



**Global Environmental
Compliance & Sustainability**

January 12, 2017

Reference No. 013968

Mr. Peter Ramanauskas
Project Manager for IND 0060306099
Waste, Pesticide and Toxins Division
U.S. EPA Region 5
77 West Jackson Blvd. (DW-8J)
Chicago, IL 60604-3590

Dear Mr. Ramanauskas:

Re: RCRA Corrective Action Administrative Order on Consent (AOC)
Progress Report 67, Fourth Quarter 2017
GM GPS – Bedford Facility, IND 006036099, Docket No. RCRA 05-2014-0011
Bedford, Indiana

Please find enclosed the Progress Report 67 (Fourth Quarter 2017) for the Resource Conservation and Recovery Act (RCRA) Corrective Action (CA) project at the GM Bedford Global Propulsion Systems (GPS) (formerly Castings, Engines, and Transmissions (CET) and formerly Powertrain) Facility (Facility) at 105 GM Drive in Bedford, Indiana, and select surrounding properties (Site). This report is being submitted in accordance with the Administrative Order on Consent, effective August 4, 2014 (United States Environmental Protection Agency (U.S. EPA) Docket No. RCRA-05-2014-011).

The next RCRA quarterly progress report covering the First Quarter of 2018 will be submitted on or before April 15, 2018.

Should you have any questions regarding this document, please do not hesitate to contact me at (313) 510-4328.

Yours truly,

General Motors LLC

Cheryl R. Hiatt
Project Manager

YD/aj/174
Encl.

c.c.: See Attached Distribution List

Mr. Ramanauskas
January 12, 2017

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GM Bedford Distribution List

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Fourth Quarter 2017 Progress Report 67

GM GPS – Bedford Facility
105 GM Drive
Bedford, Indiana
EPA ID# IND006036099
AOC Docket No. RCRA 05 2014 0011

GHD | 651 Colby Drive Waterloo Ontario N2V 1C2 Canada
013968 | Report No 416 | January 12, 2018



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1. Introduction

This Progress Report is submitted by General Motors LLC (GM) in accordance with the GM Bedford Global Propulsion Systems (GPS) Facility Resource Conservation and Recovery Act (RCRA) Administrative Order on Consent (AOC – United States Environmental Protection Agency [U.S. EPA] Docket No. RCRA 05-2014-0011), executed on August 4, 2014. This report covers the period of the fourth calendar quarter of 2017 for the RCRA Corrective Action (CA) Project at the GM GPS – Bedford Facility (Facility) and select surrounding properties (Site), Bedford, Indiana.

The next RCRA progress report covering the first quarter of 2018 will be submitted on or before April 15, 2018.

2. List of Completed Activities

The following activities took place and the following documents were prepared and distributed during this quarter:

- Results for samples collected from Spring 018 during this quarter are presented in Table 2.1. Sample results for the monthly sampling were previously emailed to U.S. EPA and Indiana Department of Environmental Management (IDEM) as they became available. As of the end of December 2017 sampling, the 12-month rolling average concentration of polychlorinated biphenyls (PCBs) in the Spring 018 discharge is 0.10 micrograms per liter ($\mu\text{g/L}$). Routine monthly sampling was conducted on October 11, November 6, and December 13. The routine samples collected were non-detect for PCBs. No opportunistic sample (sample collected after an excess of 1" of rain within a 24-hour period) was collected during the Fourth Quarter of 2017 due to the absence of a qualifying event. Spring 018 samples collected since September 27, 2016 have been non-detect for PCBs, including regular and opportunistic samples.
 - U.S. EPA approved the reduction in the Spring 018 monitoring plan via email dated October 25, 2017 and requested a minor language change to the contingency plan.
 - The contingency plan was revised as requested by U.S. EPA with the revised plan submitted to U.S. EPA via email on November 8, 2017 and acknowledged by U.S. EPA the same day.
 - As per the approved revised monitoring plan, the monitoring will be completed quarterly with samples collected the second Wednesday of the quarter. Collection of the First quarter 2018 sample will be done January 10, 2018.
- The groundwater water treatment plant (GWTP) collected and treated approximately 3,986,392 gallons of water from the Pilot Trench, Vault sumps, and wet wells during the Fourth Quarter of 2017. An estimated 0.04 pounds of PCBs were removed during the quarter through collection and treatment of the groundwater. An estimated 0.38 pounds of PCBs have been removed over the last 12 months (January 2017 through December 2017). A summary of the volumes and sample results used for this calculation is provided in Table 2.2.



