



January 27, 2009

2008 UPSTREAM PARCELS MONITORING REPORT

BAILEY'S BRANCH AND PLEASANT RUN REMOVAL ACTION BEDFORD, INDIANA

Prepared For:
General Motors Corporation

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JANUARY 27, 2009
REF. NO. 017368 (1)

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January 28, 2009

Reference No. 017368

Mr. Brad Stimple
On-Scene Coordinator
U.S. EPA Region 5 - Cleveland Office
25089 Center Ridge Road
Westlake, OH 44145

Dear Mr. Stimple:

Re: Submittal of 2008 Upstream Parcels Monitoring Report
Administrative Order on Consent for Removal Action
Docket No. V-W-'03-C-747
GM Powertrain Group, Bedford Indiana Facility
Bedford, Indiana

Please find enclosed the 2008 Upstream Parcels Monitoring Report (Report) documenting the findings of the 2008 Spring and Fall Inspections of the restored channel of Bailey's Branch Creek and adjacent riparian areas. This Report was prepared in accordance with the Administrative Order On Consent (AOC) For Removal Action (RA) Proceeding Under Sections 104, 106(a), 107, and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, 42 U.S.C. SS9604, 9606(a), 9607, and 9622 [United States Environmental Protection Agency (U.S. EPA) Docket No.: V-W-'03-C-747] effective July 31, 2003, between the U.S. EPA and General Motors (GM) for the GM Powertrain Bedford Facility. The inspections were conducted in accordance with the Upstream Parcels Interim Operations, Maintenance, and Monitoring Plan (IOMMP) (CRA, June 2008).

Should you have any questions regarding this document, please do not hesitate to contact me at (708) 476-4793 or Cheryl Hiatt at (248) 753-5799.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

for James J. McGuigan, P.E.

SH/cs/1
Encl.

c.c.: see Distribution List (attached)



**CONESTOGA-ROVERS
& ASSOCIATES**

January 28, 2009

2

Reference No. 017368

GM Bedford Distribution List

		copy sent (y/n)
Brad Stimple	U.S. EPA, OSC	Yes
Peter Ramanauskas	U.S. EPA, Region 5	Yes
Stacey DeLaReintrie	TN & Associates	Yes
Gerald O'Callaghan	IDEM Management	Yes
Dan Sparks	USFWS	Yes
Cheryl Hiatt/Ed Peterson	GM WFG Remediation	Yes
James McGuigan	CRA Project Manager	Yes
Bill Steinmann	CRA Project Geologist	Yes
Katie Kamm	CRA Oversight Engineer	Yes
Jeff Nichols	CRA QA/QC Officer	Yes
Paul Farquharson	CRA	Yes
Steve Jones	CRA	Yes
Nick Schapman	CRA	Yes
Stephen Song	ENVIRON	Yes

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1
2.0 BACKGROUND	2
3.0 RESTORATION MONITORING	3
3.1 CREEK STABILIZATION	3
3.2 VEGETATIVE COVERAGE	4
3.3 HABITAT FEATURES	5
4.0 RESTORATION MAINTENANCE	6
5.0 REFERENCES	7

LIST OF FIGURES
(Following Text)

FIGURE 1.1 UPSTREAM PARCELS LOCATION

LIST OF TABLES
(Following Text)

TABLE 2.1 TREE/VEGETATION SUMMARY

TABLE 3.1 SPECIES ABUNDANCE CATEGORIES FOR GRASSES AND FORBS

TABLE 3.2 SURVIVAL CLASSES FOR TREES AND SHRUBS

LIST OF APPENDICES

APPENDIX A SPRING 2008 CREEK CHANNEL PHOTOGRAPHIC LOG

APPENDIX B FALL 2008 CREEK CHANNEL PHOTOGRAPHIC LOG

APPENDIX C SPRING 2008 VEGETATIVE ASSESSMENT FIELD FORMS

APPENDIX D FALL 2008 VEGETATIVE ASSESSMENT FIELD FORMS

APPENDIX E VEGETATION ASSESSMENT PHOTOGRAPHIC LOG

LIST OF ACRONYMS AND TERMS

Agreement	Performance-Based Corrective Action Agreement
AOC	Administrative Order on Consent
Bailey's Branch Creek	Bailey's Branch Creek at the upstream end of Pleasant Run Watershed
CA	Corrective Action
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CRA	Conestoga-Rovers & Associates Inc.
Facility	GM Powertrain Bedford Facility
GM	General Motors Corporation
GPS	global positioning system
IDEM	Indiana Department of Environmental Management
IDNR	Indiana Department of Natural Resources
IOMMP	Interim Operation, Maintenance, and Monitoring Plan
NAOI4	Area North of Area of Interest 4
RA	Removal Action
Report	2008 Upstream Parcels Monitoring Report
RCRA	Resource Conservation and Recovery Act
Upstream Parcels	Parcels 3, 4, 5, 6, 8, 10, 11, 12, 205, 215, 216 (west of Bailey Scales Road), 401, and the area north of Area of Interest 4
U.S.C.	United States Code
U.S. EPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service

1.0 INTRODUCTION

Conestoga-Rovers and Associates, Inc. (CRA), on behalf of General Motors Corporation (GM), has prepared this 2008 Upstream Parcels Monitoring Report (Report) documenting the findings of the 2008 Spring and Fall Inspections of the restored channel of Bailey's Branch Creek and adjacent riparian areas. This Report was prepared in accordance with the Administrative Order On Consent (AOC) For Removal Action (RA) Proceeding Under Sections 104, 106(a), 107, and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, 42 U.S.C. SS 9604, 9606(a), 9607, and 9622 [United States Environmental Protection Agency (U.S. EPA) Docket No.: V-W-'03-C-747] effective July 31, 2003, and the Resource Conservation and Recovery Act (RCRA) Corrective Action (CA) activities being conducted under the Performance-Based CA Agreement (Agreement) (effective March 20, 2001, and amended on October 1, 2002, February 28, 2007, and February 27, 2008), between the U.S. EPA and GM for the GM Powertrain Bedford Facility (Facility).

The Inspections were conducted in accordance with the Upstream Parcels Interim Operation, Maintenance, and Monitoring Plan (IOMMP) (CRA, June 2008), at the Facility located in Bedford, Indiana. The locations of the Upstream Parcels (Parcels 3, 4, 5, 6, 8, 10, 11, 12, 205, 215, 216 (west of Bailey Scales Road), 401, and the area north of Area of Interest 4 (N AOI 4)) are presented on Figure 1.1. The Spring Inspection was completed the week of May 19, 2008 and the Fall Inspection was completed the week of September 22, 2008.

This Report documents inspections along Parcels 3, 4, 5, 6, 8, 10, 11, and 12. Parcels 205, 215, 216, and NAOI4 are currently under construction and monitoring will be incorporated with the East Plant Area Cover System.

2.0 **BACKGROUND**

The RA for the Upstream Parcels included removal of impacted soil, rock, and sediment from the creek area for off-site disposal and restoration of the creek and adjacent habitats in the affected areas. The creek channel, riparian corridor, and floodplain were restored to similar form using soil and aggregate materials. Restoration of the creek channel also included the construction of instream features such as pool-riffle sequences and bank stabilization structures. The riparian corridor and floodplain were returned to similar grade and vegetated with a variety of native seed mixes, shrubs and trees (combination of seedlings and specimens with diameters of 1 inch or greater). Habitat features, such as deadfalls and vernal ponds were installed with the riparian corridor. Table 2.1 presents a summary of vegetation installed by parcel, including the specific seed mixes applied.

3.0 RESTORATION MONITORING

The following sections outline monitoring activities undertaken. Spring and Fall 2008 Inspections included a field reconnaissance to assess creek channel stability, extent and nature of vegetative cover, and status of the habitat features. A photographic log, using a hand held global positioning system (GPS), was used to document conditions along the stream channel. The vegetative assessment was completed and documented using the monitoring form provided in the IOMMP.

The photographic log and location maps for the Spring and Fall 2008 Inspections are provided in Appendix A and B, respectively. The vegetation assessment monitoring forms for the Spring and Fall 2008 Inspections are provided in Appendix C and D, respectively. A photographic log collected in support of the vegetation assessment is provided in Appendix E.

3.1 CREEK STABILIZATION

A continuous photographic log was completed along the stream channel for each inspection period to document the stability of the stream channel. Minor signs of erosion along the creek banks (e.g., rill erosion, local scour) and floodplain were documented. The presence or lack of pool-riffle sequences and waterfalls were also assessed. It should be noted that natural processes are expected to modify the creek through time and the weirs (i.e., rock current deflectors installed to create pool-riffle sequences) placed during restoration are expected to be altered, moved or even removed, once natural processes take over.

In general, the creek channel has not moved or shifted significantly since the restoration activities were completed. There are some areas where the creek bottom substrate has moved in areas where creek substrate was placed over or against bedrock outcrops. For example, creek substrate along the bottom of the channel has moved within Parcel 8 in the area where the channel flows under the suspended sanitary sewer line (see Appendix A - Location 12). However, the movement of the creek substrate has resulted in no apparent movement of the bank stabilization features on either side of the sewer line.

A number of rock current deflectors were installed to promote the formation of pool-riffle sequences within the channel. The rock current deflectors remain largely intact and are documented within the photo log.

The banks along the length of the creek channel do not show visible signs of erosion, undercutting or failure. The banks stabilization features remain intact showing no visible signs of failure. Root Wads are vegetated and intact and are expected to degrade naturally over time. Within Parcel 12 a grade control structure was installed immediately downstream of a sanitary forcemain to provide sufficient cover material over the forcemain. The creek channel has eroded along the south bank of the structure (see Appendix A – Location 20) resulting in the creek channel flowing around the structure. There are no visible signs that the channel has eroded to the forcemain. However, this area has been identified for maintenance as described in Section 4.0.

3.2 VEGETATIVE COVERAGE

Areas adjacent to the restored creek channel (riparian zone) were re-vegetated by applying diverse seed mixes of native grasses and forbs and planting native shrubs and trees to promote succession to re-establish native habitats. Due to the relatively small size of the restored riparian zones for the Upstream Parcels, ground truthing during the monitoring events encompassed the entire riparian area restored on each parcel.

For grasses and forbs, the relative abundance of each species observed on each parcel was assigned a value between 1 and 6 based on the abundance categories of Simon et al. (2001). Species abundance categories for grasses and forbs are presented in Table 3.1. Each species observed was noted as either included in the specified seed mix or as a volunteer. Species identified by IDNR as invasive to Southern Indiana were noted (Nice, 2006). The percent aerial cover of grasses and forbs within each cover type was estimated by visual inspection and recorded on the monitoring form.

For shrubs and trees, monitoring consisted of identifying species present and evaluating survival of seedlings and larger specimens planted in the Upstream Parcels. Survival of shrubs and trees were assigned to one of four survival classes, as defined in Table 3.2. In addition to noting the survival of the specimens planted, shrubs and trees that have colonized each parcel (volunteers), including invasive species, were identified and noted.

In general, the vegetative cover along the riparian corridor is dense, with aerial coverage ranging from 85 to 100 percent. The lowest coverage (85 percent) was observed on Parcel 205, where activities associated with the RA are ongoing. There are no significant signs of erosion requiring maintenance.

In general, grasses observed consisted of those species in seed mixes applied to the Upstream Parcels. The majority of forbs observed were volunteer species. Some invasive species were observed, but overall percentage in terms of both composition and aerial coverage was low. Several of the species of forbs in the mix were observed.

Survival of trees and shrubs planted on Parcels 4 through 6, which consisted primarily of trees with diameters of 1-inch, 3 inches or 5-inches greater than 75 percent. Survival on Parcels 8 through 12, where seedlings were planted, was 26 to 50 percent. In addition to the species planted, several of the species observed were volunteers.

3.3 HABITAT FEATURES

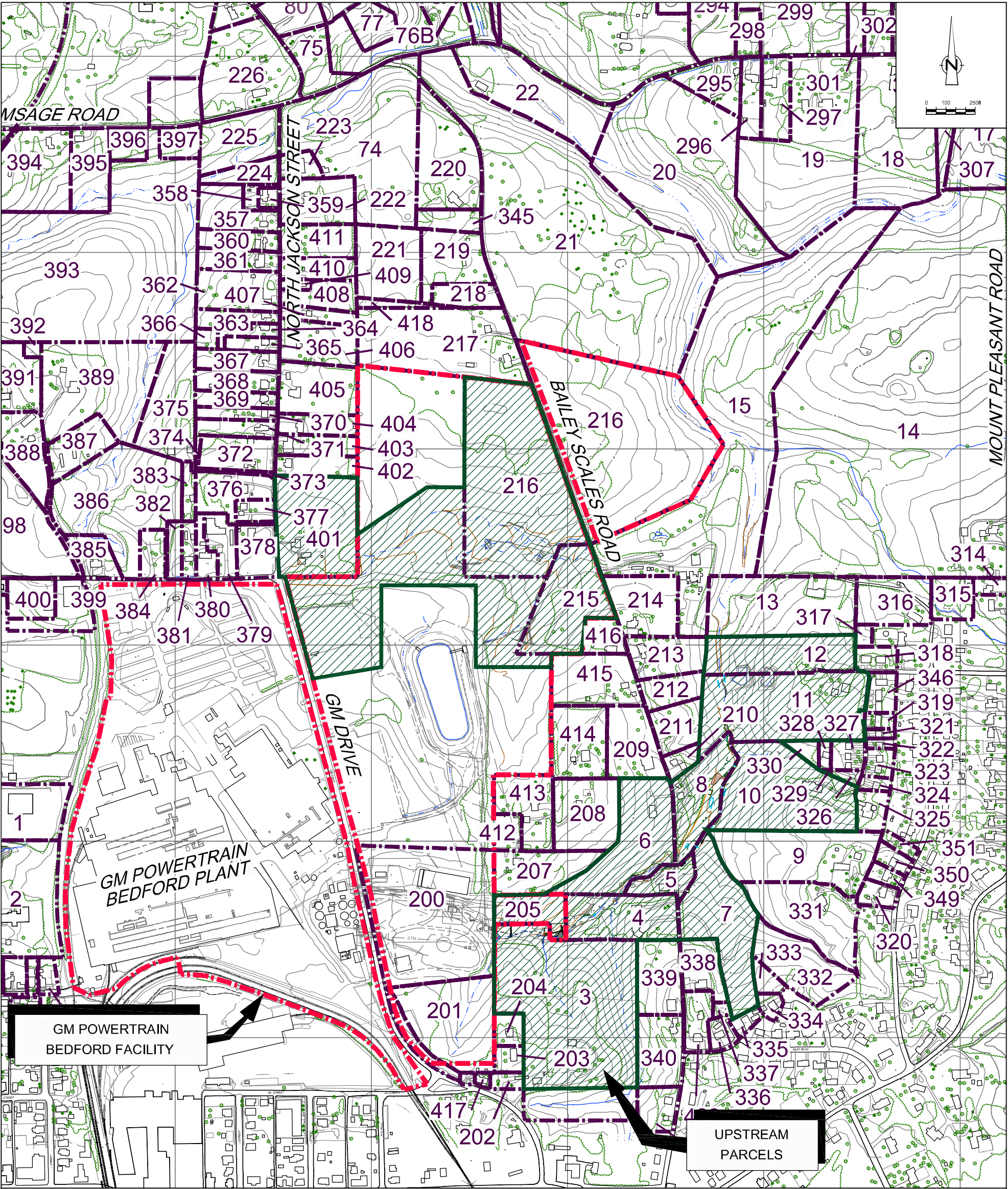
Habitat features observed during the inspections periods showed no signs of movement or significant damage. Many of these features (e.g., logs placed on ground) are naturally degrading over time, which is expected. During the Spring 2008 Inspection, many of the vernal ponds had accumulated a shallow amount of standing water as designed. The vernal ponds are heavily vegetated and there are no visible signs of erosion.

4.0 RESTORATION MAINTENANCE

The Maintenance Activities for the Upstream Parcels include the repair of the south bank at the Forcemain Crossing Grade Stabilization Structure. Maintenance will be completed during the winter months of 2008/2009. Maintenance will include the installation of aggregate along the bottom of the channel and re-grading of the bank to a stable slope (approximately 3H:1V). The bank will be seeded and overlain with an erosion control mat until a dense ground cover is established in Spring 2009. Areas significantly disturbed in support of this work within the riparian corridor will be seeded and overlain with straw mulch.

5.0 REFERENCES

- Conestoga-Rovers & Associates, Inc., Upstream Parcels Interim Operations, Maintenance, and Monitoring Plan, June 13, 2008.
- Nice, G. 2006. Noxious and invasion weeds and weed laws in Indiana. Purdue Extension Weed Science. Revised 12/06.
- Simon, T.P., Stewart, P.M., and Rothrock, P.E. 2001. Development of multimetric indices of biotic integrity of riverine and palustrine wetland plant communities along Southern Lake Michigan. Aquatic Ecosystem Health and Management 4: 293-309.



