



SITE SOURCE CONTROL (SSC) WORK PLAN ADDENDUM NO. 4

GM BEDFORD REMOVAL ACTION BEDFORD, INDIANA

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LIST OF FIGURES
(Following Text)

FIGURE 1.1 SITE LOCATION FIGURE

LIST OF PLANS
(Following Text)

PLAN 1 SEEPS AND SPRING LOCATIONS

LIST OF ACRONYMS

AOC	Administrative Order by Consent
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CA	Corrective Action
DNAPL	Dense Non-Aqueous Phase Liquid
Facility	General Motors Powertrain Bedford Facility
GM	General Motors Corporation
HASP	Health and Safety Plan
HDPE	High Density Polyethylene
NAPL	Non-Aqueous Phase Liquid
PCBs	Polychlorinated Biphenyls
RA	Removal Action
SAP	Sampling and Analysis Plan
SSC Work Plan	Site Source Control Work Plan
QAPP	Quality Assurance Project Plan
U.S. EPA	United States Environmental Protection Agency
WWTP	Wastewater Treatment Plant
RCRA	Resource Conservation and Recovery Act
NPDES	National Pollutant Discharge Elimination System

1.0 INTRODUCTION

This document presents an Addendum No. 4 to the Site Source Control Work Plan (SSC Addendum No. 4) for the General Motors Corporation (GM) Powertrain Bedford Plant (Facility) located in Bedford, Indiana (U.S. EPA ID# IND006036099). This SSC Addendum No. 4 has been developed to present changes to the Site Source Control Work Plan (SSC Work Plan, November 2003), in accordance with the Administrative Order on Consent (Docket Number V-W-'03-C-747, effective July 31, 2003) (AOC).

1.1 GENERAL

The Facility is located at 105 GM Drive, Bedford, Lawrence County, Indiana, 47421 (Figure 1.1). The Facility produces aluminum casting products, such as transmission cases, pistons, and engine blocks. Major aluminum production processes include die-casting and permanent molding. The Bedford Facility has been operating as an aluminum foundry since 1942, with major facility modifications completed in 1950, 1953, 1966, 1971, 1974, 1977, 1979, and 1980.

The Facility, located on 152.5 acres, contains approximately 915,000 square feet of floor space and employs approximately 1,000 people. The term "Site", as referred to in this document, is defined in Section I of the AOC.

1.2 PURPOSE

The purpose of this Addendum is specifically to present the modified list of seeps and springs included in the current Monitoring Program. The original list of seeps and springs were presented in the original SSC Work Plan. This Addendum will also identify the Phase II seeps and springs, which are located north of Broomsage Road and which will now be added to the ongoing monitoring plan as described in the SSC Work Plan. The results of monitoring activities to date are presented as an accompanying, but separate data package. It is intended that this data package will be updated on a quarterly basis, after the completion of each new quarterly sampling event (high and low-flow).

2.0 SEEP AND SPRING MONITORING PROGRAM

2.1 PROGRAM OVERVIEW

The monitoring program was designed to identify the potential for the seeps/springs to contain polychlorinated biphenyls (PCBs) that could re-contaminate the creek. The monitoring program included the collection of samples at each of the identified seeps and/or springs for analysis of total and dissolved PCBs, an assessment of the approximate flow rate, and the mapping and sampling of any newly discovered seep or spring. Eight sampling events were initially described during the first year of monitoring: four samples were to be collected under high flow conditions and four samples under low flow conditions. The high-flow condition is set as a minimum of two inches of rain in a 24-hour period; and the low-flow conditions is set as a minimum of seven calendar days without precipitation prior to the sampling event.

2.2 PHASE I MONITORING LIST

The SSC Work Plan set out the following list of seeps and springs that were to be included in the Phase I Monitoring program (as included in the SSC Work Plan):

- Spring_Well 1;
- Seep_001;
- Seep_002;
- Spring_3_001;
- Spring_3_003;
- Spring_004;
- Spring_009;
- Spring_018;
- Spring_020;
- Spring_021;
- Eastern Seep Area 01;
- Eastern Seep Area 02;
- Spring East of Storm Pond;
- Spring East of Storm Pond 2;
- Spring East Side of Creek;

- Spring 1452/1453;
- Spring 1469;
- Spring 1590;
- Spring 4007;
- SW-X216Y274;
- SW-X243Y232; and
- SW-X256Y260.