- The First Half 2017 EI CA750 static groundwater levels were completed on March 8 and May 1 through 4, 2017, with sampling completed during the May event. A summary memorandum of the findings groundwater levels and sampling results was submitted on June 30, 2017.
 - U.S. EPA responded with clarification questions on August 16, 2017.
 - GM and GHD responded on November 3, 2017; an updated memorandum was provided to U.S. EPA.
- The Second Half 2017 EI CA750 groundwater quality sampling was completed during the week of December 4, 2017. Quarterly static groundwater levels were collected during the same event.
- A request to terminate groundwater collection and monitoring of the Gravel Underdrain System (GUS) Sump was submitted by GM to U.S. EPA on January 18, 2017.
 - U.S. EPA responded with clarification questions on February 24, 2017.
 - GM provided a response letter to U.S. EPA's questions on March 21, 2017; letter is under review by U.S. EPA.
- GM and GHD are currently developing an interim groundwater monitoring program to monitor the impact of the Pilot Trench to groundwater flow. The interim groundwater monitoring plan is set to be submitted during the first quarter of 2018. Interim static water level measurements are currently being collected.
 - Pilot Trench monthly static groundwater monitoring was completed on November 28, 2017 and December 12, 2017.
- AOI 8 NAPL Recovery system construction was substantially completed.
 - Construction of the access road to CH-2A is complete.
 - The building was erected in November 2017.
- The East Plant Area Vault Annual Report covering the Calendar Year of 2016 was submitted to the U.S. EPA on July 14, 2017.
 - Comments from U.S. EPA were received on October 18, 2017
 - GM and GHD responded to comments on November 22, 2017
- Formal monitoring of the East Plant, West Plant and Vault cover systems for the fourth quarter was completed on December 13, 2017. Photographic log and inspection sheets of the inspection are in Appendix A.
- Installation of the guardrail at the Stormwater Pond began during December 2017.
 - Posts at the Stormwater Pond perimeter were installed in December 2017.
- A memorandum was submitted to U.S. EPA on October 30, 2017, describing the emergency response to the Plant's release to Bailey's Branch Creek sludge release from the Plant's Industrial Water Treatment Plant.



- In an email dated November 11, 2017, U.S.EPA requested clarification regarding quality control information related to the CA750 groundwater monitoring data. GM provided clarification by email dated November 22, 2017.
- An updated review of the Financial Assurance (FA) expected cost amounts for the FA documents as required by the RCRA CA Order was submitted on November 16, 2017. In an email dated November 20, 2017, U.S.EPA requested additional backup to the information provided.
- Phase I of the perimeter fence installation (along GM Drive) continued during the fourth quarter.
- Repairs were made to the Cover System.
 - A portion of the asphalt cap in the West Plant Cover System was damaged due to issues with the Facility's fire suppression system. The asphalt was repaired on November 22, 2017.
 - Erosion within drainage ditches for the East Plant Cover System ditches was repaired during the week of December 11, 2017.
- Conference calls were held with U.S. EPA and IDEM on October 5, November 7, and December 6, 2017, to discuss items related to the project.
- Tailgate meetings for the reporting period were held daily to discuss safety topics related to on-going maintenance activities.
- RCRA Quarterly Progress Report #66, covering the third quarter of 2017, was submitted to the U.S. EPA and IDEM on October 13, 2017.

3. Summaries of Problems and Planned Resolutions

- Issue with the pumps in the Leachate Collection System (LCS) sump is being resolved. The pumps in the LCS had failed and the riser pipe had become sufficiently corroded to prevent direct replacement pumps from working. A temporary replacement pump has been installed to allow pumping as needed based on manual measurements. Manual monitoring and pumping of the LCS continues. As discussed during the bi-weekly calls, the temporary pump within the GUS failed. When attempting to remove the temporary pump for replacement, the temporary pump became wedged in the sump, between the inner and outer casing. It may be possible to remove the original pump within the inner steel well casing (not previously attempted due to a curve in the casing as a result of the outer well casing kink). Due to the construction, a crane is required to remove the pump. A contractor has been retained to attempt to remove the original sump within the inner casing. If the extraction of the original pump is successful, a temporary pump can then be installed. Delays from last quarter are attributed to scheduling conflicts with the selected contractor. LCS pump and pipe replacement and GUS pump removal is scheduled for the first quarter of 2018.



4. Summaries of Changes Made in the Corrective Action (CA) During the Reporting Period

The following changes made to the CA during the reporting period.

- The RCRA Quarterly Progress Report # 66, covering the third quarter of 2017, was submitted to the U.S. EPA and IDEM on October 13, 2017.
- Installation of the AOI 8 NAPL recovery systems building and access road was completed in the fourth quarter 2017.

5. Community Relations

The telephone number for public contact is 812-277-8954 (Katie Kamm, GHD). Individual meetings can be arranged to discuss project progress with residents as requested.

A public meeting was held on December 6, 2017 at the GHD trailers to update the public on the status of the clean-up efforts. The next neighborhood/public meeting is tentatively scheduled for June 2018. Presentations for the December 2017 meeting and past meetings are posted on the GM Bedford project website at:

www.bedfordpowertraincorrectiveaction.com

The document repository continues to be located at the Bedford Public Library, with relevant project related documents available on compact disc (CD) in PDF format. Information will be updated periodically, as new documents become available. Data located in the Library repository can also be found on the aforementioned website.

6. Changes in Personnel During the Reporting Period

GHD oversight and Severson personnel completing of the Stormwater Pond dredging have demobilized from the Site. Reduced staff for GHD remain on-Site on-going maintenance operations (e.g., groundwater treatment, wet wells, Vault sumps etc.) and construction oversight. (e.g., Cover System repairs, AOI 8), respectively. K&K Fencing, McIntyre Brothers, and Severson (reduced staff) are on-Site on a project-needed basis (e.g. erosion repairs, guard rails, balance of AOI-8 construction, groundwater treatment system decommissioning [at the stormwater building]).