LEGEND

- EXISTING GROUND SURFACE ELEVATION CONTOURS (feet AMSL)
- EXISTING VEGETATION
- EXISTING BUILDINGS
- FENCE LINE
- RAILROAD TRACKS
- DIRT ROADS
- ROADS / PAVED AREAS
- APPROXIMATE SURFACE WATER LOCATION
- APPROXIMATE PARCEL BOUNDARY
- APPROXIMATE GM PROPERTY BOUNDARY
- UPSTREAM PARCELS

NOTE: PROPERTY BOUNDARY LOCATIONS APPROXIMATED FROM THE LAWRENCE COUNTY SURVEY PLATS. LOCATIONS MAY NOT ACCURATELY REPRESENT THE TRUE BOUNDARIES

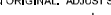
Nº	Revision	Date	Initial	SCALE VERIFICATION		GM POWERTRAIN BEDFORD PLANT	 CONESTOGA-ROVERS & ASSOCIATES			
				THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.						
										
				Approved		UPSTREAM PARCELS INTERIM OMP	Source Reference: BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL, 2001 AND CRA SURVEYS 2002 TO 2005			
						UPSTREAM PARCELS LOCATION	Project Manager: J.M.	Reviewed By: P.G.	Date: FEBRUARY 2007	
							Scale: AS SHOWN	Project N º: 17368-00	Report N º: 001	Drawing N º: figure 1.1

TABLE 2.1
TREE/VEGETATION SUMMARY
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

<i>Upstream Parcels</i>	<i>Number of trees/seedlings installed</i>	<i>Number of shrubs installed</i>	<i>Other</i>
3	-	-	grass/wildflower seed mix and slope forest seed mix
4	173	20	slope forest seed mix and riparian forest seed mix
5	62	16	slope forest seed mix and riparian forest seed mix
6	8	-	slope forest seed mix and riparian forest seed mix
7	-	-	-
8 thru 12	248	44	slope forest seed mix and riparian forest seed mix
205	-	-	grass/wildflower seed mix and slope forest seed mix
215	-	-	lawn seed
216 (West of Bailey Scales Road)	-	-	lawn seed
401	6	33	lawn seed
Area North of AOI 4	-	-	lawn seed

TABLE 3.1

SPECIES ABUNDANCE CATEGORIES FOR GRASSES AND FORBS
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

<i>Abundance Rating</i>	<i>Abundance Category</i>	<i>Description</i>
1	Observed	1 individual of a species present
2	Rare	2-4 individuals of a species present
3	Rare/Common	>4 individuals of a species, but not enough to be categorized as "common"
4	Common	Species is easily located
5	Very Common	Species is slightly dominant; up to 25% of the plant community
6	Abundant	Species accounts for 25-100% of the plant community

Source: Simon et al., 2001

TABLE 3.2

**SURVIVAL CLASSES FOR TREES AND SHRUBS
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA**

<i>Survival Class</i>	<i>Range of Percent Survival</i>
1	0 – 25%
2	26 – 50%
3	51 – 75%
4	76 – 100%

APPENDIX A

SPRING 2008 CREEK CHANNEL PHOTOGRAPHIC LOG

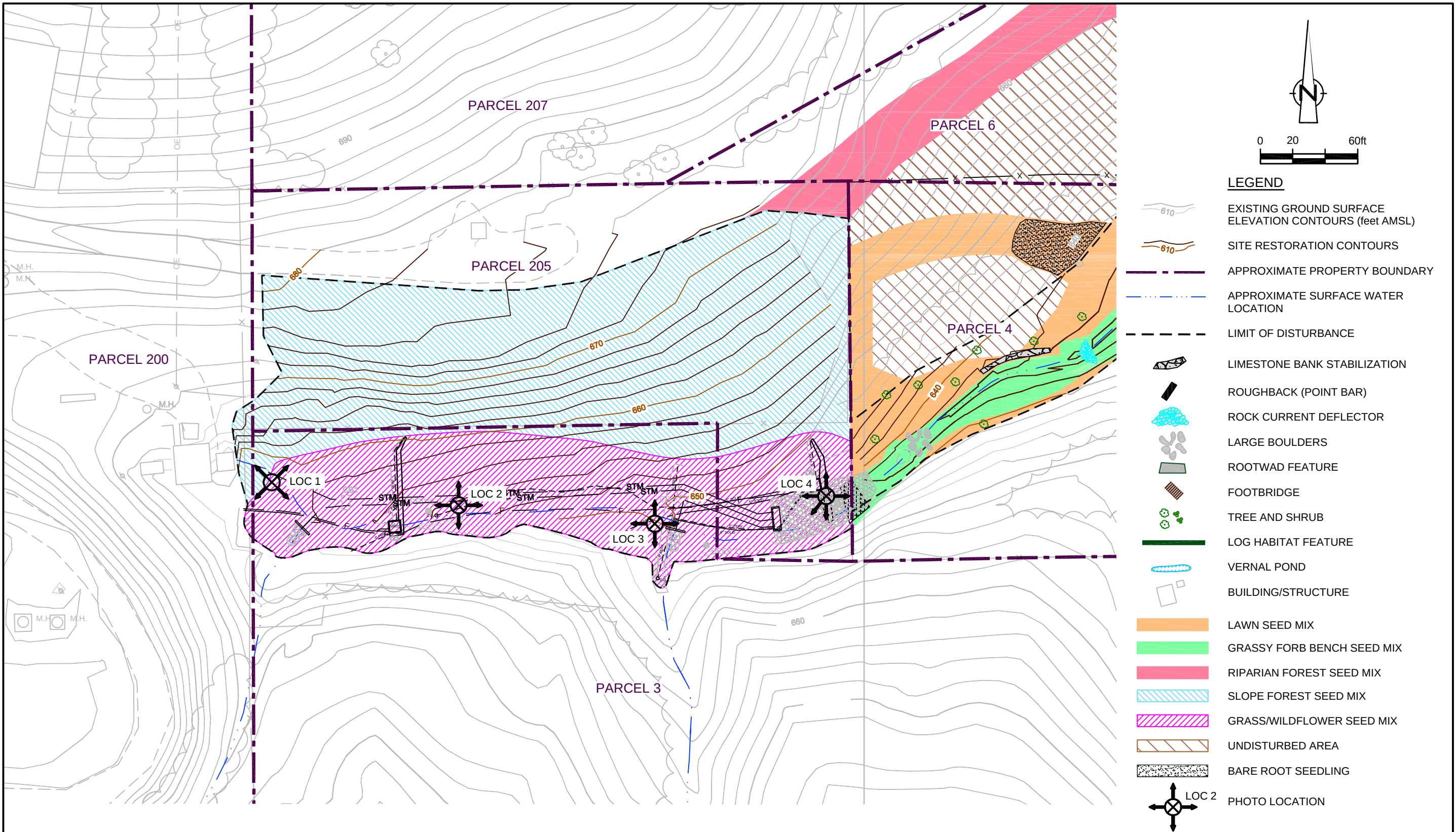
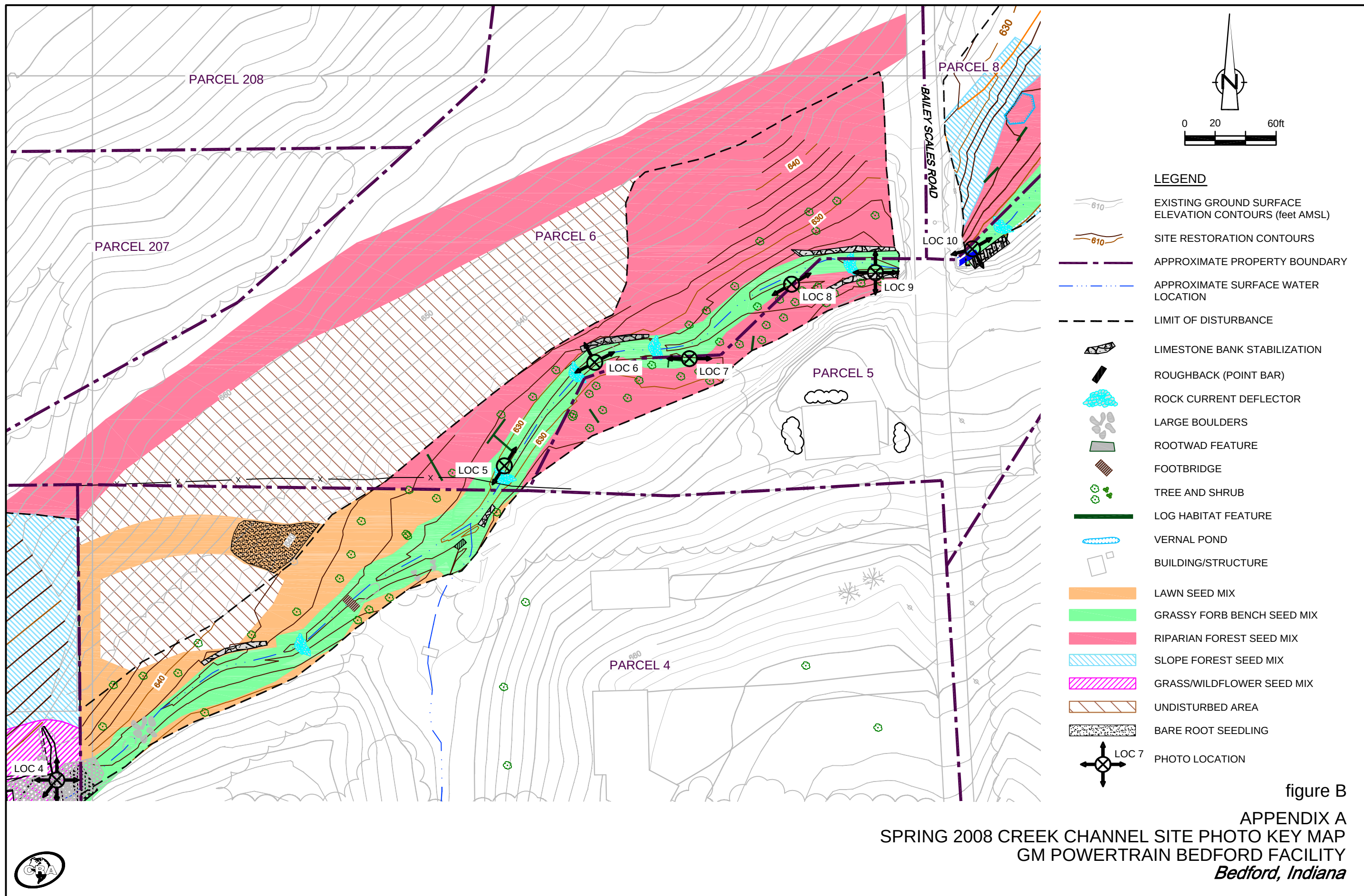
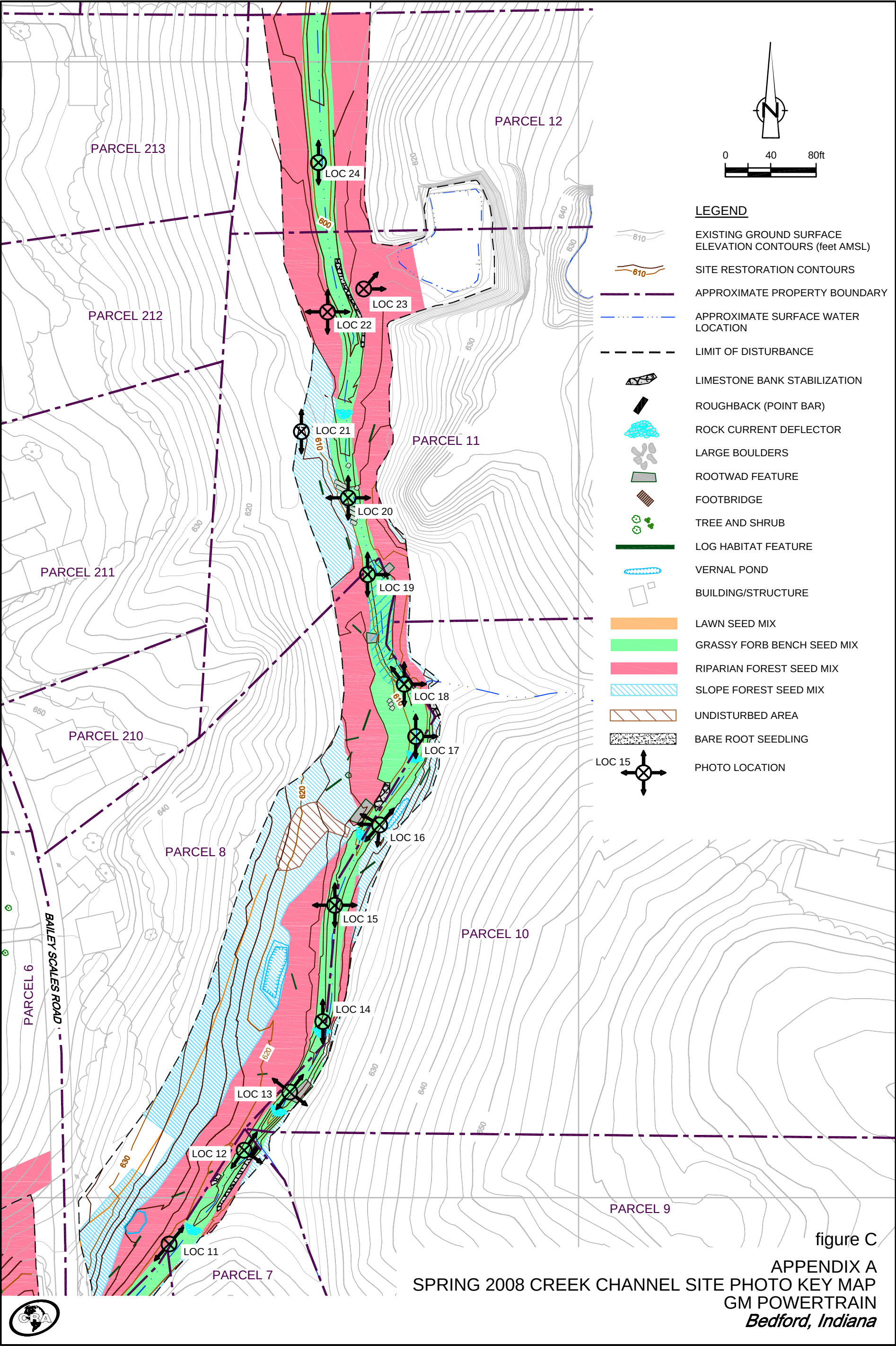


figure A
 APPENDIX A
 SPRING 2008 CREEK CHANNEL SITE PHOTO KEY MAP
 GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana







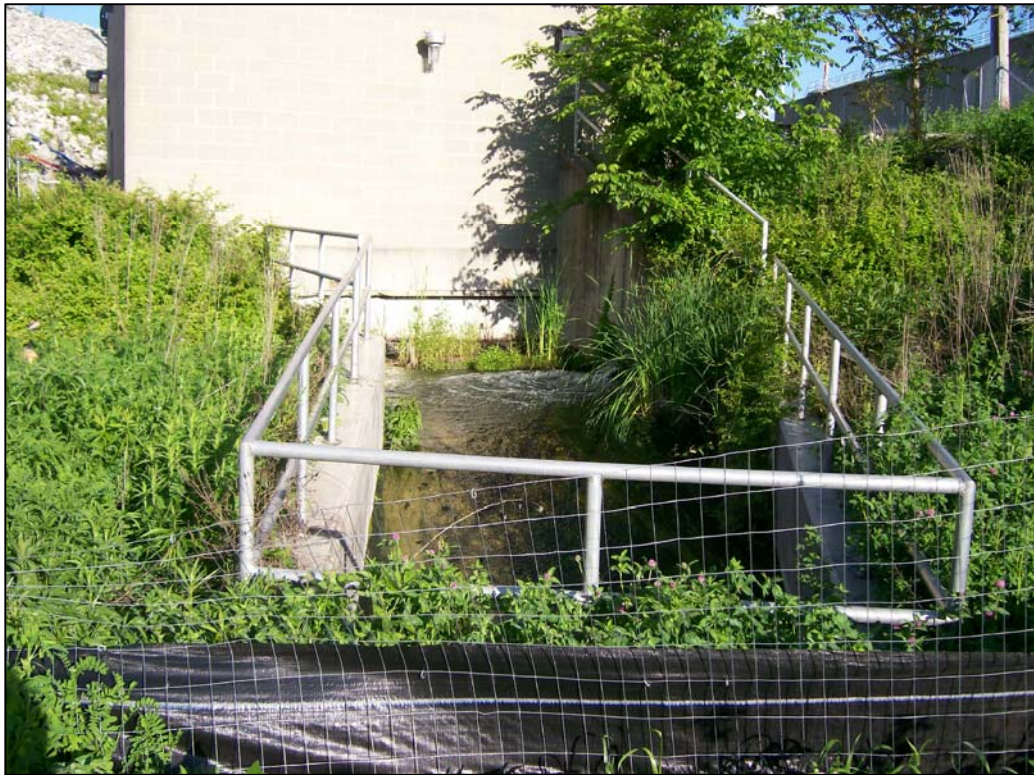


FIGURE 1.0 - PARCEL 3, LOCATION 1, LOOKING UPSTREAM (WEST)



