, Ni	Staining on floor visible Sol'ns: Cu, Cr, Ni, Caustic
Eastern Track Well	KK28 -KK55	SAC-15	PAH & PCB, Pb	Paint
Broken concrete from atop the 10,000 gal UST	EE55	SAC-16	PAH & PCB, Cu, Cr, Ni	Stain Penetrates Broken Concrete Pieces Concrete from Plater Solution Storage
Plater Pit 7 Sidewall and Floor	Already Noted (SAC-4 & 5)			Discoloration of Floor and sidewalls, corroded concrete.
Plater Pit 12 Sidewall and Floor	Already Noted (SAC-6 & 7)			Discoloration of Floor and sidewalls, corroded concrete. Green, Blue Green, Brown, Yellow
(See Photos in Appendix for the following SA Areas)				
SA-1: Hydraulic Lift Area	JJ55	SAC-17	PAH & PCB	Rust
SA-2: Pad under Sub Station 7	Q56	No Sample		
SA-2A: Die Cast Area	E49 - R55			
SA-3: Zinc Reclaim Furnace	AY55 - C57	SAC-18	PAH & PCB, Site Metals	90 Day Storage of Haz Mat last 2 years of Operation
SA-4: Scrap Metal Pit	Already Noted (SAC-12 & 13)			
SA-5:	C52			Light Brown Stain
SA-6:	C53 - C54			Brown Stain
SA-7: Die Cast Area	E49 - R55	SAC-19	PAH & PCB	
SA-8:	AA53			Brown Stain
SA-9:	CC53			Brown Stain
SA-10: Plater Pit No. 7 Sidewall & Floor	Already Noted (SAC-4 & 5)			
SA-11: Lancy Cyanide Treatment	S50			Brown Stain
SA-12: Plater Pit 12	Already Noted (SAC-6 & 7)			
SA-13: Lubricating Oil Odor	E42 - E46	SAC-20	PAH & PCB	Brown Stain
SA-14:	A46	SAC-21	PAH & PCB, Cu, Cr, Ni	Greenish-Blue
SA-15:	AY44			Brown Stain
SA-16:	A42 - A44			Olive Brown Stain
SA-17:	I43	SAC-22	PAH & PCB	Olive Brown Stain, Lubricating Oil Odor
SA-18:	Y39			Brown Stain
SA-19: Presses	E38 - Q40			Olive Brown Stain
SA-20:	A40	SAC-23		
SA-21:	BB46 - CC48	SAC-24	PAH & PCB	Olive Brown Stain
SA-22:	JJ34			Brown Stain
SA-23: Pit 234	R34			Brown Stain
SA-24:	M34			Light Brown Stain
SA-25: Presses	K35 - M36			Light Brown Stain
SA-26: Presses	J35 - J38	SAC-25		Olive Brown Stain
SA-27: Equipment Foundations	D34 - D37	SAC-26	PAH & PCB	Brown Stain
SA-28: Coil Upender	A35 - A36			Olive Brown Stain
SA-29:	AZ34			Brown Stain
SA-30:	A32			Brown/Rust Stain
SA-31:	O33			Brown Stain
SA-32:	W32			Brown Stain
SA-33:	HH28	SAC-27	PAH & PCB	Yellow brown/brown
SA-34:	AA28			Brown Stain
SA-35:	Y28			Brown Stain
SA-36:	T28 - U28	SAC-28	PAH & PCB	Yellow brown/brown
SA-37:	R28	SAC-29	PAH & PCB	Brown/Olive Brown Stain
SA-38:	P27			Brown/Olive Brown Stain
SA-39:	N28 - P30			Brown Stain
SA-40:	F28 -J31			Brown Stain
SA-41:	B23			Brown Stain
SA-42:	O23 - P23			Brown Stain
SA-43:	U22 - AA24			Brown Stain
SA-44: Plater Pit 9	T16 - Z18	SAC-30	PAH & PCB, Cu, Cr, Ni	Yellow Brown, Blue Green, Green
SA-45:	H15 - M17	SAC-31	PAH & PCB	Yellow brown/brown
SA-46:	AY5 - AZ14	SAC-32	PAH, PCB & Pb	Brown/Rust Stain
SA-47: Plastic Extruders	Already Noted (SAC-10 & 11)			Brown Stain
SA-48: Former Hydraulic UST	G12 - L14	SAC-33	PAH & PCB	Dark Stain, Hydraulic/Lubricating Oil odor
SA-49:	E12			Brown Stain
SA-50: Pit 107	N12 - P14			Brown Stain
SA-51:	S11 - U12			Yellow brown/brown
SA-52:	Y12			Brown Stain
SA-53:	DD13 - DD17			Brown Stain
SA-54:	GG14 - II14	SAC-34	PAH & PCB	Yellow brown/brown
SA-55:	U8			Yellow brown/brown
Plater Pit 5	Already Noted (SAC-1)			Brown, Yellow Brown, Blue Green
Plater Pit 12 Sidewall and Floor	Already Noted (SAC-6 & 7)			Brown, Yellow Brown, Blue Green, Green
Hazardous Substance Area				
Tool Room	C34	SAC-40	PAH & PCB	Areas on the first floor known to have contained one or more hazardous material during operations
BI-LAM Mldgs	G20	SAC-41	PAH & PCB	
Seat Adjuster Fab	I34	SAC-42	PAH & PCB	
Storage	Y46	SAC-43	PAH & PCB	
Coil Storage (Bailer)	AY49 - AZ49	SAC-44	PAH & PCB	
Rack Strip Area	AZ54	SAC-45	PAH & PCB, Site Metals, Cr+6	
Zinc Die Cast Area	H52	SAC-46	PAH & PCB, Site Metals, Cr+6	
Former 1, 2, 3 Platers	V52	SAC-47	PAH & PCB	
Chrome Plating Area	Already Noted (SAC-6 & 7)			
Adjacent to Phosphate Line	Q38	SAC-48	PAH & PCB	
Old Dichlorobenzene Area	Z49	SAC-49	PAH & PCB	
Old Zinc Remelt Furnace Area	E48 - E54	SAC-50	PAH & PCB	
ELPO Paint System	HH46 - KK52	SAC-51	PAH & PCB, Site Metals, Cr ⁺⁶	
Background				
Front Office	O1 - P2	SAC-52	BNs, PCB, Site Metals, Cr ⁺⁶	Background. Analyses a composite of all analytes for bias sample locations.
Lavatory	F2	SAC-53		
Hall 1	E48	SAC-54		
Hall 2	CC55	SAC-55		