7. Projected Work for the Next Reporting Period

Work anticipated for the next reporting period includes:

- Replace the pump and stainless steel riser installations at the LCS sump
- Remove the original GUS sump and replace the pump
- Install the wiring of the AOI 8 Solar Sipper System and install the pump within CH-2a



- Monitor Spring 018 in accordance with the revised schedule
- Complete the Phase 1 perimeter fence installation
- Clear trees along the balance of the perimeter fence alignment
- Complete outstanding responses to comments on documentation and/or finalize reports for the following:
 - Response to Comments for the RFI Report
 - Construction Certification Report for the Pilot Trench
 - Pilot Trench Monitoring Plan
 - Construction Certification Report for Stormwater Pond Sediment Removal
 - Quality Assurance Project Plan (update)
 - Phase 2 Perimeter Groundwater Collection Trench Design

8. Copies of Daily Reports, Inspection Reports, Laboratory/Monitoring Data

Table 2.1 presents the quarterly results from Spring 018 sampling. Table 2.2 presents the estimated PCB mass removal for the SSC systems for the past 12 months. Table 2.3 presents the static water levels to support the performance of the pilot perimeter groundwater trench collection system.

Appendix A includes the field monitoring forms for the cover system inspections and a photographic log:

1. Weeds or clover growth were noted at most Transects in the East Plant Area and the West Plant Area, which is also typically accompanied by some bare patches.
2. Heavy weed growth was identified at Transects EV1, EV2, EV3, EV6, EV7, EV8, and EV9.
3. Eroded areas along the north and east perimeter ditch were identified and have been addressed.

Additional packages of analytical data have been, and will continue to be submitted to U.S. EPA as the validated data becomes available.

Table 2.1

Spring 018 Sampling Results - October/November/December 2017
GM CET Bedford Facility
Bedford, Indiana

Area Sample Location: Sample Identification: Sample Date:		P015 Spring 018C SW-015-101117-MC-40972 10/11/2017	P015 Spring 018C SW-015-110617-MC-40980 11/6/2017	P015 Spring 018C SW-015-110617-MC-40981 11/6/2017 Duplicate	P015 Spring 018C SW-015-121317-MC-40983 12/13/2017
Parameters	Units				
PCBs					
Aroclor-1016 (PCB-1016)	ug/L	0.19 U	0.19 U	0.19 U	0.19 U
Aroclor-1221 (PCB-1221)	ug/L	0.19 U	0.19 U	0.19 U	0.19 U
Aroclor-1232 (PCB-1232)	ug/L	0.19 U	0.19 U	0.19 U	0.19 U
Aroclor-1242 (PCB-1242)	ug/L	0.19 U	0.19 U	0.19 U	0.19 U
Aroclor-1248 (PCB-1248)	ug/L	0.19 U	0.19 U	0.19 U	0.19 U
Aroclor-1254 (PCB-1254)	ug/L	0.19 U	0.19 U	0.19 U	0.19 U
Aroclor-1260 (PCB-1260)	ug/L	0.19 U	0.19 U	0.19 U	0.19 U
Total PCBs	ug/L	ND	ND	ND	ND
Wet					
Total suspended solids (TSS)	ug/L	28000	8600	6000	10000

Notes:

U - Not detected at the associated reporting limit.

J - Estimated concentration.

UJ - Not detected; associated reporting limit is estimated.

ND - Non-Detect for total PCBs

12 month rolling average (January 2017 – December 2017) is 0.10 ug/L PCBs.

Table 2.2

**300 gpm Design Capacity Water Treatment System and GWTP PCB Mass Removal Estimate
GM Bedford CET Facility
Bedford, Indiana**

	Groundwater Treatment Plant (GWTP) Treated Volume (gallon)	PCB Influent Concentration (µg/L)	Mass PCB Treated (pound)
January 2017	7,303,000	2.1	0.128
February 2017	2,678,000	3.1	0.069
March 2017	5,726,000	0.79	0.038
April 2017	2,849,000	1.1	0.026
May 2017	4,648,000	1.3	0.050
June 2017	2,385,000	1.1	0.022
July 2017 ¹	1,618,000	0.055 ¹	0.001
August 2017	395,000	1.5	0.005
September 2017 ^{2,3}	459,483	0.055 ¹	0.000
October 2017 ⁴	833,154	1.6	0.011
November 2017	1,627,974	0.74	0.010
December 2017	1,525,264	1.7	0.022
Total Estimated Volume of Water Treated, Fourth Quarter 2017 (gallons)			3,986,392
Total Estimated Mass of PCB Treated, Fourth Quarter 2017 (pounds)			0.04
Total Estimated Mass of PCB Treated, Since January 2017 (pounds)			0.38

Notes:

- 1 Sample results were non-detect. Half of the quantitation limit (max of 0.11 µg/L for both samples) is used to calculate the mass of PCB treated.
- 2 Estimate based on average daily flow rate for first fourteen days (6 days operation) of September, projected for a total of 13 days of operation consistent with August treatment.
- 3 PCB concentration based on one value instead of average of two monthly samples.
- 4 PCB concentration based on an average of two values for October 2017

Appendix A

Fourth Quarter 2017 Cover System Inspection: Photograph Log, Transect Figures, and Field Logs



Photo 1: EV1 Vault Cover System vegetation growth



Cover System Inspection Fourth Quarter 2017



Photo 2: EV1 Vault Cover facing east toward pond



Cover System Inspection Fourth Quarter 2017



Photo 3: Vegetation at ES1 facing southwest.



Cover System Inspection Fourth Quarter 2017



Photo 4: Vegetation growth at EV2



Cover System Inspection Fourth Quarter 2017



Photo 5: Vegetation growth at ES3.