The above list contained the following errors:

- Spring 4007 - The actual location identification should be, "Spring_40-007";
- SW-X243Y232 - This is actually a sample identification for the surface water sample collected at the spring location, "Eastern Seep Area 01" and not a seep or spring. There is only one spring at this location, which is Eastern Seep Area 01;
- SW-X256Y260 - This is a sample identification for a surface water sample collected at this location. There is not a seep, or spring, at this location; and
- Seep_5013 - This spring was inadvertently omitted from the list. It was also discovered later in the monitoring program that there was another spring located near Seep_5013 and that the field personnel had been checking the second spring, rather than the original location. These springs were subsequently renamed as Seep_5013A (the original spring) and Seep_5013B (the spring the field personnel were checking).

Several of the springs listed above were already being collected as part of the Site Source Control system and were not individually sampled:

- Spring_3_001 - This spring was being collected at Wet Well 1;
- Spring_3_003 - This spring was being collected at Wet Well 1; and
- Seep_001 - This spring was being collected at Wet Well 2.

The above list also contained the following seeps and springs, which were located on property for which access was not immediately granted:

- Spring_020 - Access to this property was granted after the low-flow sampling event during the third calendar quarter of 2004;

- Spring 1452/1453 - Access to this property was granted after the low-flow sampling event during the first calendar quarter of 2005; and
- Spring 40-007 - Access to this property was granted after the low-flow sampling event during the first calendar quarter of 2005.

2.3 THERMAL IMAGERY

In an effort to identify additional springs that may have been missed through visual reconnaissance, a thermal imagery study was completed during the late hours of March 20 through the early hours of March 21, 2004. The imagery was completed by EagleView Industries (EagleView) of Vickburg, MS, using a Jet Ranger helicopter at an approximate altitude of 750 feet above the ground surface and a Mitsubishi 5120C infrared imager. An approximate six square mile area was surveyed during this flight. A description of this proposed work was included in the RCRA Facility Investigation Work Plan Addendum No. 5 (CRA, July 26, 2004). The final report from EagleView was distributed on April 21, 2005.

The latitude and longitude coordinates of each thermal anomaly were then plotted on existing figures. Field verification was conducted on each of the thermal anomalies identified within the area of the Phase I Monitoring program and beyond, where access could be obtained. In many cases, the anomaly was verified as either an existing spring, animal, or existing pumps/generators in the remediation area. Some anomalies could not be found in the field (possibly small animals). Several of the anomalies identified by EagleView were duplicates of other images (i.e., several anomalies were shown on multiple images and identified by EagleView as separate anomalies. An example of this can be found in "Spr 21" and "Spr 32" in EagleView's data report). The results of the field verification within the Phase I Monitoring program were used to add any new seeps and/or springs (e.g., Springs I, J, K, L, and M). A summary of the seeps and springs sampled for each event can be found in Section 3.0.

3.0 PHASE I MONITORING SUMMARY

The following sections summarize which seeps and springs were included for each sampling event. Summary tables and results describing each of these sampling events are presented in the Site Source Control - Seep and Spring Data Package. Plan 1 presents all of the currently identified seeps and springs.

3.1 SAMPLING EVENT 1 - 2Q04

3.1.1 LOW-FLOW SAMPLING EVENT

The first low-flow sampling event consisted of the collection of six samples from the seeps and springs included in the Phase I monitoring program. These samples were collected during May 12 and 13, and May 18, 2004.

Samples were collected from Spring_Well 1, Spring_009, Spring_018, Eastern Seep Area 01, Eastern Seep Area 02, and Spring_1590. The following springs were dry; Seep_002, Spring_004, Spring_021, Spring East of Storm Pond, Spring East of Storm Pond-2, Spring East Side of Creek, and Seep_5013A. One spring could not be found during this event (was later re-staked by the surveyor), and one spring (Spring_1469) was overlooked by the field personnel. Seep_001 was not sampled as this water was being collected at Wet Well 2 at the time of sampling, and water from Spring_3_001 and Spring_3_003 was being collected within the groundwater collection trench at Wet Well 1.

3.1.2 HIGH-FLOW SAMPLING EVENT

Seep and spring sampling was conducted in response to a qualifying high-flow event on June 1, 2004. Fourteen samples were collected for this event. Samples were not collected from the following springs: Seep_001 (Wet Well 2), Spring_004 (dry), Spring_020 (no access), Spring_1452/1453 (no access), Spring_040-007 (no access), and Seep_5013A (see explanation above).

One additional spring was added to the monitoring system after discovery. This spring (NAOI4/P401) was sampled on July 30, 2004, well after the high-flow sampling event.

3.2 SAMPLING EVENT 2 - 3Q04

3.2.1 LOW-FLOW SAMPLING EVENT

The seeps and springs included in the Phase I Monitoring program were sampled upon reaching a low-flow qualifying event. Samples were collected on August 13, 16, and 17, 2004. Seven samples were collected from the list of seeps and springs from the previous sampling event (six locations were dry), Wet Well 1 and Wet Well 2 were sampled, an additional twelve samples were collected, as described below.