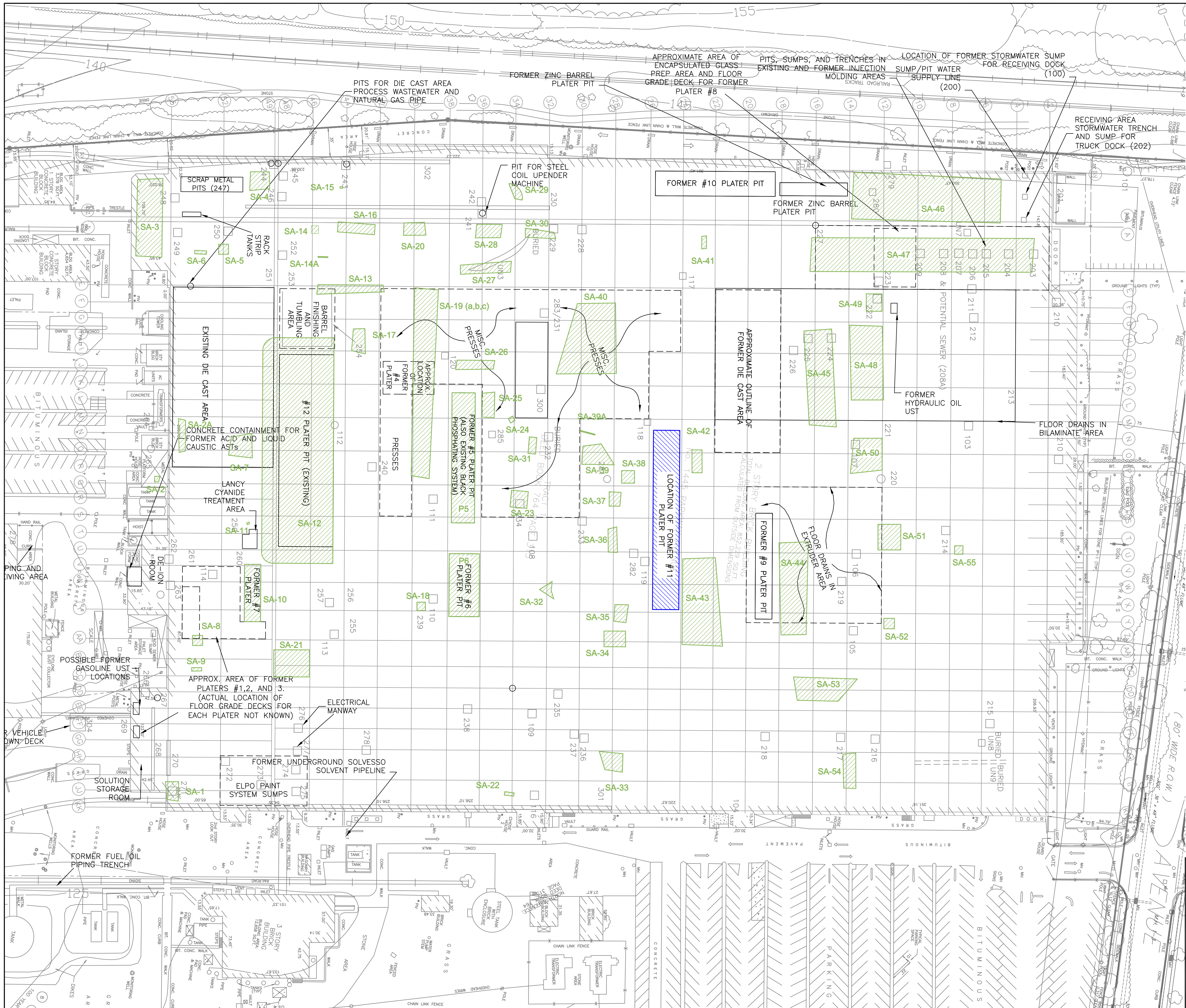
TABLE 1
Concrete Assessment Plan Summary
General Motors Corporation
Former Delphi Interior and Lighting Systems
Trenton, New Jersey
ISRA Case No. E97070