Cover System Inspection Fourth Quarter 2017



Photo 6: EV2 East Plant Area Cover facing southeast towards pond



Cover System Inspection Fourth Quarter 2017



Photo 7: Drainage at ES12 facing northeast.



Cover System Inspection Fourth Quarter 2017



Photo 8: Drainage pipe along EV3 East Plant Area Cover.



Cover System Inspection Fourth Quarter 2017



Photo 9: Vegetation on ES1 East Plant Area Cover at south end of Pond.



Cover System Inspection Fourth Quarter 2017



Photo 10: Vegetation along EV4 East Plant Area Cover facing southwest



Cover System Inspection Fourth Quarter 2017



Photo 11: ES3 East Plant Cover System facing north



Cover System Inspection Fourth Quarter 2017



Photo 12: EV4 East Plant Area Cover erosion repairs.



Cover System Inspection Fourth Quarter 2017



Photo 13: Vegetation south of EV5, facing pond



Cover System Inspection Fourth Quarter 2017



Photo 14: Vegetative growth along EV5 East Plant Area.



Cover System Inspection Fourth Quarter 2017



Photo 15: Vegetation growth at ES12 East Plant Area Cover.



Cover System Inspection Fourth Quarter 2017



Photo 16: EV7 East Plant Cover facing northwest, mowed to promote wildflower growth.



Cover System Inspection Fourth Quarter 2017



Photo 17: East Plant Area Cover System along EV6, facing northwest.



Cover System Inspection Fourth Quarter 2017



Photo 18: East Plant Area Cover overview facing north.



Cover System Inspection Fourth Quarter 2017



Photo 19: EV9 East Plant Area Cover surface water drainage.



Cover System Inspection Fourth Quarter 2017



Photo 20: ES14 East Plant Area Cover



Cover System Inspection Fourth Quarter 2017

TABLE D.1

COVER SYSTEMS INSPECTION LOG
 CONSTRUCTION CERTIFICATION REPORT EAST PLANT COVER SYSTEM
 GM CET BEDFORD FACILITY
 BEDFORD, INDIANA

Date of Inspection: 12/13/2017

Weather: sunny
 32

Inspector: mike curtis

Temperature: degrees

ITEM	TYPES OF PROBLEMS	CHECKED		DETAILED ACTIONS REQUIRED	NOTES	DATE AND NATURE OF ACTIONS COMPLETED
		NO PROBLEMS	CORRECTIVE ACTION REQUIRED			
VEGETATED SOIL COVER SYSTEM						
Transect EV1	QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			heavy weed growth	
	EXPOSURE OF LINER	X				
	EROSION	X				
	LOCALIZED SETTLEMENT/SLUMPING	X				
	PONDING OF WATER/DRAINAGE	X				
	SIGNS OF BURROWING BY ANIMALS	X				
	ROOTING OF TREES	X				
	Transect EV2	QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			heavy weed growth
EXPOSURE OF LINER	X					
EROSION	X					
LOCALIZED SETTLEMENT/SLUMPING	X					
PONDING OF WATER/DRAINAGE	X					
SIGNS OF BURROWING BY ANIMALS	X					
ROOTING OF TREES	X					

TABLE D.1

COVER SYSTEMS INSPECTION LOG
 CONSTRUCTION CERTIFICATION REPORT EAST PLANT COVER SYSTEM
 GM CET BEDFORD FACILITY
 BEDFORD, INDIANA

ITEM	TYPES OF PROBLEMS	CHECKED		DETAILED ACTIONS REQUIRED	NOTES	DATE AND NATURE OF ACTIONS COMPLETED
		NO PROBLEMS	CORRECTIVE ACTION REQUIRED			
VEGETATED SOIL COVER SYSTEM (CONTINUED)						
Transect EV3	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			heavy weed growth	
	- EXPOSURE OF LINER	X				
	- EROSION	X				
	- LOCALIZED SETTLEMENT/SLUMPING	X				
	- PONDING OF WATER/DRAINAGE	X				
	- SIGNS OF BURROWING BY ANIMALS	X				
	- ROOTING OF TREES	X				
Transect EV4	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X				
	- EXPOSURE OF LINER	X				
	- EROSION	X				
	- LOCALIZED SETTLEMENT/SLUMPING	X				
	- PONDING OF WATER/DRAINAGE	X				
	- SIGNS OF BURROWING BY ANIMALS	X				
	- ROOTING OF TREES	X				
Transect EV5	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X				
	- EXPOSURE OF LINER	X				
	- EROSION	X				
	- LOCALIZED SETTLEMENT/SLUMPING	X				
	- PONDING OF WATER/DRAINAGE	X				
	- SIGNS OF BURROWING BY ANIMALS	X				
	- ROOTING OF TREES	X				

TABLE D.1

COVER SYSTEMS INSPECTION LOG
 CONSTRUCTION CERTIFICATION REPORT EAST PLANT COVER SYSTEM
 GM CET BEDFORD FACILITY
 BEDFORD, INDIANA