The following describes the changes to the Phase I Monitoring program during this low-flow sampling event.

Several components of the Site Source Control system were installed, or under construction, during the this sampling event:

- NA004 Sump A - This sump was being constructed during this sampling event. Water collected from this area includes the spring location SW-X216Y274. No sample was collected from this location;
- NA004 Sump B - This sump was completed prior to this sampling event. This water included springs Spring East of Storm Pond and Spring East of Storm Pond-2. A water sample was collected from this location; and
- Wet Well 3 - This structure was being constructed during this sampling event. No sample was collected from this location.

Several new soil seeps (small volume of water emanating from the soil/bedrock contact within the active Removal Action excavation) were discovered after a rainfall and prior to this low-flow sampling event. Each seep was dry upon return to these locations to obtain samples and each seep was dry during this low-flow event (except at the location 8-3). The following is a list of these soil seeps located, which are located between Parcel 205 and Parcel 11:

- 205-1;
- 4-1;
- 4-2;
- 4-3;
- 5-1;

- 6-1;
- 6-2;
- 6-3;
- 8-1;
- 8-2;
- 8-3 (sampled);
- 10-1A (note that a seep was initially named 10-1. However, it was subsequently determined to be the same spring as Spring_004);
- 11-1;
- 11-2;
- 11-2A; and
- 11-3.

Several new springs were also identified downstream of Spring_018. These springs are: Spring_020-002, Spring_021-002, Spring_021-003, and Spring_021-004. All of these springs were sampled during this low-flow event, with the exception of Spring_020-002, which was dry.

After completion of the low-flow event, and upon backfilling in the area north of AOI 4, several new springs were discovered as wet spots in the relatively dry soil backfill. Each new spring in this area was sampled after the low-flow event. These new springs north of AOI 4 are:

- Spring A;
- Spring B;
- Spring C;
- Spring D;
- Spring E;
- Spring F; and
- Spring G.

3.2.2 HIGH-FLOW SAMPLING EVENT

Water samples were collected from seeps and springs on October 20 and 21, 2004, after a qualifying high-flow event occurred. Note that a qualifying event did not occur during the 3rd calendar quarter and that quarter was extended, as described in the SSC Work Plan. Thirty-one samples were collected for the Phase I Monitoring program during this event.

The following describes conditions encountered during this sampling event:

- access was granted to Parcel 36 (Spring_020) prior to this sampling event;
- three springs (Spring_020, Eastern Seep Area 02, and Spring East Side of Creek) were dry;
- several of the soil seeps, previously identified in the current RA excavation, had either been removed through excavation, or had been covered during subsequent restoration activities. Four of these original soil seep locations were still flowing and samples were obtained; one soil seep (6-1) was covered during restoration and re-surface up the side slope (this was renamed to 6-1A and sampled). The following indicates the status of these soil seeps during this high-flow sampling event:
 - 205-1 (dry; covered),
 - 4-1 (dry; covered),
 - 4-2 (dry; covered),
 - 4-3 (dry; covered),
 - 5-1 (dry; covered),
 - 6-1 (dry; covered),
 - 6-1A (sampled),
 - 6-2 (dry; covered),
 - 6-3 (dry; covered),
 - 8-1 (sampled),
 - 8-2 (dry; covered),
 - 8-3 (sampled),
 - 10-1A (dry; excavated),
 - 11-1 (dry; excavated),
 - 11-2 (dry; excavated),

- 11-2A (sampled), and
- 11-3 (sampled).

In addition, existing springs, Seep_002 and Spring_004 were excavated and these locations were dry;

- Spring_021-003 was submerged underwater and could not be sampled during this high-flow event;
- One new location (Spring H) was identified in the area east of the existing stormwater pond. This "spring" was initially underground and was uncovered during RA excavation activities in this area. This location was sampled during this high-flow event;
- The construction of Wet Well 3 was completed prior to this monitoring event and a sample was collected from this location; and
- Construction of NA004 Sump A was completed and a sample was collected.

3.3 SAMPLING EVENT 3 - 4Q04

3.3.1 LOW-FLOW SAMPLING EVENT

Seventeen samples were collected from the seeps and springs included in the Phase I Monitoring program during October 7 and 8, 2004. Thirty locations were dry during this sampling event.