FIGURE 1.1 - PARCEL 3, LOCATION 1, LOOKING DOWNSTREAM (EAST)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 1.2 - PARCEL 3, LOCATION 1, LOOKING SOUTHWEST



FIGURE 1.3 - PARCEL 3, LOCATION 1, LOOKING NORTHEAST

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 2.0 - PARCEL 3, LOCATION 2, LOOKING UPSTREAM (WEST)

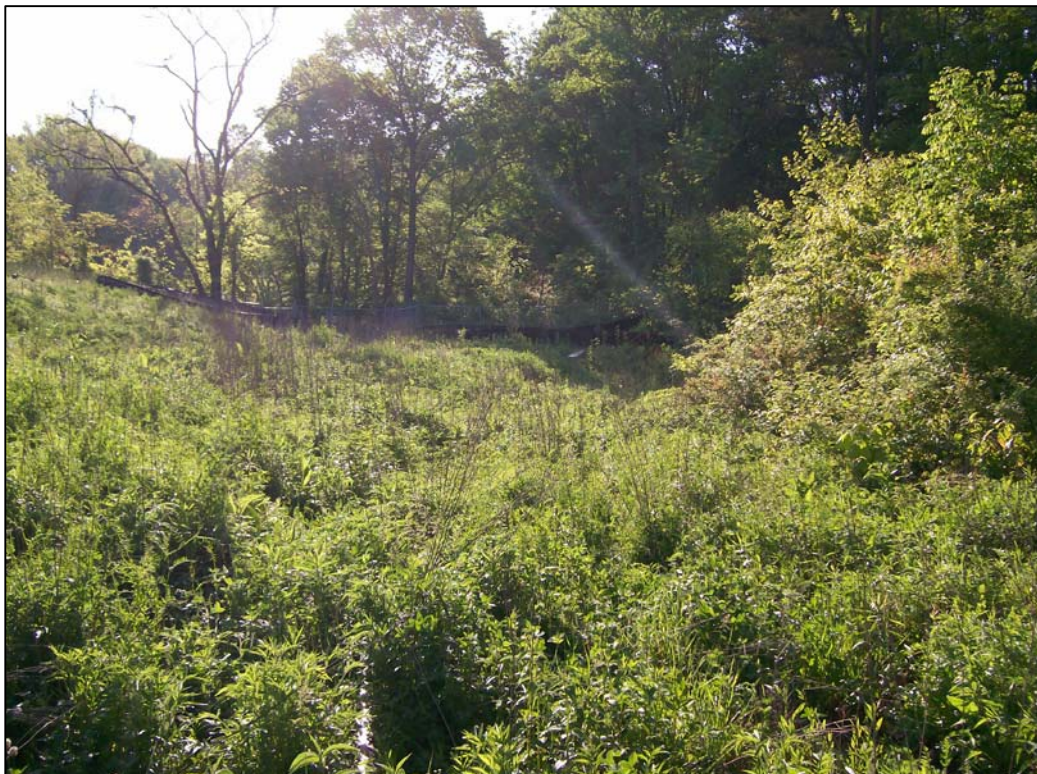


FIGURE 2.1 - PARCEL 3, LOCATION 2, LOOKING DOWNSTREAM (EAST)

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FIGURE 2.2 - PARCEL 3, LOCATION 2, LOOKING SOUTH



FIGURE 2.3 - PARCEL 3, LOCATION 2, LOOKING NORTH

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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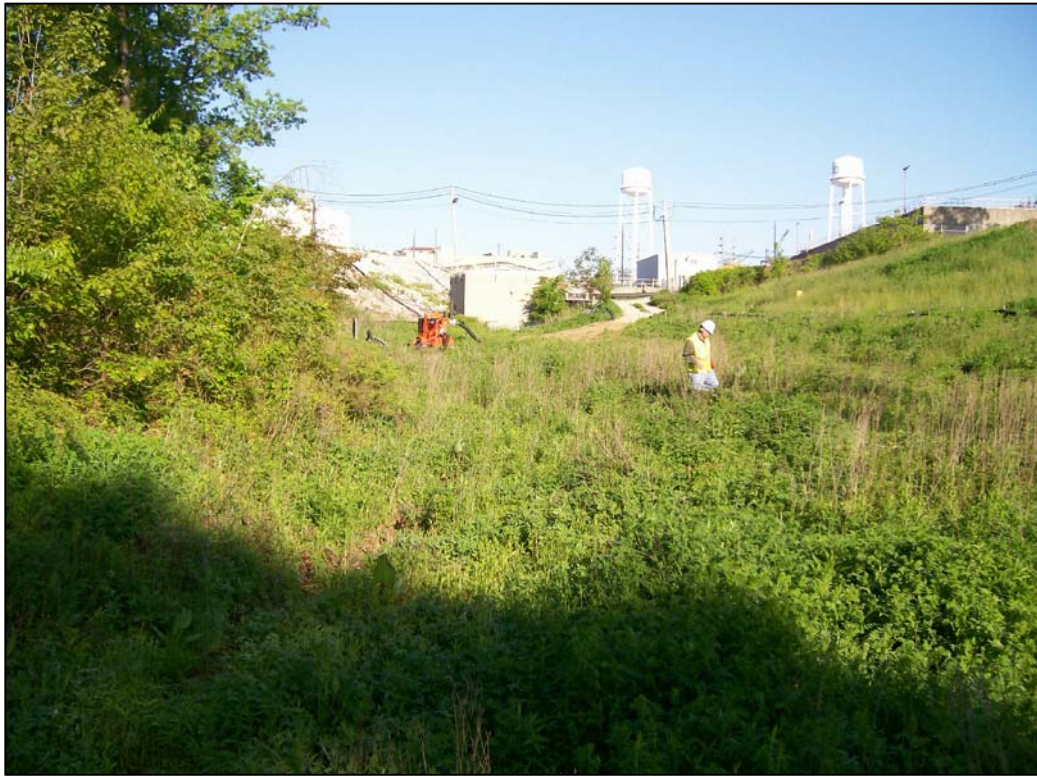


FIGURE 3.0 - PARCEL 3, LOCATION 3, LOOKING UPSTREAM (WEST)



FIGURE 3.1 - PARCEL 3, LOCATION 3, LOOKING DOWNSTREAM (EAST)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 3.2 - PARCEL 3, LOCATION 3, TRIBUTARY (SOUTH)



FIGURE 3.3 - PARCEL 3, LOCATION 3, LOOKING NORTH

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 4.0 - PARCEL 205, LOCATION 4, LOOKING UPSTREAM (WEST)

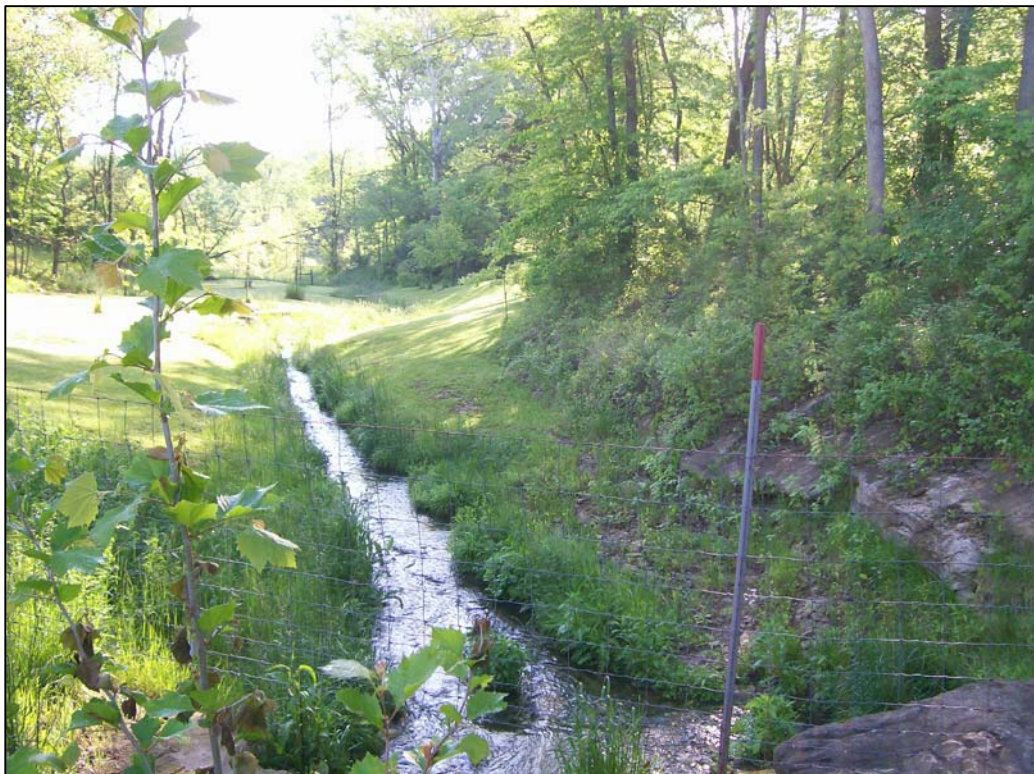


FIGURE 4.1 - PARCEL 205, LOCATION 4, LOOKING DOWNSTREAM (EAST)

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 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 4.2 - PARCEL 205, LOCATION 4, LOOKING SOUTH



FIGURE 4.3 - PARCEL 205, LOCATION 4, LOOKING NORTH

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 4.4 - PARCEL 205, LOCATION 4, OUTFALL SPECIAL LOOKING SOUTHWEST



FIGURE 5.0 - PARCEL 6, LOCATION 5, LOOKING UPSTREAM (SOUTHWEST)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 5.1 - PARCEL 6, LOCATION 5, LOOKING DOWNSTREAM (NORTHEAST)

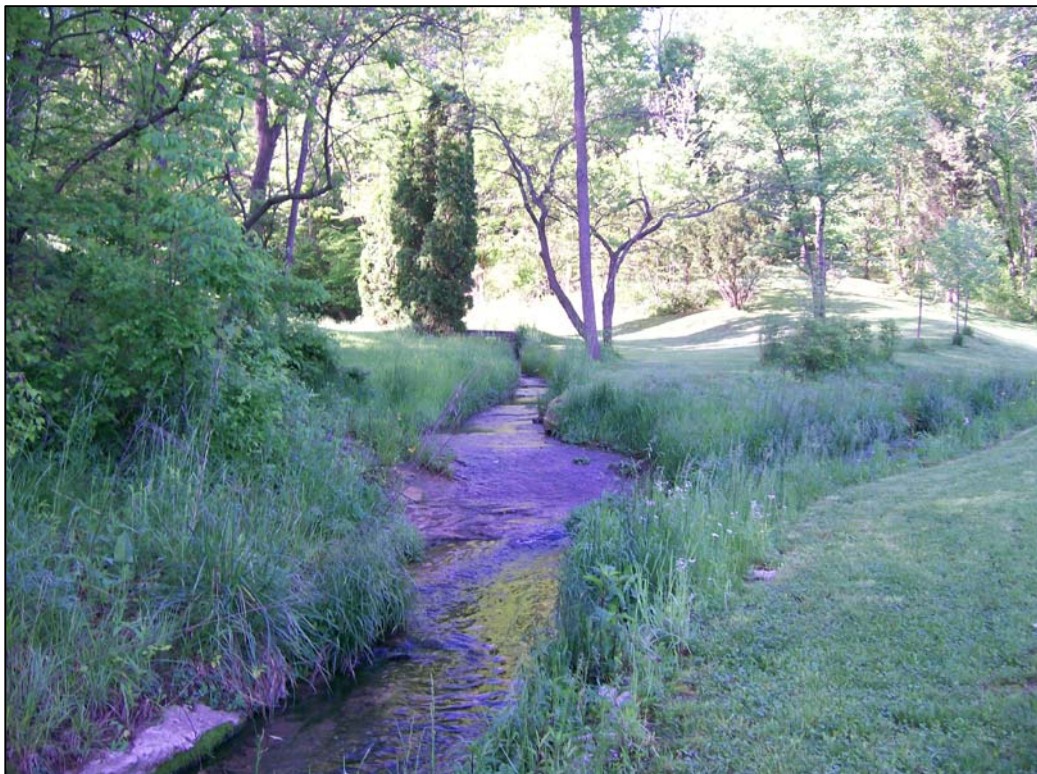


FIGURE 5.2 - PARCEL 6, LOCATION 5, LOOKING AT TRIBUTARY (SOUTHWEST)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 6.0 - PARCEL 6, LOCATION 6, LOOKING UPSTREAM (SOUTHWEST)

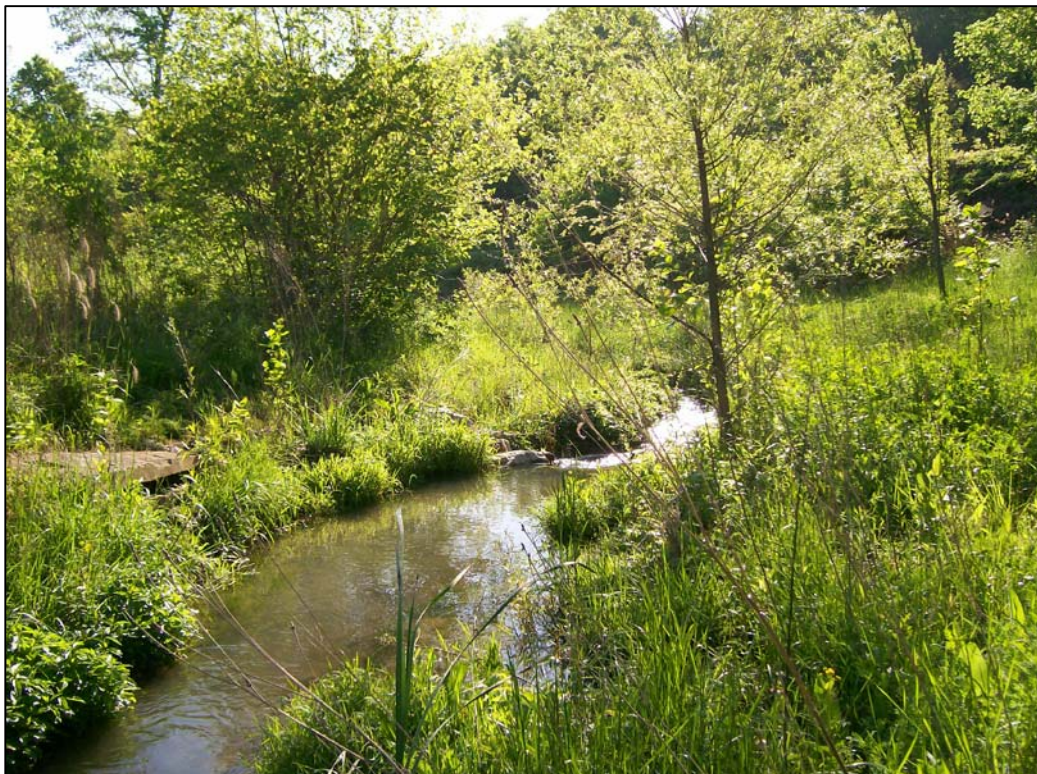


FIGURE 6.1 - PARCEL 6, LOCATION 6, LOOKING DOWNSTREAM (NORTHEAST)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 6.2 - PARCEL 6, LOCATION 6, LOOKING NORTH BANK



FIGURE 6.3 - PARCEL 6, LOCATION 6, ROCK CURRENT DEFLECTOR (SOUTHWEST)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
 GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana



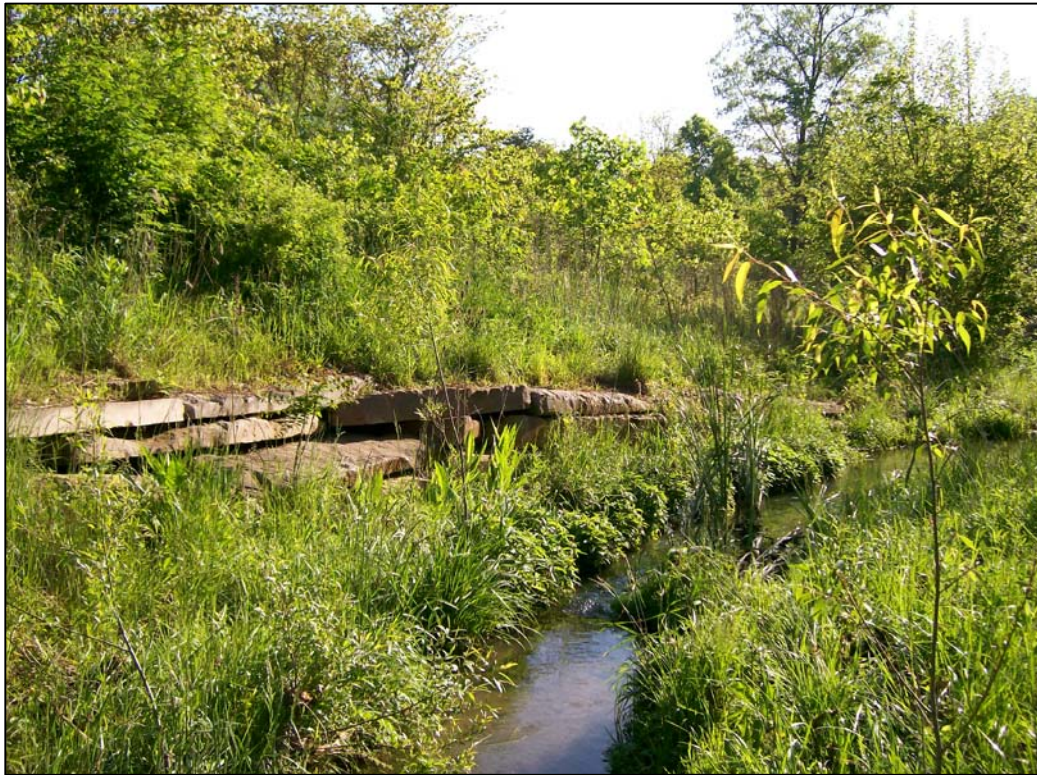


FIGURE 6.4 - PARCEL 6, LOCATION 6, SPECIAL LOOKING AT BANK STABILIZATION (NORTHEAST)

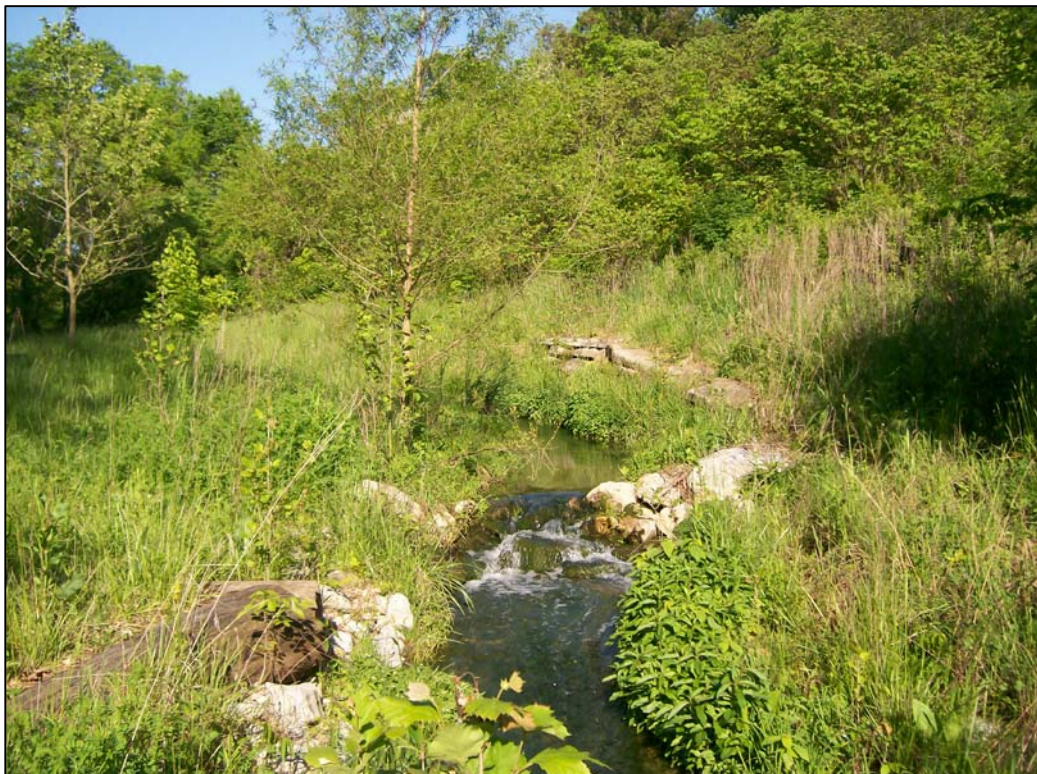


FIGURE 7.0 - PARCEL 5, LOCATION 7, LOOKING UPSTREAM (WEST)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 7.1 - PARCEL 5, LOCATION 7, LOOKING DOWNSTREAM (EAST)



FIGURE 7.2 - PARCEL 5, LOCATION 7, ROCK CURRENT DEFLECTOR

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 7.3 - PARCEL 5, LOCATION 7, LOG DEFLECTOR ON SOUTH BANK



FIGURE 8.0 - PARCEL 5, LOCATION 8, LOOKING UPSTREAM (NORTHWEST)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 8.1 - PARCEL 5, LOCATION 8, LOOKING DOWNSTREAM (NORTHEAST)



FIGURE 9.0 - PARCEL 5, LOCATION 9, LOOKING UPSTREAM (WEST)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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Bedford, Indiana





FIGURE 9.1 - PARCEL 5, LOCATION 9, LOOKING DOWNSTREAM (EAST)



FIGURE 9.2 - PARCEL 5, LOCATION 9, LOOKING SOUTH BANK

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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Bedford, Indiana





FIGURE 9.3 - PARCEL 5, LOCATION 9, LOOKING NORTH BANK

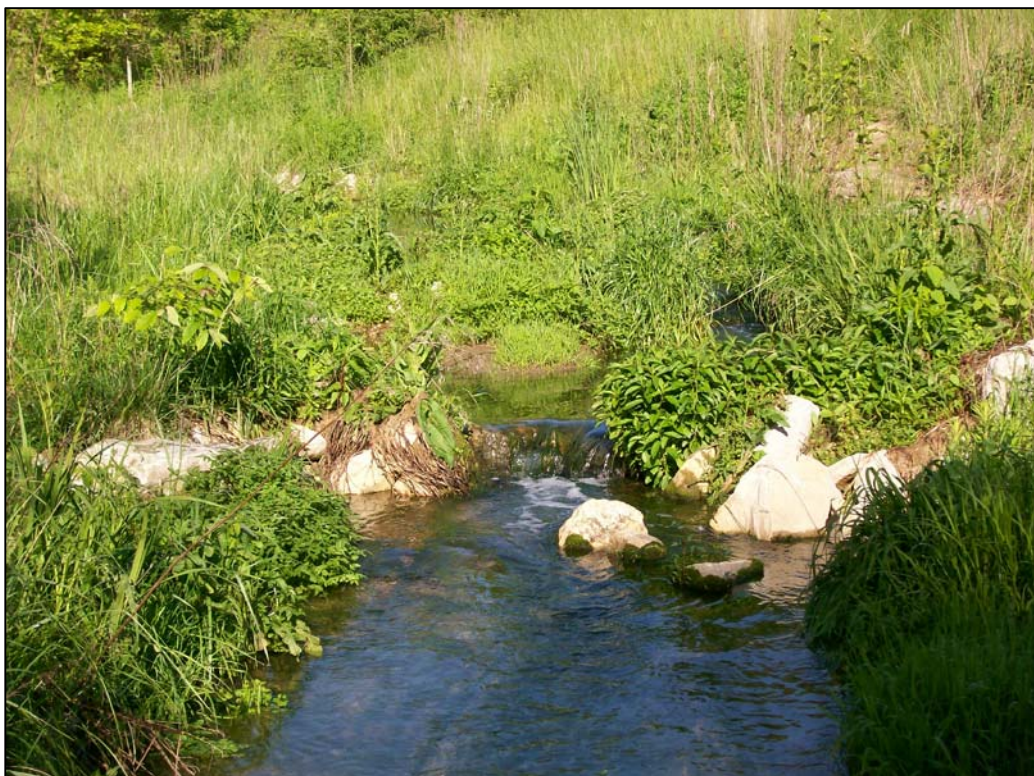


FIGURE 9.4 - PARCEL 5, LOCATION 9, ROCK CURRENT DEFLECTOR

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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Bedford, Indiana





FIGURE 10.0 - PARCEL 5, LOCATION 10, LOOKING UPSTREAM (WEST)



FIGURE 10.1 - PARCEL 5, LOCATION 10, LOOKING DOWNSTREAM (NORTHEAST)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 10.2 - PARCEL 5, LOCATION 10, LOOKING SOUTH BANK



FIGURE 10.3 - PARCEL 5, LOCATION 10, POOL

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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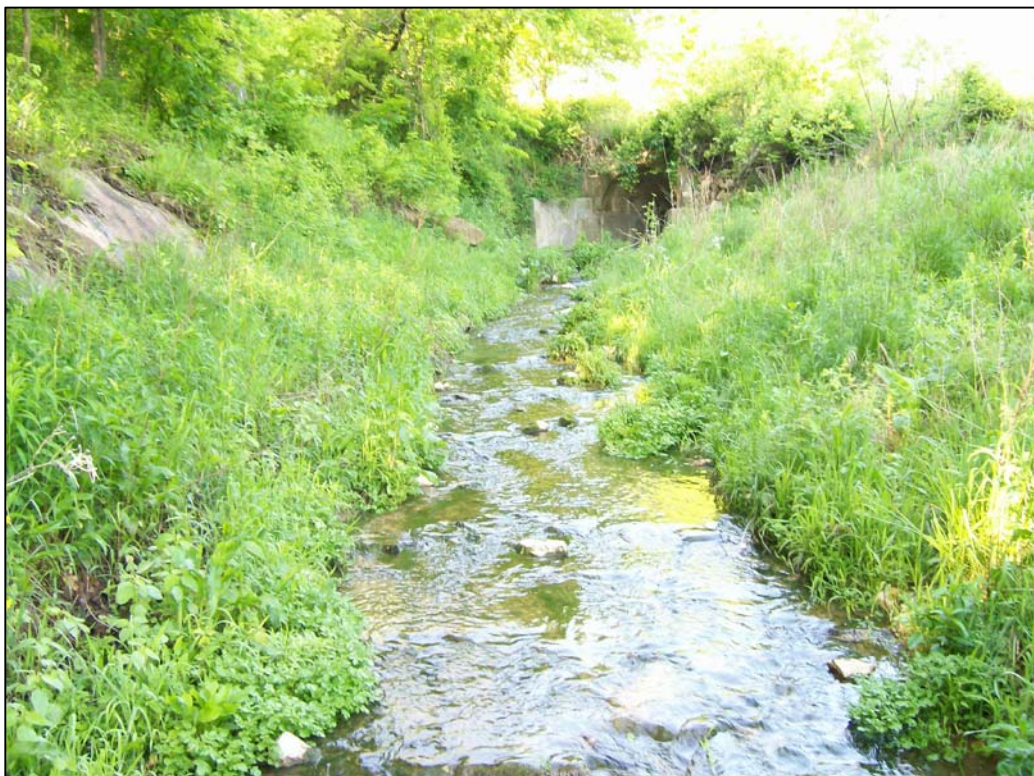


FIGURE 11.0 - PARCEL 8, LOCATION 11, LOOKING UPSTREAM (SOUTHWEST)

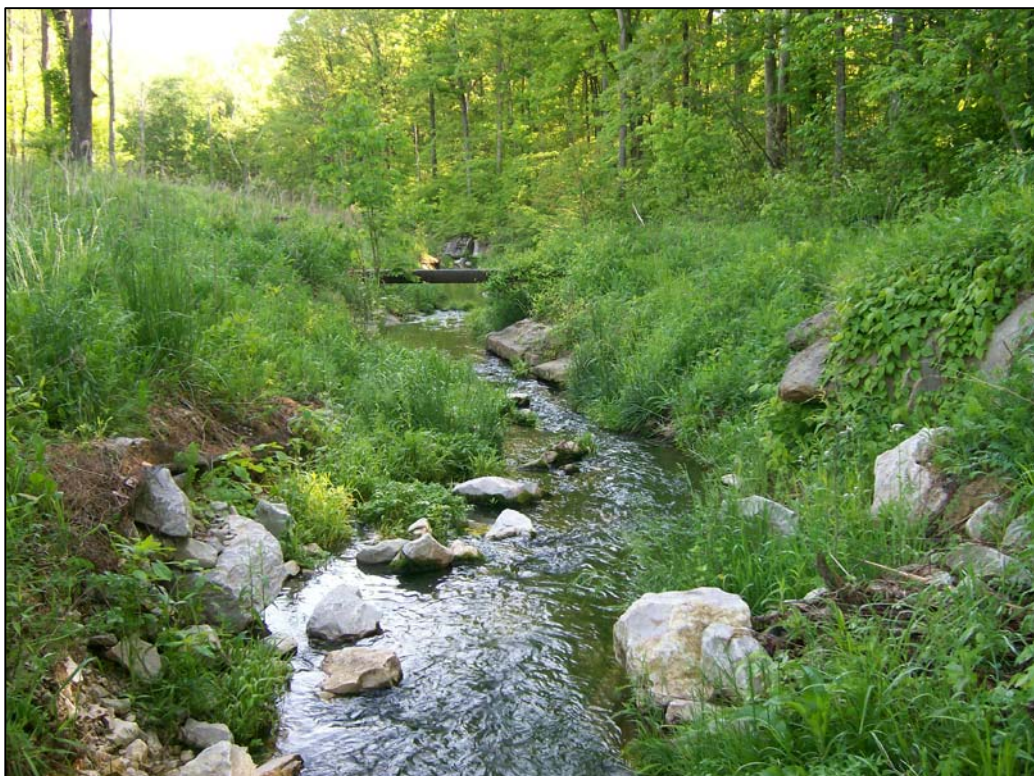


FIGURE 11.1 - PARCEL 8, LOCATION 11, LOOKING DOWNSTREAM (NORTHEAST)

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 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 11.2 - PARCEL 8, LOCATION 11, EAST BANK

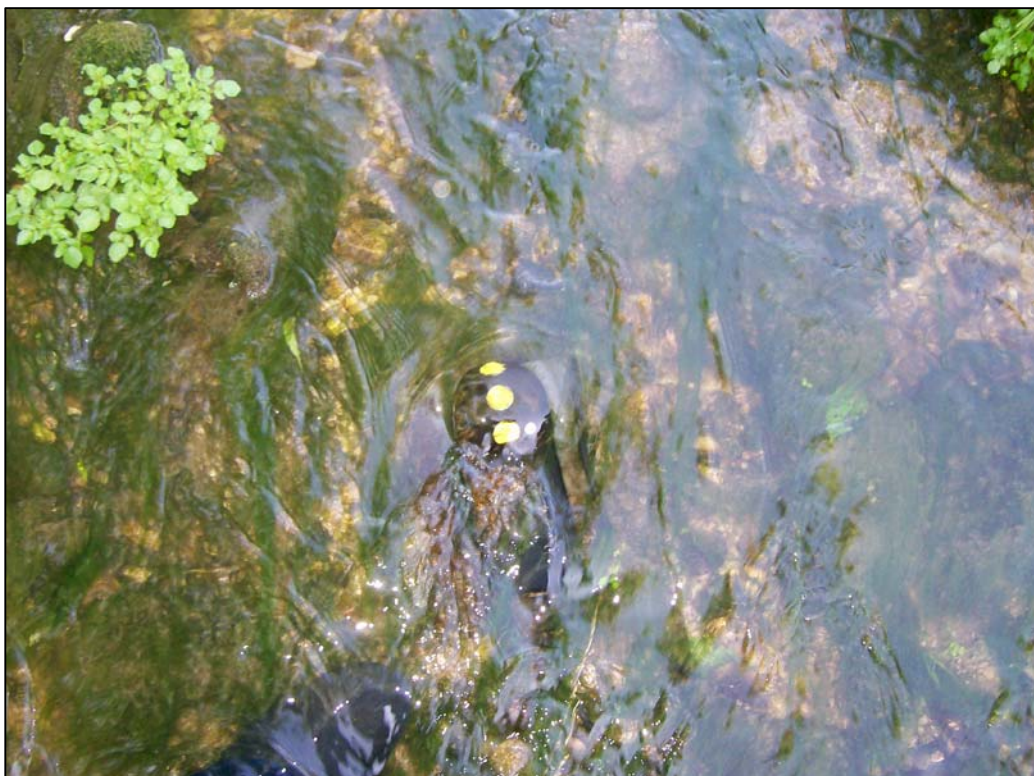


FIGURE 11.3 - PARCEL 8, LOCATION 11, FLOW SENSOR

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 12.0 - PARCEL 7, LOCATION 12, LOOKING UPSTREAM (SOUTHWEST)



FIGURE 12.1 - PARCEL 7, LOCATION 12, LOOKING DOWNSTREAM (NORTHEAST)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 12.2 - PARCEL 7, LOCATION 12, WEST BANK