ITEM	TYPES OF PROBLEMS	CHECKED		DETAILED ACTIONS REQUIRED	NOTES	DATE AND NATURE OF ACTIONS COMPLETED
		NO PROBLEMS	CORRECTIVE ACTION REQUIRED			
VEGETATED SOIL COVER SYSTEM (CONTINUED)						
Transect EV6	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			heavy weed growth	
	- EXPOSURE OF LINER	X				
	- EROSION	X				
	- LOCALIZED SETTLEMENT/SLUMPING	X				
	- PONDING OF WATER/DRAINAGE	X				
	- SIGNS OF BURROWING BY ANIMALS	X				
	- ROOTING OF TREES	X				
Transect EV7	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			heavy weed growth	
	- EXPOSURE OF LINER	X				
	- EROSION	X				
	- LOCALIZED SETTLEMENT/SLUMPING	X				
	- PONDING OF WATER/DRAINAGE	X				
	- SIGNS OF BURROWING BY ANIMALS	X				
	- ROOTING OF TREES	X				
Transect EV8	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			heavy weed growth	
	- EXPOSURE OF LINER	X				
	- EROSION	X				
	- LOCALIZED SETTLEMENT/SLUMPING	X				
	- PONDING OF WATER/DRAINAGE	X				
	- SIGNS OF BURROWING BY ANIMALS	X				
	- ROOTING OF TREES	X				

TABLE D.1

COVER SYSTEMS INSPECTION LOG
CONSTRUCTION CERTIFICATION REPORT EAST PLANT COVER SYSTEM
GM CET BEDFORD FACILITY
BEDFORD, INDIANA

ITEM	TYPES OF PROBLEMS	CHECKED		DETAILED ACTIONS REQUIRED	NOTES	DATE AND NATURE OF ACTIONS COMPLETED
		NO PROBLEMS	CORRECTIVE ACTION REQUIRED			
VEGETATED SOIL COVER SYSTEM (CONTINUED)						
Transect EV9	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			has been mowed	
	- EXPOSURE OF LINER	X				
	- EROSION	X				
	- LOCALIZED SETTLEMENT/SLUMPING	X				
	- PONDING OF WATER/DRAINAGE	X				
	- SIGNS OF BURROWING BY ANIMALS	X				
	- ROOTING OF TREES	X				
Transect WV1	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X				
	- EXPOSURE OF LINER	X				
	- EROSION	X				
	- LOCALIZED SETTLEMENT/SLUMPING	X				
	- PONDING OF WATER/DRAINAGE	X				
	- SIGNS OF BURROWING BY ANIMALS	X				
	- ROOTING OF TREES	X				

TABLE D.1

COVER SYSTEMS INSPECTION LOG
CONSTRUCTION CERTIFICATION REPORT EAST PLANT COVER SYSTEM
GM CET BEDFORD FACILITY
BEDFORD, INDIANA

ITEM	TYPES OF PROBLEMS	CHECKED		DETAILED ACTIONS REQUIRED	NOTES	DATE AND NATURE OF ACTIONS COMPLETED
		NO PROBLEMS	CORRECTIVE ACTION REQUIRED			
HARD SURFACE COVER SYSTEMS						
	<u>Transect EA1</u>	- QUALITY OF ASPHALT COVER	x			
		- PRESENCE OF CRACKING OR DISCOLORATION	X			
	<u>Transect EA2</u>	- QUALITY OF ASPHALT COVER	x			
		- PRESENCE OF CRACKING OR DISCOLORATION	X			
	<u>Transect WA1</u>	- QUALITY OF ASPHALT COVER	x			
		- PRESENCE OF CRACKING OR DISCOLORATION	X			
ACCESS ROAD						
	<u>ACCESS ROAD</u>	- EROSION	X			
		- OBSTRUCTIONS/DEBRIS	x			
		- POTHOLES	X			
		- DAMAGE CAUSED BY VEHICULAR TRAFFIC	X			

TABLE D.1

COVER SYSTEMS INSPECTION LOG
 CONSTRUCTION CERTIFICATION REPORT EAST PLANT COVER SYSTEM
 GM CET BEDFORD FACILITY
 BEDFORD, INDIANA

ITEM	TYPES OF PROBLEMS	CHECKED		DETAILED ACTIONS REQUIRED	NOTES	DATE AND NATURE OF ACTIONS COMPLETED
		NO PROBLEMS	CORRECTIVE ACTION REQUIRED			
SWALE/DRAINAGE DITCHES						
Transect ES1	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			heavy weed growth	
	- EROSION	X				
	- OBSTRUCTIONS	X				
	- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	X				
	- SIGNS OF BURROWING BY ANIMALS	X				
	- ROOTING OF TREES	X				
Transect ES2	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			heavy weed growth	
	- EROSION	X				
	- OBSTRUCTIONS	X				
	- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	X				
	- SIGNS OF BURROWING BY ANIMALS	X				
	- ROOTING OF TREES	X				
Transect ES3	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			heavy weed growth	
	- EROSION	X				
	- OBSTRUCTIONS	X				
	- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	X				
	- SIGNS OF BURROWING BY ANIMALS	X				
	- ROOTING OF TREES	X				

TABLE D.1

COVER SYSTEMS INSPECTION LOG
 CONSTRUCTION CERTIFICATION REPORT EAST PLANT COVER SYSTEM
 GM CET BEDFORD FACILITY
 BEDFORD, INDIANA