Location Name (Figure 3)	Proposed Sample Name	Analyses	Rationale
Former Paint Building	SAC-56	PAH, PCB & Pb	Ancillary structures with remaining floor slabs.
Former Garage	SAC-57	PAH & PCB	
Former Storage and Salvage Building	SAC-58	PAH & PCB	
Behind Caustic dip tanks	SAC-59	PAH & PCB	
Former Die Storage Area	SAC-60 & 61	PAH & PCB	
Former Valve House	SAC-62	PAH & PCB	
Former Power House	SAC-63	PAH & PCB	
Former Primary Switch House	SAC-64	PAH & PCB	
Former Hazardous Waste Storage Pad	SAC-65	PAH, PCB, Site Metals, Cr ⁺⁶	

Notes:

- Ba = Barium
- BNs = Base Neutral Compounds
- CN = Cyanide
- Cr⁺⁶ = Hexavalent Chromium
- Cu = Copper
- Ni = Nickel
- PAHs = Polynuclear Aromatic Hydrocarbons
- Pb = Lead
- PCBs = Polychlorinated Biphenyls
- SAC = Surface Assessment, Concrete
- Site Metals = TAL metals minus earth metals (aluminum, calcium, iron, magnesium, potassium, and sodium)
- Total Cr = Total Chromium
- Zn = Zinc

Grid Location based on Roof Support Column Grid. Locations are approximate and include interpolated locations between former column IDs.