The following describes conditions encountered during this sampling event:

- A water sample was not collected from the location Eastern Seep Area 02, as this area was under construction for the installation of SSC System C;
- A water sample was not collected from the location Spring H, as this area was under construction for the installation of SSC System H; and
- Seven new locations were identified after completion of the low-flow sampling event. Each of the following locations were sampled upon discovery:
 - Spring_021-005 (oil was noted emanating from this spring),
 - Spring I,
 - Spring L,
 - Spring M,

- Spring_013-001,
- Spring_015-001, and
- Spring_015-002.

Two additional locations were also identified (Spring J and Spring K). However, these springs were dry upon return to collect samples from these locations.

Note that the oil at Spring_021-005 was only observed at the initial discovery. Subsequent monitoring of this area has not resulted in any additional oil observations from this spring.

3.3.2 HIGH-FLOW SAMPLING EVENT

Twenty-five existing locations were sampled during this high-flow sampling event on January 10, 11, 12, and 14, 2005 (one location was sampled twice). Fifteen locations remained dry and samples could not be collected. Seven locations were submerged and could not be sampled.

The following describes conditions encountered during this sampling event:

- The installations of the seven SSC systems in the area north and east of AOI 4 were completed prior to this sampling event. Samples were collected from the following locations:
 - SSC System A (includes SW-X216Y274, NA004 Sump A, Spring A, and Spring B),
 - SSC System B (includes Spring East of Storm Pond, Spring East of Storm Pond 02, and NA004 Sump B),
 - SSC System C (this sample is actually of combination of waters from SSC System C (Eastern Seep Area 02), SSC System D (Eastern Seep Area 01), and SSC System H),
 - SSC System E (Spring C),
 - SSC System F (Spring D and Spring E),
 - SSC System G (Spring F and Spring G), and
 - SSC System H ((Spring H) this was also sampled independently from the combination described above);

- Six new springs were identified during this high-flow sampling event. Samples were collected at each of the following new locations:
 - Spring_013-002,
 - Spring_013-003,
 - Spring_015-003,
 - Spring_015-004,
 - Spring_015-005, and
 - Spring_015-006; and
- Upon request by the U.S. EPA, the location where a surface water sample had been previously collected (OS-00-022502-JW-1088) was re-visited in order to collect a water sample from the source of water at this location. However, it was determined in the field that a spring, or seep, could not be readily ascertained immediately in this vicinity. The surface water flowing in this area was tracked upstream to the location of a new spring (not previously monitored). This spring was named as Spring_205-001 and was sampled during this high-flow event.

3.4 SAMPLING EVENT 4 - 1Q05

3.4.1 LOW-FLOW SAMPLING EVENT

Seventeen seep and spring locations were sampled during this low-flow event conducted on January 31, and February 1 and 2, 2005. Forty-one locations were dry and could not be sampled. Three locations remained submerged and were not sampled.

The following describes conditions encountered during this sampling event:

- Five soil seeps discovered during the open excavation from Parcel 205 through Parcel 11 were covered through the completion of the RA restoration activities along this stretch of the creek. No flow was observed from these locations during this sampling event; and
- Access was granted to Parcel 74 after the completion of this event. Samples were collected from Spring_1452/1453 (from the original Phase I Monitoring list) and from a new spring (Spring_074-002) discovered at the time of sampling. This sampling occurred on March 9, 2005.

4.0 PHASE II MONITORING PROGRAM

As indicated in the SSC Work Plan, additional seeps and springs, north of Broomsage Road and along the creek, are now added to the monitoring program. All identification, sampling, and monitoring of Phase II seeps and springs, will be completed using the same protocols as with the Phase I Monitoring program. The following identifies the additional springs that are included in the Phase II Monitoring program:

- Spring_1459;
- Spring_734;
- Spring_028-001;
- Spring_028-002;
- Spring_1468;
- Spring_1572;
- Spring_1549;
- Spring_1547;
- Spring_1556;
- Spring_910;
- Spring_040-001;
- Spring_040-002; and
- Spring_040-003.

During the Phase II Monitoring program, additional thermal anomalies, as identified in the thermal imagery survey, will be field verified. Any newly discovered seeps and/or springs along the creek in the Phase II Monitoring area will be evaluated as to the need for their inclusion into the Phase II Monitoring program using the same criteria as for Phase I.

This phase of monitoring will begin with the next qualifying event (high or low-flow).

5.0 REPORTING

As indicated in Section 1.0, this Addendum presents changes to the list of seeps and springs for both the Phase I and Phase II Monitoring programs being completed at the Site. The results (tables and databox figures) for all sampling completed to date are presented in a separate data package (Site Source Control - Seep and Spring Data Package). This data package will be updated on a quarterly basis to present each new quarter's sampling events (high and low-flow).