ITEM	TYPES OF PROBLEMS	CHECKED		DETAILED ACTIONS REQUIRED	NOTES	DATE AND NATURE OF ACTIONS COMPLETED
		NO PROBLEMS	CORRECTIVE ACTION REQUIRED			
SWALE/DRAINAGE DITCHES (CONTINUED)						
Transect ES4	QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			heavy weed growth	
	- EROSION	X				
	- OBSTRUCTIONS	X				
	- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	X				
	- SIGNS OF BURROWING BY ANIMALS	X				
	- ROOTING OF TREES	X				
Transect ES5	QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			heavy weed growth	
	- EROSION	X				
	- OBSTRUCTIONS	X				
	- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	X				
	- SIGNS OF BURROWING BY ANIMALS	X				
	- ROOTING OF TREES	X				
Transect ES6	QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			heavy weed growth	
	- EROSION	X				
	- OBSTRUCTIONS	X				
	- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	X				
	- SIGNS OF BURROWING BY ANIMALS	X				
	- ROOTING OF TREES	X				

TABLE D.1

COVER SYSTEMS INSPECTION LOG
CONSTRUCTION CERTIFICATION REPORT EAST PLANT COVER SYSTEM
GM CET BEDFORD FACILITY
BEDFORD, INDIANA

ITEM	TYPES OF PROBLEMS	CHECKED		DETAILED ACTIONS REQUIRED	NOTES	DATE AND NATURE OF ACTIONS COMPLETED
		NO PROBLEMS	CORRECTIVE ACTION REQUIRED			
SWALE/DRAINAGE DITCHES (CONTINUED)						
Transect ES7	QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			heavy weed growth	
	- EROSION	X				
	- OBSTRUCTIONS	X				
	- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	X				
	- SIGNS OF BURROWING BY ANIMALS	X				
	- ROOTING OF TREES	X				
Transect ES8	QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			heavy weed growth	
	- EROSION	X				
	- OBSTRUCTIONS	X				
	- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	X				
	- SIGNS OF BURROWING BY ANIMALS	X				
	- ROOTING OF TREES	X				
Transect ES9	QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			heavy weed growth	
	- EROSION	X				
	- OBSTRUCTIONS	X				
	- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	X				
	- SIGNS OF BURROWING BY ANIMALS	X				
	- ROOTING OF TREES	X				

TABLE D.1

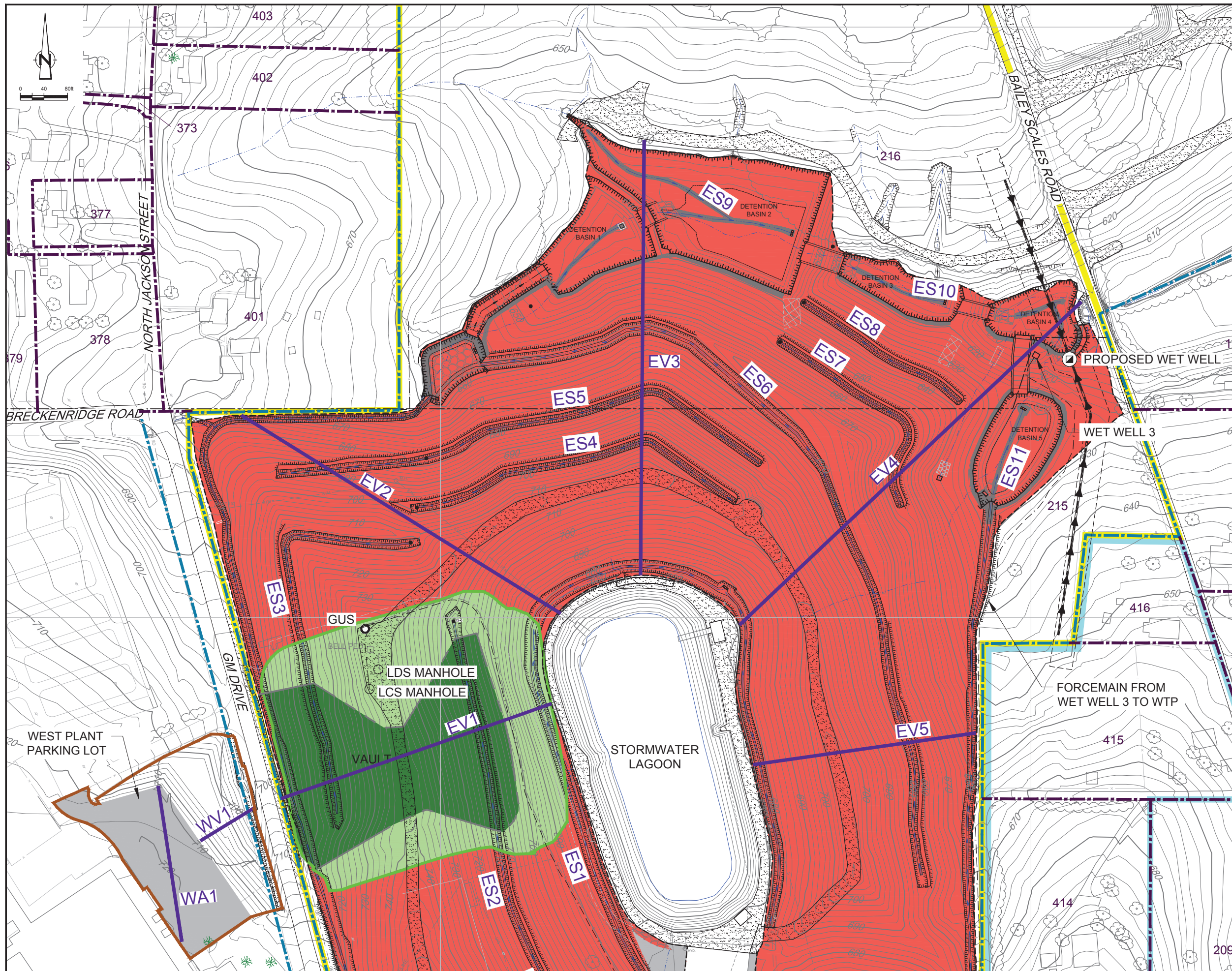
COVER SYSTEMS INSPECTION LOG
CONSTRUCTION CERTIFICATION REPORT EAST PLANT COVER SYSTEM
GM CET BEDFORD FACILITY
BEDFORD, INDIANA