FIGURE 12.3 - PARCEL 7, LOCATION 12, LOOKING AT TRIBUTARY (EAST)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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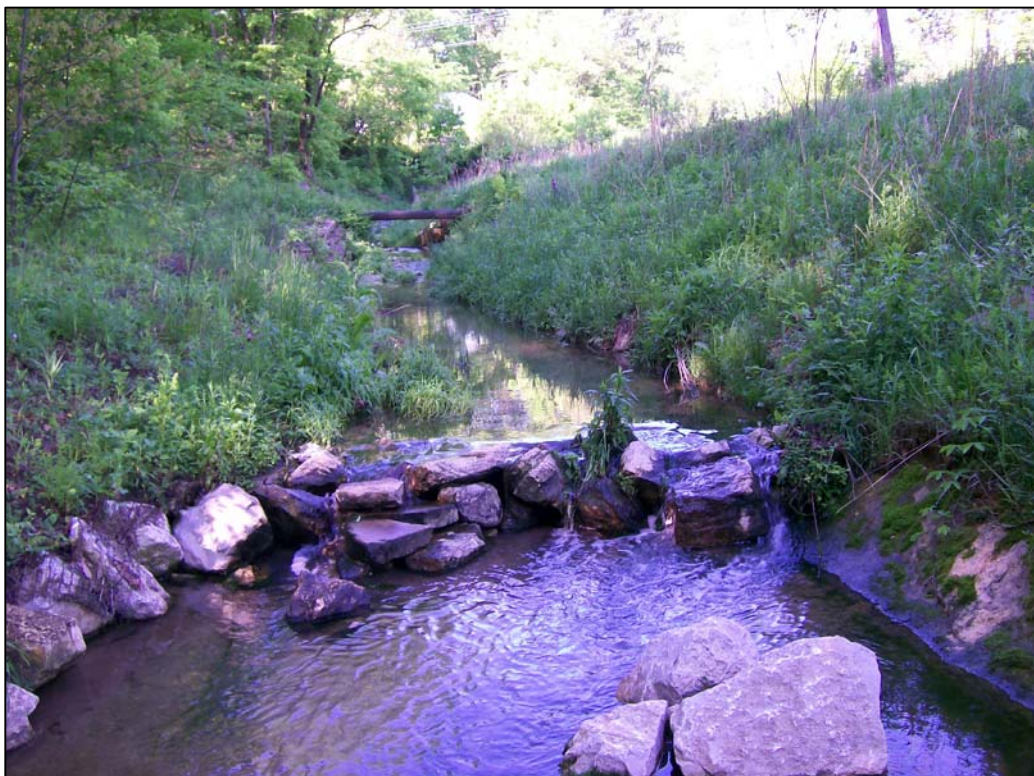


FIGURE 13.0 - PARCEL 8, LOCATION 13, LOOKING UPSTREAM (SOUTHWEST)/ ROCK CURRENT DEFLECTOR

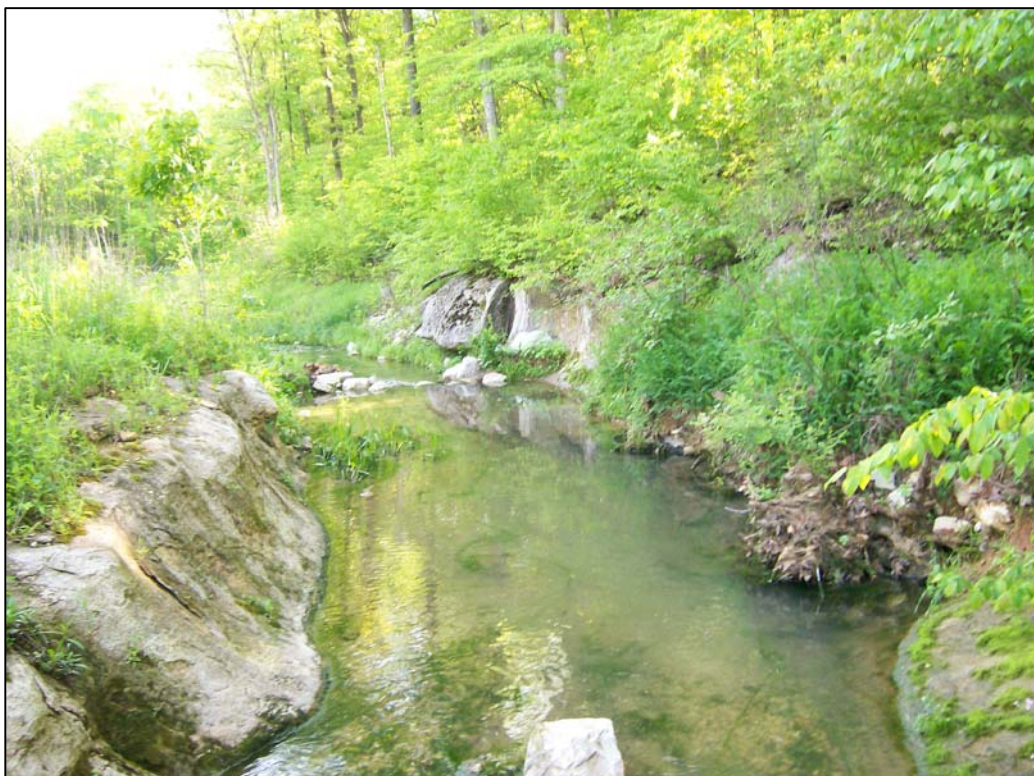


FIGURE 13.1 - PARCEL 8, LOCATION 13, LOOKING DOWNSTREAM (NORTHEAST)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 13.2 - PARCEL 8, LOCATION 13, LOOKING SOUTHEAST BANK



FIGURE 13.3 - PARCEL 8, LOCATION 13, LOOKING NORTHWEST BANK

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 13.4 - PARCEL 8, LOCATION 13, ROOTWAD FEATURE (EAST)

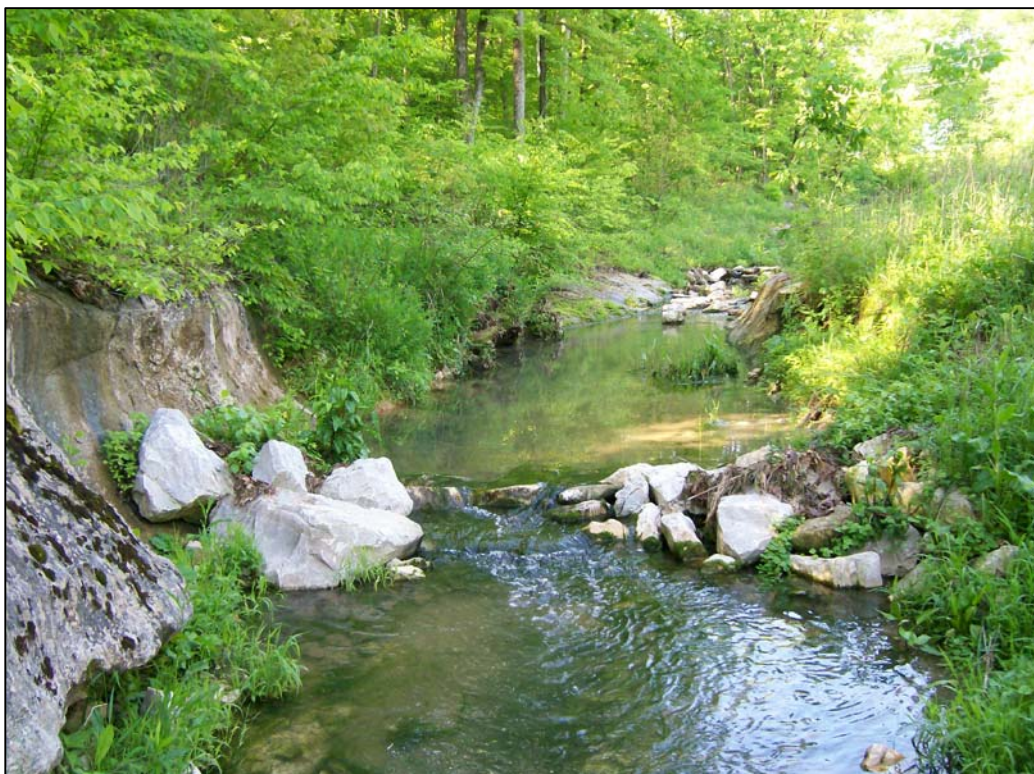


FIGURE 14.0 - PARCEL 8, LOCATION 14, LOOKING UPSTREAM (SOUTH)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 14.1 - PARCEL 8, LOCATION 14, LOOKING DOWNSTREAM (NORTH)



FIGURE 15.0 - PARCEL 8, LOCATION 15, LOOKING UPSTREAM (SOUTH)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 15.1 - PARCEL 8, LOCATION 15, LOOKING DOWNSTREAM (NORTH)



FIGURE 15.2 - PARCEL 8, LOCATION 15, LOOKING EAST BANK

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 15.3 - PARCEL 8, LOCATION 15, LOOKING WEST BANK



FIGURE 16.0 - PARCEL 8, LOCATION 16, LOOKING UPSTREAM (SOUTHWEST)/ ROCK CURRENT DEFLECTOR

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 16.1 - PARCEL 8, LOCATION 16, LOOKING DOWNSTREAM (NORTHEAST)



FIGURE 16.2 - PARCEL 8, LOCATION 16, LOOKING EAST BANK

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 16.3 - PARCEL 8, LOCATION 16, LOOKING WEST BANK



FIGURE 16.4 - PARCEL 8, LOCATION 16, SPECIAL LOOKING WEST/ ROOT WAD FEATURE

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 16.5 - PARCEL 8, LOCATION 16, SPECIAL LOOKING NORTHWEST/ ROUGHBACK BANK STABILIZATION



FIGURE 17.0 - PARCEL 8, LOCATION 17, LOOKING UPSTREAM (SOUTH)/ ROCK CURRENT DEFLECTOR

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
 GM POWERTRAIN BEDFORD FACILITY
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FIGURE 17.1 - PARCEL 8, LOCATION 17, LOOKING DOWNSTREAM (NORTH)



FIGURE 17.2 - PARCEL 8, LOCATION 17, LOOKING EAST BANK

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
 GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 18.0 - PARCEL 8, LOCATION 18, LOOKING UPSTREAM (SOUTH)



FIGURE 18.1 - PARCEL 8, LOCATION 18, LOOKING DOWNSTREAM (NORTH)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
 GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 18.2 - PARCEL 8, LOCATION 18, LOOKING EAST BANK



FIGURE 18.3 - PARCEL 8, LOCATION 18, SPECIAL LOOKING AT TRIBUTARY (EAST)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
 GM POWERTRAIN BEDFORD FACILITY
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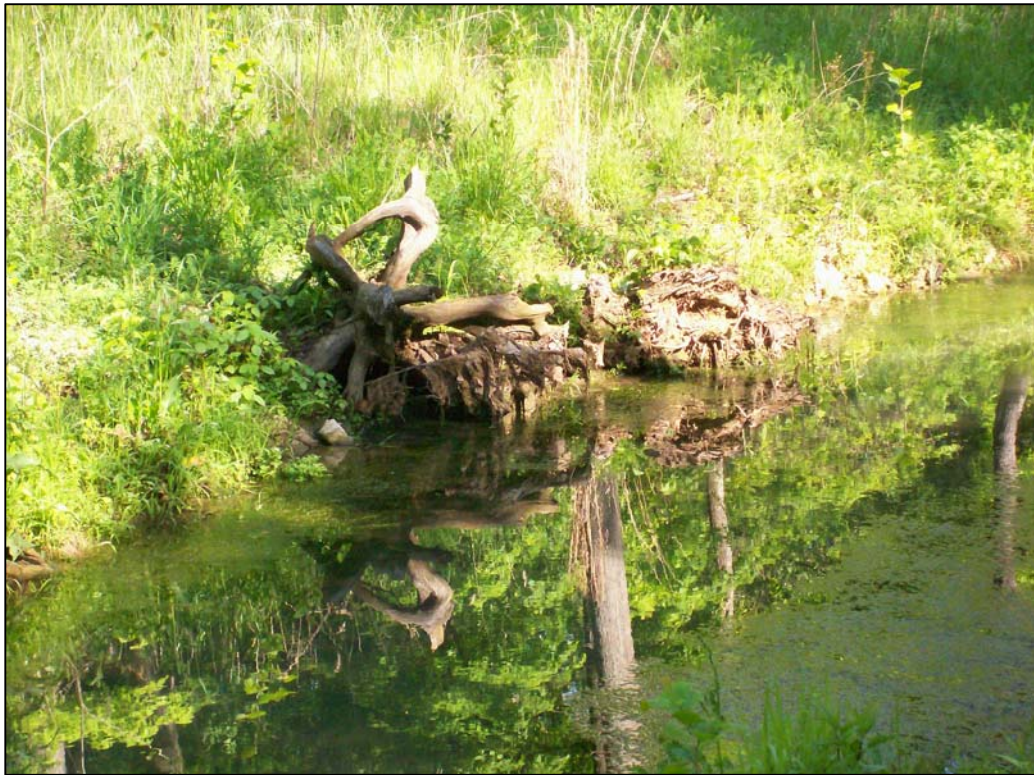


FIGURE 18.4 - PARCEL 8, LOCATION 18, ROOTWAD FEATURE



FIGURE 19.0 - PARCEL 8, LOCATION 19, LOOKING UPSTREAM (SOUTH)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
 GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 19.1 - PARCEL 8, LOCATION 19, LOOKING DOWNSTREAM (NORTH)



FIGURE 19.2 - PARCEL 8, LOCATION 19, LOOKING EAST BANK

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
 GM POWERTRAIN BEDFORD FACILITY
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FIGURE 19.3 - PARCEL 8, LOCATION 19, ROOTWAD FEATURE

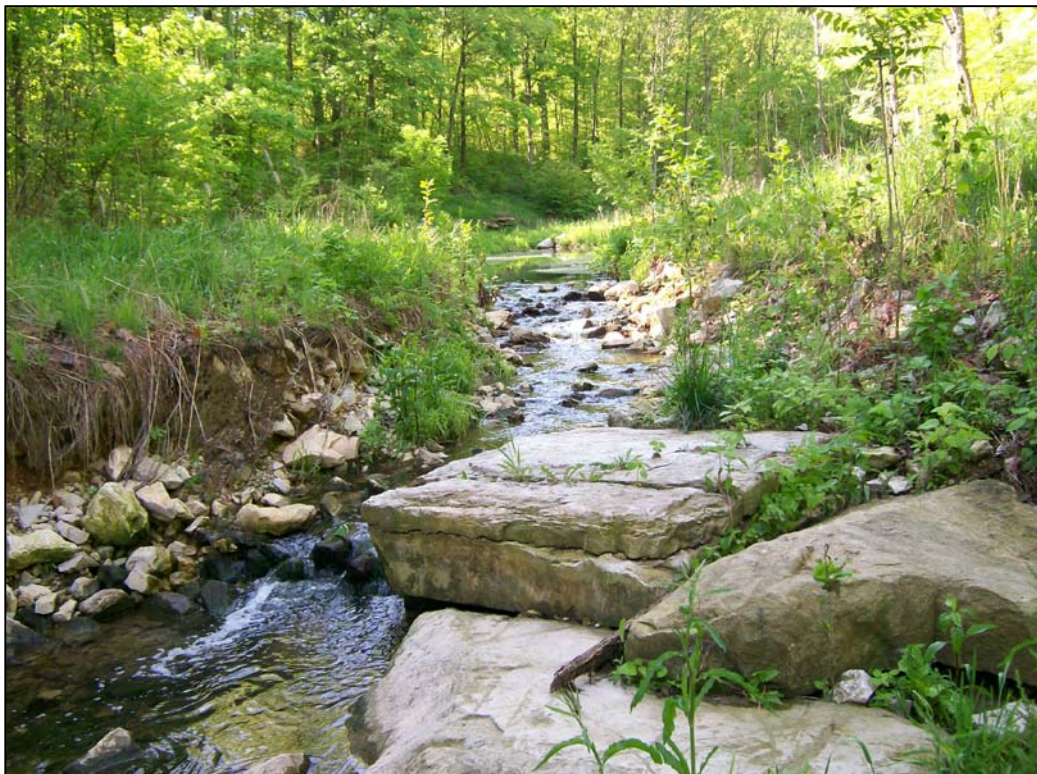


FIGURE 20.0 - PARCEL 11, LOCATION 20, LOOKING UPSTREAM (SOUTH)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
 GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 20.1 - PARCEL 11, LOCATION 20, LOOKING DOWNSTREAM (NORTH)



FIGURE 20.2 - PARCEL 11, LOCATION 20, LOOKING EAST BANK

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
 GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 20.3 - PARCEL 11, LOCATION 20, LOOKING WEST BANK