NOTES:

1. BASE MAP IS FROM A MAP ENTITLED "ALTA/ACSM LAND TITLE SURVEY FOR GENERAL MOTORS CORPORATION, 1445 PARKWAY AVENUE, TRENTON, N.J." DATED 8/02/93, LAST REVISED 10/19/93, PREPARED BY ROBERT W. ENT, INC. DEED REFERENCE : DEED BOOK 4512, PAGE 252 & c.. MAP REFERENCE : "PLAN OF SURVEY AND MINOR SUBDIVISION OF LOT 1, BLOCK 343, GM CORPORATION SITE SITUATED IN EWING TOWNSHIP, MERCER COUNTY, NEW JERSEY", DATED 12/18/01, REVISED TO 3/27/02, PREPARED BY MASER CONSULTING, P.A.. HORIZONTAL DATUM IS BASED ON THE ABOVE REFERENCED DEED.

MONITOR WELL LOCATIONS PREPARED BY GERALD G. DEGROAT L.S. SCHOOLEY'S MOUNTAIN, NEW JERSEY 07870

N.J. LAND SURVEYOR LIC. NO. 26791
NAMED "MONITOR WELL LOCATIONS, TOWNSHIP OF EWING, MERCER COUNTY, NEW JERSEY"

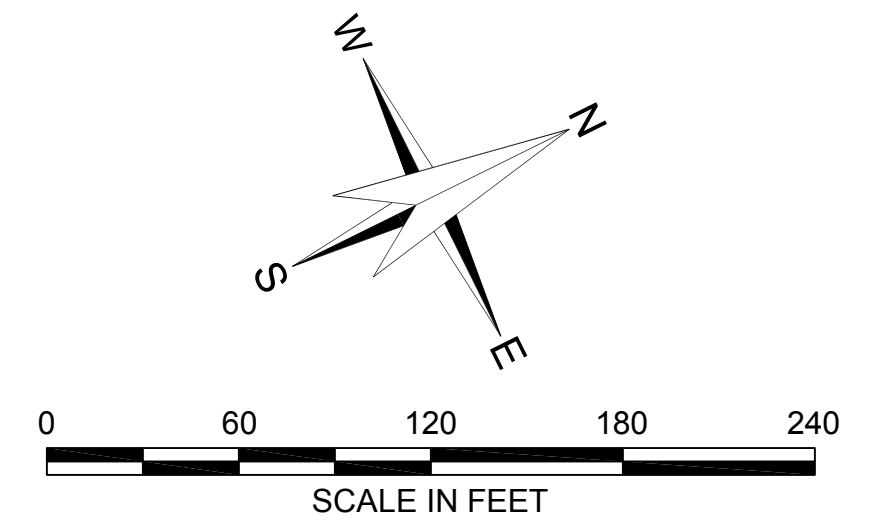
LAST REVISED AUGUST 24, 2007

BENCH MARK - N.J.G.S. MON. 11 B 1
ELEVATION 131.49' (NAVD 1988)
HORIZONTAL DATUM - N.J. STATE PLANE COORDINATE SYSTEM (NAD 1983)

LEGEND:

221 □ PIT, SUMP OR TRENCH

SA-1 to SA-55 STAIN LOCATION



HALEY & ALDRICH GENERAL MOTORS CORPORATION
TRENTON, NEW JERSEY
ISRA CASE NO. E97070

CONCRETE STAIN LOCATIONS -
MANUFACTURING BUILDING

SCALE: AS SHOWN
AUGUST 2008



FIGURE 3