ITEM	TYPES OF PROBLEMS	CHECKED		DETAILED ACTIONS REQUIRED	NOTES	DATE AND NATURE OF ACTIONS COMPLETED
		NO PROBLEMS	CORRECTIVE ACTION REQUIRED			
SWALE/DRAINAGE DITCHES (CONTINUED)						
	Transect ES10	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			heavy weed growth
		- EROSION	X			
		- OBSTRUCTIONS	X			
		- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	X			
		- SIGNS OF BURROWING BY ANIMALS	X			
		- ROOTING OF TREES	X			
	Transect ES11	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			heavy weed growth
		- EROSION	X			
		- OBSTRUCTIONS	X			
		- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	X			
		- SIGNS OF BURROWING BY ANIMALS	X			
		- ROOTING OF TREES	X			
	Transect ES12	- QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			heavy weed growth
		- EROSION	X			
		- OBSTRUCTIONS	X			
		- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	X			
		- SIGNS OF BURROWING BY ANIMALS	X			
		- ROOTING OF TREES	X			

TABLE D.1

COVER SYSTEMS INSPECTION LOG
CONSTRUCTION CERTIFICATION REPORT EAST PLANT COVER SYSTEM
GM CET BEDFORD FACILITY
BEDFORD, INDIANA

ITEM	TYPES OF PROBLEMS	CHECKED		DETAILED ACTIONS REQUIRED	NOTES	DATE AND NATURE OF ACTIONS COMPLETED
		NO PROBLEMS	CORRECTIVE ACTION REQUIRED			
SWALE/DRAINAGE DITCHES (CONTINUED)						
Transect ES13	QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			heavy weed growth	
	- EROSION	X				
	- OBSTRUCTIONS	X				
	- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION	X				
	- SIGNS OF BURROWING BY ANIMALS	X				
	- ROOTING OF TREES	X				
	Transect ES13	QUALITY OF VEGETATIVE COVER - LENGTH OF GRASS - DEAD/DYING GRASS - GRASS COVERAGE - NOXIOUS WEEDS	X			has been mowed
- EROSION		X				
- OBSTRUCTIONS		X				
- CULVERT/CATCH BASIN - OBSTRUCTIONS - SEDIMENT ACCUMULATION		X				
- SIGNS OF BURROWING BY ANIMALS		X				
- ROOTING OF TREES		X				



LEGEND

- EXISTING GROUND SURFACE ELEVATION CONTOURS (feet AMSL)
- EXISTING VEGETATION
- EXISTING BUILDINGS
- EXISTING FENCE LINE
- EXISTING RAILROAD TRACKS
- EXISTING DIRT ROADS
- EXISTING ROADS / PAVED AREAS
- EXISTING ELECTRICAL POWER LINE
- EXISTING FORCEMAIN TO TREATMENT FACILITY
- EXISTING OVERHEAD ELECTRICAL POWER LINE
- APPROXIMATE SURFACE WATER LOCATION
- APPROXIMATE GM PROPERTY BOUNDARY
- APPROXIMATE PROPERTY BOUNDARY
- EXISTING STORM SEWER
- WEST PLANT COVER LIMIT
- VAULT LIMIT
- EAST PLANT COVER LIMIT
- DRAINAGE DITCH
- ASPHALT PAVEMENT AREA
- LOW FLOW CHANNEL
- EAST PLANT AREA
- GM LLC OWNED RESIDENTIAL
- EAST PLANT COVER SYSTEM
- FINAL VAULT COVER SYSTEM AT SURFACE
- FINAL VAULT COVER SYSTEM BURIED BY EAST PLANT AREA COVER SYSTEM
- GRAVEL BED
- PAVED COVER SURFACE
- PROPOSED PILOT TRENCH
- VAULT GROUNDWATER UNDERDRAIN SYSTEM SUMP
- LEAK DETECTION SYSTEM SUMP
- LEACHATE COLLECTION SYSTEM SUMP
- TRANSECT