FIGURE 20.4 - PARCEL 11, LOCATION 20, SPECIAL LOOKING EAST BANK

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
 GM POWERTRAIN BEDFORD FACILITY
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FIGURE 21.0 - PARCEL 11, LOCATION 21, RILL LOOKING UPSTREAM (SOUTH)

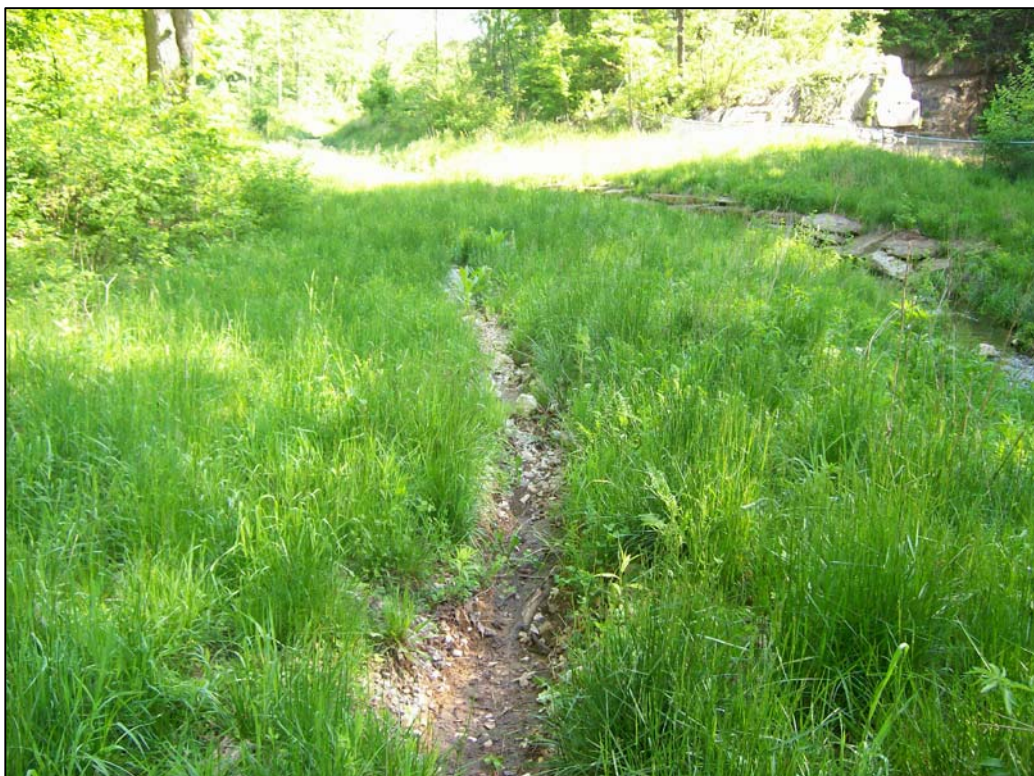


FIGURE 21.1 - PARCEL 11, LOCATION 21, RILL LOOKING DOWNSTREAM (NORTH)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
 GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 22.0 - PARCEL 11, LOCATION 22, LOOKING UPSTREAM (SOUTH)



FIGURE 22.1 - PARCEL 11, LOCATION 22, LOOKING DOWNSTREAM (NORTH)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
 GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 22.2 - PARCEL 11, LOCATION 22, LOOKING EAST BANK



FIGURE 22.3 - PARCEL 11, LOCATION 22, LOOKING WEST BANK

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
 GM POWERTRAIN BEDFORD FACILITY
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FIGURE 22.4 - PARCEL 11, LOCATION 22, SPECIAL LOOKING EAST BANK



FIGURE 23.0 - PARCEL 11, LOCATION 23, SPECIAL LOOKING EAST WETLAND

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
 GM POWERTRAIN BEDFORD FACILITY
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FIGURE 23.1 - PARCEL 11, LOCATION 23, SPECIAL LOOKING NORTHEAST WETLAND



FIGURE 24.0 - PARCEL 12, LOCATION 24, LOOKING UPSTREAM (SOUTH)

APPENDIX A
 SPRING 2008 CREEK CHANNEL PHOTO LOG
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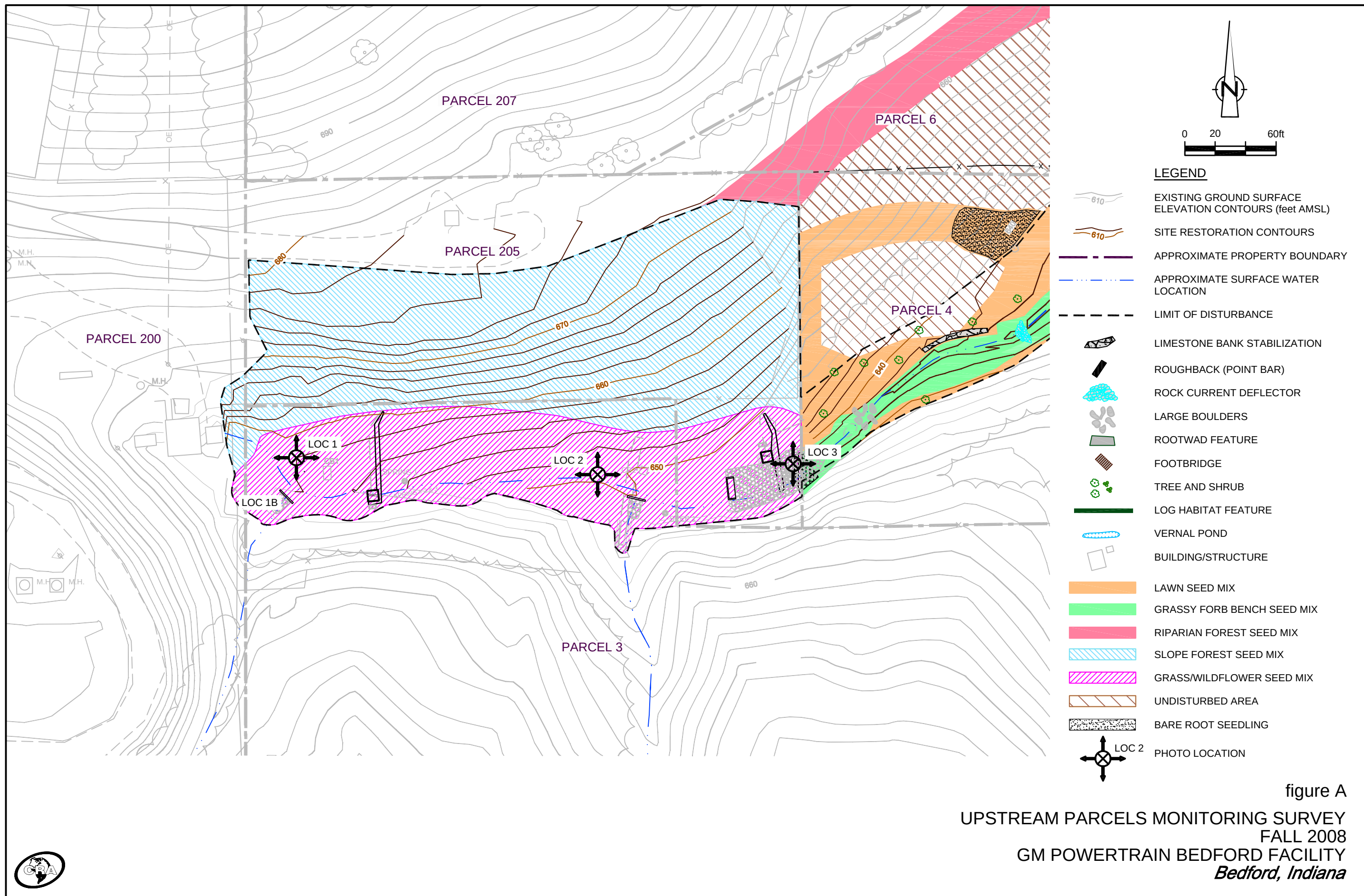
FIGURE 24.1 - PARCEL 12, LOCATION 24, LOOKING DOWNSTREAM (NORTH)

APPENDIX A
SPRING 2008 CREEK CHANNEL PHOTO LOG
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APPENDIX B

FALL 2008 CREEK CHANNEL PHOTOGRAPHIC LOG



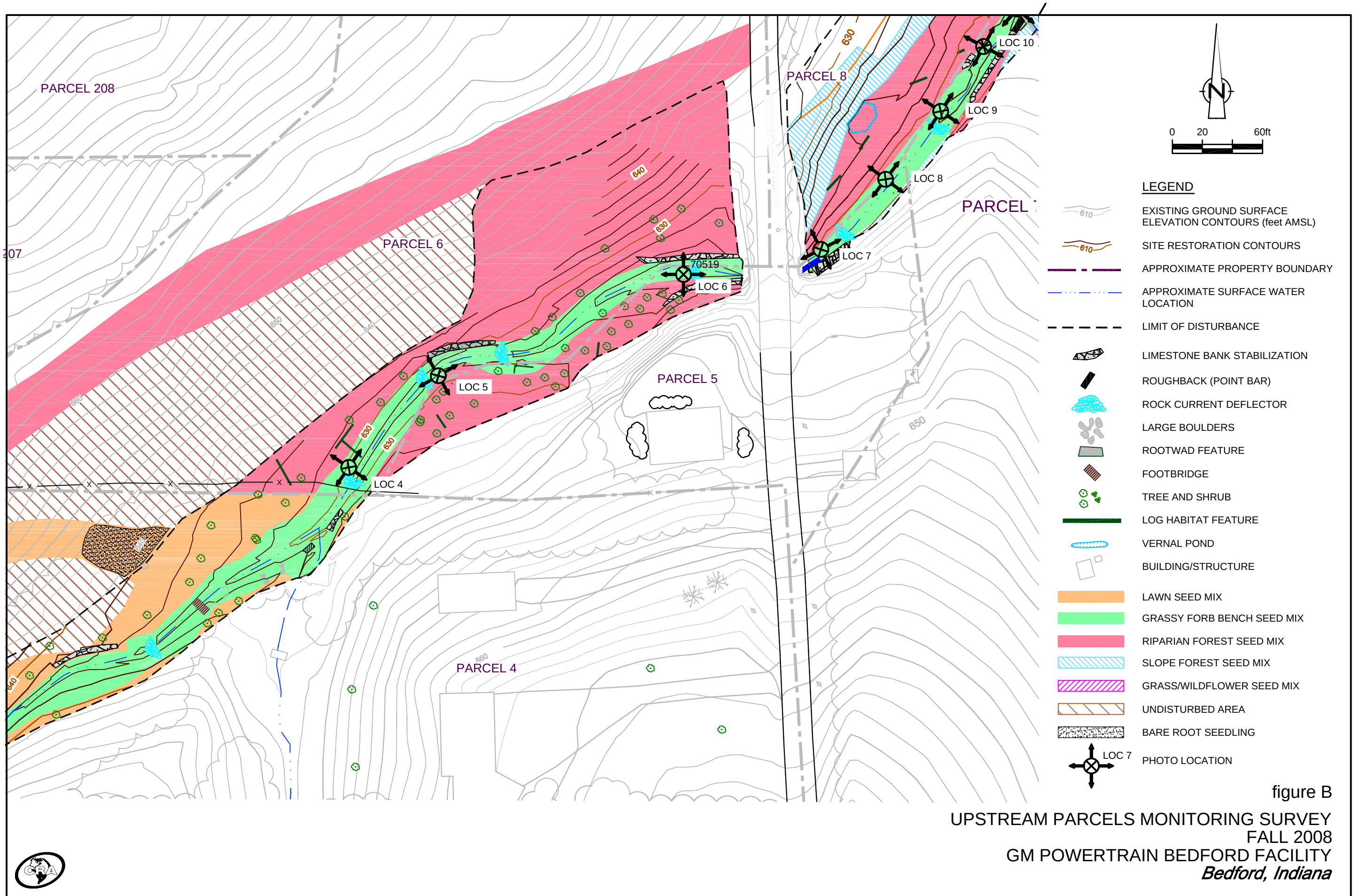


figure B
 UPSTREAM PARCELS MONITORING SURVEY
 FALL 2008
 GM POWERTRAIN BEDFORD FACILITY
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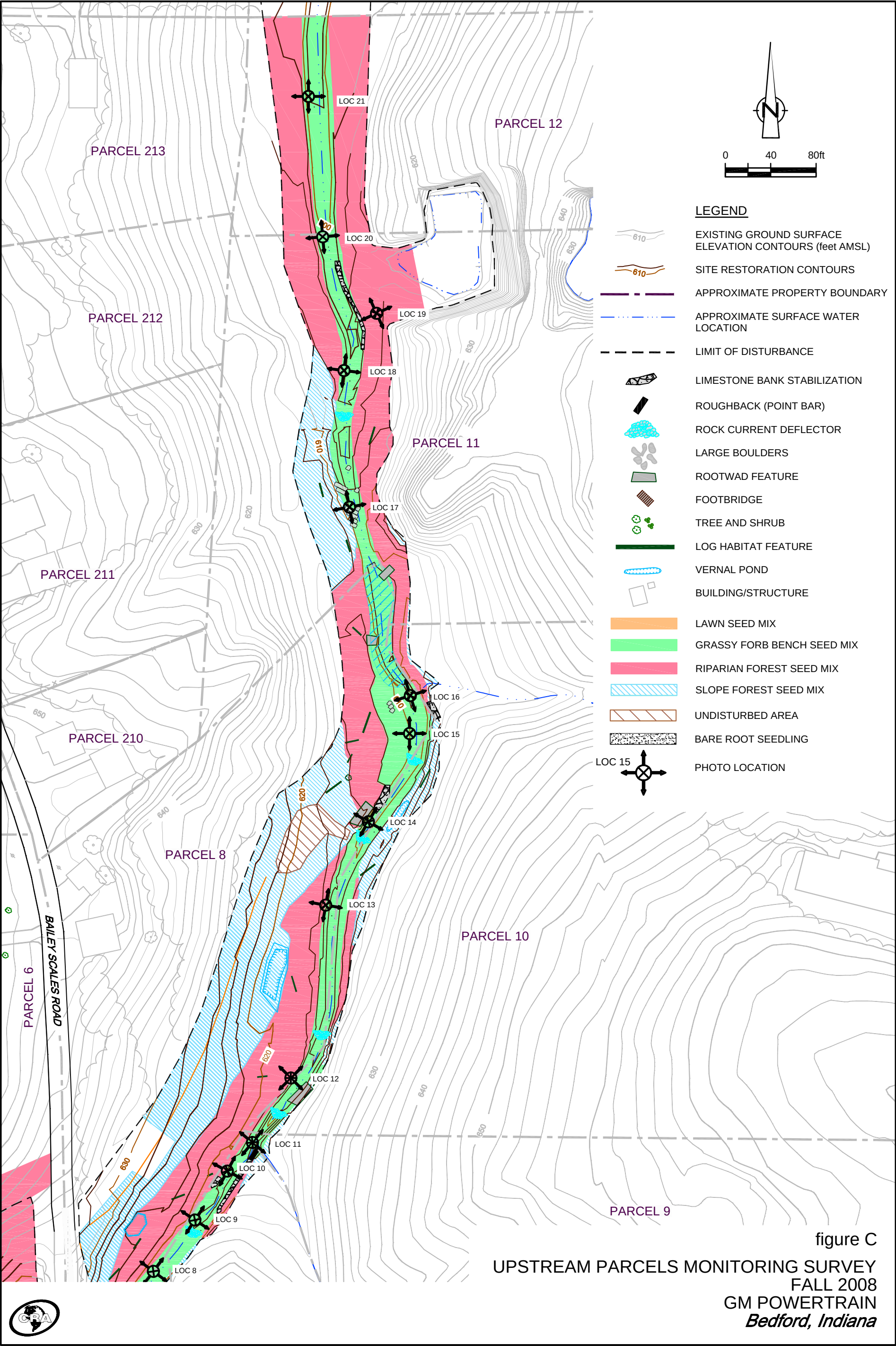




FIGURE 1.0 - PARCEL 3, LOCATION 1 LOOKING UPSTREAM (WEST)



FIGURE 1.1 - PARCEL 3, LOCATION 1 LOOKING DOWNSTREAM (EAST)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 1.2 - PARCEL 3, LOCATION 1, LOOKING NORTH



FIGURE 1.3 - PARCEL 3, LOCATION 1, LOOKING SOUTH

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 1.4 - PARCEL 3, LOCATION 1, CULVERT INLET



FIGURE 2.0 - PARCEL 3 LOCATION 2, LOOKING UPSTREAM (WEST)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 2.1 - PARCEL 3, LOCATION 3, LOOKING DOWNSTREAM (EAST)



FIGURE 2.2 - PARCEL 3, LOCATION 2, LOOKING SOUTH

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 2.3 - PARCEL 3, LOCATION 2, LOOKING NORTH



FIGURE 3.0 - PARCEL 205, LOCATION 4, LOOKING UPSTREAM (WEST)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 3.1 - PARCEL 205, LOCATION 3, LOOKING DOWNSTREAM (EAST)



FIGURE 3.2 - PARCEL 205, LOCATION 3, LOOKING NORTH

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 3.3 - PARCEL 205, LOCATION 3, LOOKING SOUTH



FIGURE 4.0 - PARCEL 6, LOCATION 5, LOOKING UPSTREAM (SOUTHWEST)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
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FIGURE 4.1 - PARCEL 6, LOCATION 4, LOOKING DOWNSTREAM (NORTHEAST)



FIGURE 4.2 - PARCEL 6, LOCATION 4, LOOKING NORTH

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
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FIGURE 4.3 - PARCEL 6, LOCATION 4, LOOKING SOUTHEAST



FIGURE 5.0 - PARCEL 5, LOCATION 5, LOOKING UPSTREAM (SOUTHWEST)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 5.1 - PARCEL 5, LOCATION 5, LOOKING DOWNSTREAM (NORTHEAST)



FIGURE 5.2 - PARCEL 5, LOCATION 5, LOOKING SOUTHEAST

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 5.3 - PARCEL 5, LOCATION 5, LOOKING NORTHWEST (BANK STABILIZATION)



FIGURE 6.0 - PARCEL 5, LOCATION 6, LOOKING UPSTREAM (SOUTHWEST)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
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FIGURE 6.1 - PARCEL 5, LOCATION 6, LOOKING DOWNSTREAM (NORTHEAST)



FIGURE 6.2 - PARCEL 5, LOCATION 6, LOOKING SOUTH

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 6.3 - PARCEL 5, LOCATION 6, LOOKING NORTH



FIGURE 7.0 - PARCEL 8, LOCATION 7, LOOKING UPSTREAM (WEST)

APPENDIX B
FALL 208 CREEK CHANNEL PHOTO LOG
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FIGURE 7.1 - PARCEL 8, LOCATION 7, LOOKING DOWNSTREAM (NORTHEAST)



FIGURE 7.2 - PARCEL 8, LOCATION 7, LOOKING SOUTH

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 7.3 - PARCEL 8, LOCATION 7, LOOKING NORTH



FIGURE 8.0 - PARCEL 8, LOCATION 8, LOOKING (SOUTHWEST)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 8.1 - PARCEL 8, LOCATION 8, LOOKING DOWNSTREAM (NORTHEAST)



FIGURE 8.2 - PARCEL 8, LOCATION 8, LOOKING SOUTHEAST

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 8.3 - PARCEL 8, LOCATION 8. LOOKING NORTH



FIGURE 9.0 - PARCEL 8, LOCATION 9, LOOKING UPSTREAM (SOUTHWEST)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 9.1 - PARCEL 8, LOCATION 9, LOOKING DOWNSTREAM (NORTHEAST)



FIGURE 9.2 - PARCEL 8, LOCATION 9, LOOKING SOUTHEAST

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 9.3 - PARCEL 8, LOCATION 9, LOOKING SOUTHWEST



FIGURE 10.0 - PARCEL 7, LOCATION 10, LOOKING UPSTREAM (SOUTHWEST)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 10.1 - PARCEL 7, LOCATION 10, LOOKING DOWNSTREAM (NORTHEAST)



FIGURE 10.2 - PARCEL 7, LOCATION 10, LOOKING EAST BANK

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 11.0 - PARCEL 9, LOCATION 11, LOOKING (SOUTHWEST)



FIGURE 11.1 - PARCEL 9, LOCATION 11, LOOKING DOWNSTREAM (NORTHEAST)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 11.2 - PARCEL 9, LOCATION 11, LOOKING EAST BANK



FIGURE 11.3 - PARCEL 9, LOCATION 11, LOOKING WEST BANK

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 11.4 - PARCEL 9, LOCATION 11, LOOKING AT TRIBUTARY (SOUTHEAST)



FIGURE 12.0 - PARCEL 10, LOCATION 12, LOOKING UPSTREAM (SOUTHWEST)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 12.1 - PARCEL 10, LOCATION 12, LOOKING DOWNSTREAM (NORTHEAST)



FIGURE 12.2 - PARCEL10, LOCATION 12, LOOKING EAST BANK

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 12.3 - PARCEL 10, LOCATION 12, LOOKING WEST BANK



FIGURE 12.4 - PARCEL 10, LOCATION 12, LOOKING AT ROOTWAD (EAST)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 12.5 - PARCEL 10, LOCATION 12, LOOKING AT ROCK CURRENT DEFLECTOR (SOUTHWEST)



FIGURE 13.0 - PARCEL 8, LOCATION 13, LOOKING UPSTREAM (SOUTHWEST)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 13.1 - PARCEL 8, LOCATION 13, LOOKING DOWNSTREAM (NORTHEAST)



FIGURE 13.2 - PARCEL 8, LOCATION 13, LOOKING WEST BANK

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 13.3 - PARCEL 8, LOCATION 13, LOOKING EAST BANK

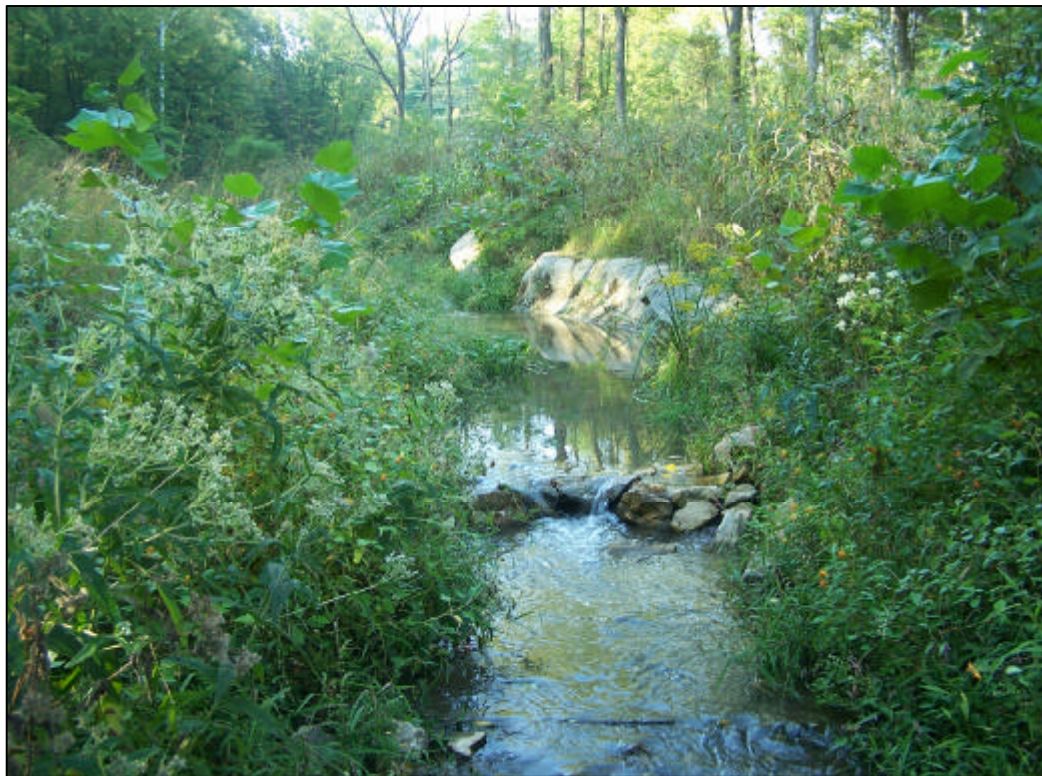


FIGURE 14.0 - PARCEL 8, LOCATION 14, LOOKING UPSTREAM (SOUTHWEST)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
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FIGURE 14.1 - PARCEL 8, LOCATION 14, LOOKING (NORTHEAST)



FIGURE 14.2 - PARCEL8, LOCATION 14, LOOKING EAST BANK

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
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FIGURE 14.3 - PARCEL 8, LOCATION 14, LOOKING WEST BANK



FIGURE 15.0 - PARCEL 8, LOCATION 15, LOOKING UPSTREAM (SOUTHWEST)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 15.1 - PARCEL 8, LOCATION 15, LOOKING DOWNSTREAM (NORTH)



FIGURE 15.2 - PARCEL 8, LOCATION 15, LOOKING WEST BANK

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 15.3 - PARCEL 8, LOCATION 15, LOOKING EAST BANK



FIGURE 16.0 - PARCEL 8, LOCATION 16, LOOKING TRIBUTARY (EAST)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 16.1 - PARCEL 8, LOCATION 16, LOOKING DOWNSTREAM (NORTH)



FIGURE 16.2 - PARCEL 8, LOCATION 16, EAST BANK

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 17.0 - PARCEL 11, LOCATION 17, LOOKING UPSTREAM (SOUTH)



FIGURE 17.1 - PARCEL 11, LOCATION 17, LOOKING DOWNSTREAM (NORTH)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
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FIGURE 17.3 - PARCEL 17, LOCATION 17, LOOKING WEST BANK



APPENDIX B
FALL 2008 CREEKCHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana



FIGURE 17.4 - PARCEL 11, LOCATION 17, EAST BANK



FIGURE 18.0 - PARCEL 11, LOCATION 18, LOOKING UPSTREAM (SOUTH)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
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FIGURE 18.1 - PARCEL 11, LOCATION 18, LOOKING DOWNSTREAM (NORTH)



FIGURE 18.2 - PARCEL 11, LOCATION 18, WEST BANK

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 18.3 - PARCEL 11, LOCATION 18, LOOKING EAST BANK



FIGURE 19.0 - PARCEL 11, LOCATION 19, QUARRY (NORTH EAST)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 20.0 - PARCEL 11, LOCATION 20, LOOKING UPSTREAM (SOUTH)



FIGURE 20.1 - PARCEL 11, LOCATION 20, LOOKING DOWNSTREAM (NORTH)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
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Bedford, Indiana





FIGURE 21.0 - PARCEL 12, LOCATION 21, LOOKING UPSTREAM (SOUTH)



FIGURE 21.1 - PARCEL 12, LOCATION 21, LOOKING DOWNSTREAM (NORTH)

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 20.2 - PARCEL 11, LOCATION 20, LOOKING EAST



FIGURE 20.3 - PARCEL 11, LOCATION 20, LOOKING SOUTHWEST

APPENDIX B
FALL 2009 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
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FIGURE 21.2 - PARCEL 12, LOCATION 21, LOOKING WEST BANK



FIGURE 21.3 - PARCEL 12, LOCATION 21, LOOKING EAST BANK

APPENDIX B
FALL 2008 CREEK CHANNEL PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana



APPENDIX C

SPRING 2008 VEGETATIVE ASSESSMENT FIELD FORMS

PARCEL 205
VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Inspectors

S. Jones, S. Burke

Date

May 21-22, 2008

Parcels/Cover Type

Parcel 205/Grass-Forb Meadow

I. GRASSES AND FORBS

<i>Common Name</i>	<i>Scientific Name</i>	<i>Abundance</i>		<i>Seeded</i>		<i>Volunteer</i>		<i>Invasive</i> ¹	
		<i>Rating</i>	<i>Category</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Redtop	<i>Agrostis sp.</i>	4	Common	X			X		X
Orchardgrass	<i>Dactylus glomerata</i>	4	Common		X	X			X
Switchgrass	<i>Panicum virgatum</i>	4	Common		X	X			X
Partridge Pea	<i>Chamaecrista fasciculata</i>	5	Very Common		X	X			X
Goldenrod	<i>Solidago sp.</i>	5	Very Common		X	X			X
Red Clover	<i>Trifolium pratense</i>	5	Very Common		X	X			X
Aster	<i>Aster sp.</i>	4	Common		X	X			X
Queen Anne's Lace	<i>Daucus carota</i>	4	Common		X	X			X
Sneezeweed	<i>Helenium autumnale</i>	4	Common	X			X		X
Sunflower	<i>Helianthus sp.</i>	4	Common		X	X			X
Wild Bergamot	<i>Monarda fistulosa</i>	4	Common	X			X		X

PARCEL 205
VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

I. GRASSES AND FORBS (continued)

<i>Common Name</i>	<i>Scientific Name</i>	<i>Abundance</i>		<i>Seeded</i>		<i>Volunteer</i>		<i>Invasive</i>	
		<i>Rating</i>	<i>Category</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Yellow Wood Sorrel	<i>Oxalis corniculata</i>	4	Common		X	X			X
Curly Dock	<i>Rumex crispus</i>	4	Common		X	X			X
Prairie Dock	<i>Rumex sp.</i>	4	Common		X	X			X
Common Mullein	<i>Verbascum thapsus</i>	4	Common		X	X			X
White Turtlehead	<i>Chelone glabra</i>	3	Rare/Common		X	X			X
Chicory	<i>Chicorium intybus</i>	3	Rare/Common		X	X			X
Crownvetch	<i>Coronilla varia</i>	3	Rare/Common		X	X		X	
Gypsy Flower	<i>Cynoglossum officinale</i>	3	Rare/Common		X	X			X
Tick-Trefoil	<i>Desmodium illinoiense</i>	3	Rare/Common	X			X		X
Daisy Fleabane	<i>Erigeron philadelphicus</i>	3	Rare/Common		X	X			X
Gill-Over-The-Ground	<i>Glechoma hederacea</i>	3	Rare/Common		X	X			X
Jewelweed	<i>Impatiens capensis</i>	3	Rare/Common		X	X			X
Wild Lettuce	<i>Lactuca sp.</i>	3	Rare/Common		X	X			X
White Sweet Clover	<i>Melilotus alba</i>	3	Rare/Common		X	X		X	
Bee Balm	<i>Monarda sp.</i>	3	Rare/Common		X	X			X
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	3	Rare/Common		X	X			X
Common Plantain	<i>Plantago major</i>	3	Rare/Common		X	X			X
Compass Plant	<i>Silphium laciniatum</i>	3	Rare/Common	X			X		X
Indian Cup	<i>Silphium perfoliatum</i>	3	Rare/Common		X	X			X

PARCEL 205
VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

I. GRASSES AND FORBS (continued)

<i>Common Name</i>	<i>Scientific Name</i>	<i>Abundance</i>		<i>Seeded</i>		<i>Volunteer</i>		<i>Invasive</i>	
		<i>Rating</i>	<i>Category</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Rosinweed	<i>Silphium sp.</i>	3	Rare/Common	X		X			X
Tumble Mustard	<i>Sisymbrium altissimum</i>	3	Rare/Common		X	X			X
Late Goldenrod	<i>Solidago gigantea</i>	3	Rare/Common		X	X			X
Common Dandelion	<i>Taraxacum officinale</i>	3	Rare/Common		X	X			X
Wild Iris	<i>Iris sp.</i>	2	Rare		X	X			X
Blue Lettuce	<i>Lactuca tatarica</i>	2	Rare		X	X			X
Meadow Parsnip	<i>Thaspium trifoliatum</i>	2	Rare/Common		X	X			X
Spiderwort	<i>Tradescantia sp.</i>	2	Rare		X	X			X
Mint	<i>Unidentified</i>	2	Rare		X	X			X
Rattlesnake Master	<i>Eryngium yuccifolium</i>	1	Observed	X			X		X

Percent Areal Coverage of Grasses and Forbs

85-90%

PARCEL 205
VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

II. SHRUBS AND TREES

Common Name	Scientific Name	Planted		Volunteer		Invasive	
		Yes	No	Yes	No	Yes	No
Maple	<i>Acer sp.</i>		X	X			X
Bitternut Hickory	<i>Carya cordiformes</i>		X	X			X
Catalpa	<i>Catalp bigionoides</i>		X	X			X
Redbud	<i>Cercis canadensis</i>		X	X			X
Ash	<i>Fraxinus sp.</i>		X	X			X
Sycamore	<i>Platanus occidentalis</i>		X	X			X
Quaking Aspen	<i>Populus tremuloides</i>		X	X			X
Willow	<i>Salix sp.</i>		X	X			X

Survival Class N/A ≤ 25% 26-50% 51-75% > 75%
(Shrubs and Trees)

III. WILDLIFE OBSERVED

Numerous songbirds

IV. NOTES

Areas of sparse vegetation appear to be been recently disturbed by human activity
 Trees and shrubs were not planted on Parcel 205

¹ - Invasive species based on: Nice, G. 2006. Noxious and Invasive Weeds and the Weed Laws in Indiana. Purdue Extension Weed Science. Revised 12/06