TRANSECT LABELING

- E EAST PLANT COVER
- V VEGETATIVE COVER
- A ASPHALT COVER
- W WEST PLANT COVER
- S SWALE

SCALE VERIFICATION

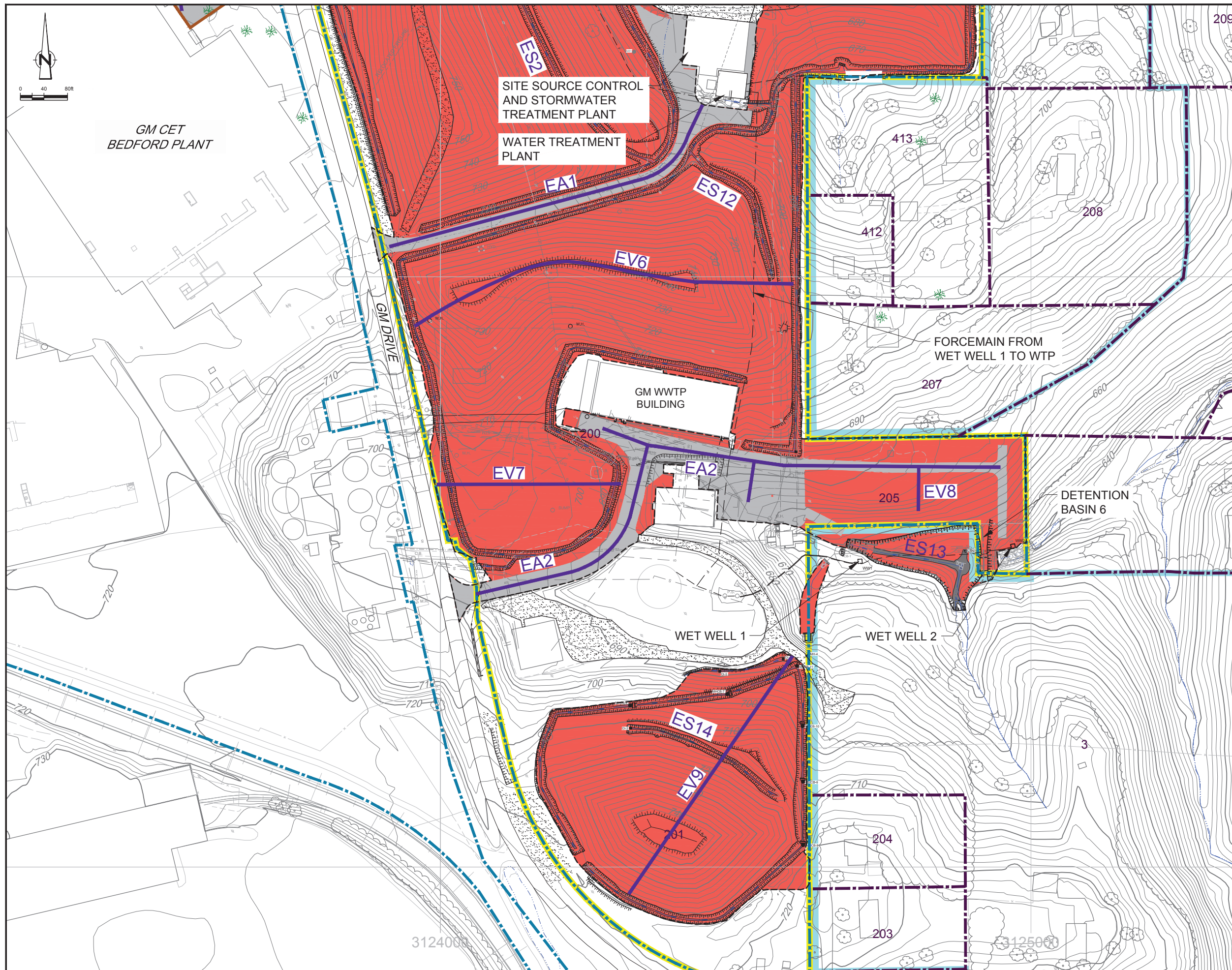
THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

**GM CET BEDFORD FACILITY
BEDFORD, INDIANA**

INTERIM OPERATIONS, MAINTENANCE AND MONITORING PLAN
EAST PLANT COVER SYSTEM
EAST PLANT COVER SYSTEM INSPECTIONS
NORTHERN SECTION AND WEST PLANT
COVER SYSTEM INSPECTIONS



Source Reference: BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001 AND CRA SURVEYS 2002 TO 2008			
Project Manager: J.M.	Reviewed By: P.G.	Date: October 2016	
Scale: 1:80	Project N ^o : 13968-00	Report N ^o : 402	Drawing N ^o : figure D.1



LEGEND

- EXISTING GROUND SURFACE ELEVATION CONTOURS (feet AMSL)
- EXISTING VEGETATION
- EXISTING BUILDINGS
- EXISTING FENCE LINE
- EXISTING RAILROAD TRACKS
- EXISTING DIRT ROADS
- EXISTING ROADS / PAVED AREAS
- EXISTING ELECTRICAL POWER LINE
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- GM LLC OWNED RESIDENTIAL
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- FINAL VAULT COVER SYSTEM BURIED BY EAST PLANT AREA COVER SYSTEM
- GRAVEL BED
- PAVED COVER SURFACE
- PROPOSED PILOT TRENCH
- VAULT GROUNDWATER UNDERDRAIN SYSTEM SUMP
- LEAK DETECTION SYSTEM SUMP
- LEACHATE COLLECTION SYSTEM SUMP
- TRANSECT

TRANSECT LABELING

- E EAST PLANT COVER
- V VEGETATIVE COVER
- A ASPHALT COVER
- W WEST PLANT COVER
- S SWALE

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

**GM CET BEDFORD FACILITY
BEDFORD, INDIANA**

INTERIM OPERATIONS, MAINTENANCE AND MONITORING PLAN
EAST PLANT COVER SYSTEM

**EAST PLANT COVER SYSTEM INSPECTIONS
SOUTHERN SECTION**



Source Reference:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001
AND CRA SURVEYS 2002 TO 2008

Project Manager: J.M.	Reviewed By: P.G.	Date: October 2016
Scale: 1:80	Project N ^o : 13968-00	Report N ^o : 402
		Drawing N ^o : figure D.2