PARCELS 4-6
VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Inspectors

S. Jones, S. Burke

Date

May 21, 2008

Parcels/Cover Type

Parcels 4- 6/ Riparian Forest

I. GRASSES AND FORBS

<i>Common Name</i>	<i>Scientific Name</i>	<i>Abundance</i>		<i>Seeded</i>		<i>Volunteer</i>		<i>Invasive</i>	
		<i>Rating</i>	<i>Category</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Redtop	<i>Agrostis sp.</i>	6	Abundant	X			X		X
Fescue	<i>Festuca sp.</i>	4	Common	X			X		X
Orchardgrass	<i>Dactylus glomerata</i>	4	Common		X	X			X
Partridge Pea	<i>Chamaecrista fasciculata</i>	5	Very Common		X	X			X
Jewelweed	<i>Impatiens capensis</i>	5	Very Common		X	X			X
Clover	<i>Trifolium sp.</i>	5	Very Common		X	X			X
Aster	<i>Aster sp.</i>	4	Common	X			X		X
Beggarsticks	<i>Bidens cernua</i>	4	Common	X			X		X
Sedge	<i>Carex sp.</i>	4	Common	X			X		X
Sunflower	<i>Helianthus sp.</i>	4	Common		X	X			X
Japanese Honeysuckle	<i>Japanica lonicera</i>	4	Common		X	X		X	
Watercress	<i>Nasturtium officinale</i>	4	Common		X	X			X

PARCELS 4-6
VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

I. GRASSES AND FORBS (continued)

<i>Common Name</i>	<i>Scientific Name</i>	<i>Abundance</i>		<i>Seeded</i>		<i>Volunteer</i>		<i>Invasive</i>	
		<i>Rating</i>	<i>Category</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Mayapple	<i>Podophyllum peltatum</i>	4	Common		X	X			X
Sweet Coneflower	<i>Rudbeckia subtomentosa</i>	4	Common		X	X			X
Prairie Dock	<i>Rumex sp.</i>	4	Common		X	X			X
Goldenrod	<i>Solidago sp.</i>	4	Common		X	X			X
Common Dandelion	<i>Taraxacum officinale</i>	4	Common		X	X			X
Red Clover	<i>Trifolium pratense</i>	4	Common		X	X			X
Cattail	<i>Typha sp.</i>	4	Common		X	X			X
Common Mullein	<i>Verbascum thapsus</i>	4	Common		X	X			X
Queen Anne's Lace	<i>Daucus carota</i>	3	Rare/Common		X	X			X
Daisy Fleabane	<i>Erigeron philadelphicus</i>	3	Rare/Common		X	X			X
Wild Lettuce	<i>Lactuca sp.</i>	3	Rare/Common		X	X			X
Curly Dock	<i>Rumex crispus</i>	3	Rare/Common		X	X			X
Wild Grape	<i>Vitis sp.</i>	3	Rare/Common		X	X			X
Milkweed	<i>Ascleopias sp.</i>	2	Rare	X			X		X
Compass Plant	<i>Silphium laciniatum</i>	2	Rare		X	X			X
White Snakeroot	<i>Eupatorium rugosum</i>	1	Observed		X	X			X
Sleepydick	<i>Ornithogalum umbellatum</i>	1	Observed		X	X		X	
Meadow Parsnip	<i>Thaspium trifoliatum</i>	1	Observed		X	X			X

PARCELS 4-6
VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

I. GRASSES AND FORBS (continued)

<i>Common Name</i>	<i>Scientific Name</i>	<i>Abundance</i>		<i>Seeded</i>		<i>Volunteer</i>		<i>Invasive</i>	
		<i>Rating</i>	<i>Category</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Bulrush	<i>Schoenoplectus tabernaemontani</i>	1	Observed	X			X		X
Meadow Parsnip	<i>Thaspium trifoliatum</i>	1	Observed		X	X			X

Percent Areal Coverage of Grasses and Forbs

95-100%

II. SHRUBS AND TREES

<i>Common Name</i>	<i>Scientific Name</i>	<i>Planted</i>		<i>Volunteer</i>		<i>Invasive</i>	
		<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Box Elder	<i>Acer negundo</i>	X			X		X
Red Maple	<i>Acer rubrum</i>	X			X		X
Silver Maple	<i>Acer saccharinum</i>	X			X		X
Dogwood	<i>Cornus sp.</i>	X			X		X
Black Walnut	<i>Juglans nigra</i>	X			X		X
Black Gum	<i>Nyssa sylvatica</i>	X			X		X
Sycamore	<i>Platanus occidentalis</i>	X			X		X
Pin Oak	<i>Quercus palustris</i>	X			X		X

PARCELS 4-6
VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

II. SHRUBS AND TREES (continued)

<i>Common Name</i>	<i>Scientific Name</i>	<i>Planted</i>		<i>Volunteer</i>		<i>Invasive</i>	
		<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Shumard Oak	<i>Quercus shumardii</i>	X			X		X
Oak	<i>Quercus sp.</i>	X			X		X
Wild Raspberry	<i>Rhubus sp.</i>		X	X			X
Wild Rose	<i>Rosa sp.</i>		X	X			X
Elderberry	<i>Sambucus sp.</i>	X			X		X

Survival Class
(Shrubs and Trees)

≤ 25%

26-50%

51-75%

> 75%

III. WILDLIFE OBSERVED

Numerous songbirds

IV. NOTES

Plant species not identified on Parcels 4 and 6, which are litigant parcels. Vegetation on Parcel 4 is maintained as lawn.

Plant species on Parcel 6 is similar to vegetation on Parcel 5. Survival of shrubs and trees are Parcel 6 appears to be > 75%.

¹ - Invasive species based on: Nice, G. 2006. Noxious and Invasive Weeds and the Weed Laws in Indiana. Purdue Extension Weed Science. Revised 12/06

PARCELS 8-12
VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Inspectors	S. Jones, S. Burke
Date	May 21, 2008
Parcels/Cover Type	Parcels 8-12/Riparian Forest

I. GRASSES AND FORBS

Common Name	Scientific Name	Abundance		Seeded		Volunteer		Invasive	
		Rating	Category	Yes	No	Yes	No	Yes	No
Little Bluestem	<i>Schizachyrium scoparium</i>	4	Common	X			X		X
Timothy	<i>Phleum pratense</i>	4	Common		X	X			X
Bluejoint Grass	<i>Calamagrostis canadensis</i>	4	Common	X			X		X
Redtop	<i>Agrostis sp.</i>	4	Common	X			X		X
Switchgrass	<i>Panicum virgatum</i>	3	Rare/Common	X			X		X
Canadian Wild Rye	<i>Elymus canadensis</i>	3	Rare/Common	X			X		X
Orchardgrass	<i>Dactylus glomerata</i>	3	Rare/Common		X	X			X
Blue-Eyed Grass	<i>Sisyrinchium sp.</i>	2	Rare		X	X			X
Kentucky Bluegrass	<i>Poa pratensis</i>	2	Rare		X	X			X
Clover	<i>Trifolium sp.</i>	5	Very Common		X	X			X
Goldenrod	<i>Solidago sp.</i>	5	Very Common		X	X			X
Partridge Pea	<i>Chamaecrista fasciculata</i>	5	Very Common		X	X			X

PARCELS 8-12
VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

I. GRASSES AND FORBS (continued)

<i>Common Name</i>	<i>Scientific Name</i>	<i>Abundance</i>		<i>Seeded</i>		<i>Volunteer</i>		<i>Invasive</i>	
		<i>Rating</i>	<i>Category</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Milkweed	<i>Ascleopias sp.</i>	4	Common	X			X		X
Queen Anne's Lace	<i>Daucus carota</i>	4	Common		X	X			X
Sunflower	<i>Helianthus sp.</i>	4	Common		X	X			X
Jewelweed	<i>Impatiens capensis</i>	4	Common		X	X			X
Japanese Honeysuckle	<i>Japanica lonicera</i>	4	Common		X	X		X	
White Sweet Clover	<i>Melilotus alba</i>	4	Common		X	X		X	
Yellow Wood Sorrel	<i>Oxalis corniculata</i>	4	Common		X	X			X
Ragweed	<i>Ambrosia artemisiifolia</i>	3	Rare/Common		X	X			X
Aster	<i>Aster sp.</i>	3	Rare/Common		X	X			X
Teasel	<i>Dipsacus laciniatus</i>	3	Rare/Common		X	X			X
Daisy Fleabane	<i>Erigeron philadelphicus</i>	3	Rare/Common		X	X			X
Boneset	<i>Eupatorium perfoliatum</i>	3	Rare/Common		X	X			X
Leafy Spurge	<i>Euphorbia esula</i>	3	Rare/Common		X	X			X
Yellow Spring Bedstraw	<i>Galium verum</i>	3	Rare/Common		X	X			X
Cranesbill	<i>Geranium sp.</i>	3	Rare/Common		X	X			X
Gill-Over-The-Ground	<i>Glechoma hederacea</i>	3	Rare/Common		X	X			X
Sneezeweed	<i>Helenium autumnale</i>	3	Rare/Common	X			X		X
Rush	<i>Juncus sp.</i>	3	Rare/Common	X			X		X
Wild Lettuce	<i>Lactuca sp.</i>	3	Rare/Common		X	X			X
Watercress	<i>Nasturtium officinale</i>	3	Rare/Common		X	X			X

PARCELS 8-12
VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

I. GRASSES AND FORBS (continued)

<i>Common Name</i>	<i>Scientific Name</i>	<i>Abundance</i>		<i>Seeded</i>		<i>Volunteer</i>		<i>Invasive</i>	
		<i>Rating</i>	<i>Category</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	3	Rare/Common		X	X			X
Mayapple	<i>Podophyllum peltatum</i>	3	Rare/Common		X	X			X
Solomon's Seal	<i>Polygonatum biflorum</i>	3	Rare/Common		X	X			X
Rough-Fruited Cinquefoil	<i>Potentilla recta</i>	3	Rare/Common		X	X			X
Cutleaf Coneflower	<i>Rudbeckia laciniata</i>	3	Rare/Common		X	X			X
Curly Dock	<i>Rumex crispus</i>	3	Rare/Common		X	X			X
Prairie Dock	<i>Rumex sp.</i>	3	Rare/Common		X	X			X
Golden Ragwort	<i>Senecio aureus</i>	3	Rare/Common		X	X			X
Tansy Ragwort	<i>Senecio jacobaea</i>	3	Rare/Common		X	X			X
Common Groundsel	<i>Senecio vulgaris</i>	3	Rare/Common		X	X			X
Tumble Mustard	<i>Sisymbrium altissimum</i>	3	Rare/Common		X	X			X
False Solomo's Seal	<i>Snukacuba racemosa</i>	3	Rare/Common		X	X			X
Star Chickweed	<i>Stellaria pubera</i>	3	Rare/Common		X	X			X
Common Dandelion	<i>Taraxacum officinale</i>	3	Rare/Common		X	X			X
Stinging Nettle	<i>Urtica dioica</i>	3	Rare/Common		X	X			X
Vetch	<i>Vicia sp.</i>	3	Rare/Common		X	X			X
Wild Grape	<i>Vitis sp.</i>	3	Rare/Common		X	X			X
Wild Garlic	<i>Allium canadense</i>	2	Rare		X	X			X
Fox Sedge	<i>Carex vulpinoidea</i>	2	Rare	X			X		X
Spikerush	<i>Eleocharis obtuse</i>	2	Rare	X			X		X

PARCELS 8-12
VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

I. GRASSES AND FORBS (continued)

<i>Common Name</i>	<i>Scientific Name</i>	<i>Abundance</i>		<i>Seeded</i>		<i>Volunteer</i>		<i>Invasive</i>	
		<i>Rating</i>	<i>Category</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Waterweed	<i>Elodea sp.</i>	2	Rare/Common		X	X			X
Smartweed	<i>Polygonum pennsylvanicum</i>	2	Rare		X	X			X
Cattail	<i>Typha sp.</i>	2	Rare		X	X			X
Mint	<i>Unidentified</i>	2	Rare		X	X			X
Yarrow	<i>Achillea millefolium</i>	1	Observed		X	X			X
Sedge	<i>Carex sp.</i>	1	Observed	X			X		X
Wild Iris	<i>Iris sp.</i>	1	Observed		X	X			X
Wild Rhubarb	<i>Rheum sp.</i>	1	Observed		X	X			X
Indian Cup	<i>Silphium perfoliatum</i>	1	Observed		X	X			X

Percent Areal Coverage of Grasses and Forbs

95-100%

PARCELS 8-12
VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

II. SHRUBS AND TREES

<i>Common Name</i>	<i>Scientific Name</i>	<i>Planted</i>		<i>Volunteer</i>		<i>Invasive</i>	
		<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Boxelder	<i>Acer negundo</i>		X	X			X
Red Maple	<i>Acer rubrum</i>	X			X		X
Silver Maple	<i>Acer saccharinum</i>		X	X			X
Ohio Buckeye	<i>Aesculus glabra</i>		X	X			X
Alder	<i>Alnus sp.</i>		X	X			X
Indigobush	<i>Amorpha fruticosa</i>	X			X		X
Bitternut Hickory	<i>Carya cordiformes</i>	X			X		X
Shellbark Hickory	<i>Carya laciniosa</i>	X			X		X
Gray Dogwood	<i>Cornus racemosa</i>	X			X		X
Bush Honeysuckle	<i>Diervilla lonicera</i>		X	X			X
Ash	<i>Fraxinus sp.</i>		X	X			X
Honey Locust	<i>Gleditsia triacanthos</i>		X	X			X
Black Walnut	<i>Juglans nigra</i>	X			X		X
Spicebush	<i>Lindera benzoin</i>	X			X		X
Tulip Poplar	<i>Liriodendron tulipifera</i>		X	X			X
Mulberry	<i>Morus sp.</i>		X	X			X
Sycamore	<i>Platanus occidentalis</i>		X	X			X
Aspen	<i>Populus sp.</i>		X	X			X
Black Cherry	<i>Prunus serotina</i>	X			X		X
Shingle Oak	<i>Quercus imbricaria</i>	X			X		X

PARCELS 8-12
VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

II. SHRUBS AND TREES (continued)

<i>Common Name</i>	<i>Scientific Name</i>	<i>Planted</i>		<i>Volunteer</i>		<i>Invasive</i>	
		<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Chinkapin Oak	<i>Quercus muehlenbergii</i>		X	X			X
Pin Oak	<i>Quercus palustris</i>	X			X		X
Shumard Oak	<i>Quercus shumardii</i>	X			X		X
Sumac	<i>Rhus glabra</i>		X	X			X
Multiflora Rose	<i>Rosa multiflora</i>		X	X			X
Wild Raspberry	<i>Rubus sp.</i>		X	X			X
Willow	<i>Salix sp.</i>		X	X			X
Elderberry	<i>Sambucus canadensis</i>	X			X		X
Elm	<i>Ulmus sp.</i>		X	X			X
Arrowwood	<i>Viburnum dentatum</i>		X	X			X
Blackhaw	<i>Viburnum prunifolium</i>	X			X		X

Survival Class
(Shrubs and Trees)

≤ 25%

26-50%

51-75%

> 75%

**PARCELS 8-12
VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA**

III. WILDLIFE OBSERVED

Numerous songbirds

Fox

Painted turtle

Green frogs

Deer tracks and scat

IV. NOTES

¹ - Invasive species based on: Nice, G. 2006. Noxious and Invasive Weeds and the Weed Laws in Indiana. Purdue Extension Weed Science. Revised 12/06

PARCEL 401
VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Inspectors	S. Jones, S. Burke
Date	May 22, 2008
Parcels/Cover Type	Parcel 401/Grass-Forb Cover Adjacent to Conveyance Channel

I. GRASSES AND FORBS

<i>Common Name</i>	<i>Scientific Name</i>	<i>Abundance</i>		<i>Seeded</i>		<i>Volunteer</i>		<i>Invasive</i>	
		<i>Rating</i>	<i>Category</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Grass sp.	Gramminae	4	Very Common	X			X		
Aster	<i>Aster sp.</i>	4	Common		X	X			X
Goldenrod	<i>Solidago sp.</i>	4	Very Common		X	X			X
Patridge Pea	<i>Chamaecrista fasciculata</i>	4	Very Common		X	X			X
Rosinweed	<i>Silphium sp.</i>	4	Very Common	X		X			X

Percent Areal Coverage of Grasses and Forbs

Banks of Water Course - 90-95% / Channel - No Vegetation

PARCEL 401
VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

II. SHRUBS AND TREES

<i>Common Name</i>	<i>Scientific Name</i>	<i>Planted</i>		<i>Volunteer</i>		<i>Invasive</i>	
		<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Box Elder	<i>Acer negundo</i>		X	X			X
Catalpa	<i>Catalp bignonoides</i>		X	X			X
Multiflora Rose	<i>Rosa multiflora</i>		X	X			X
Tulip Poplar	<i>Liriodendron tulipifera</i>		X	X			X
Sassafras	<i>Sassafras albidum</i>		X	X			X

Survival Class N/A ≤ 25% 26-50% 51-75% > 75%
(Shrubs and Trees)

III. WILDLIFE OBSERVED

None

IV. NOTES

Vegetation assessed from GM Drive.

Trees and shrubs were not planted on Parcel 401.

¹ - Invasive species based on: Nice, G. 2006. Noxious and Invasive Weeds and the Weed Laws in Indiana. Purdue Extension Weed Science. Revised 12/06

APPENDIX D

FALL 2008 VEGETATIVE ASSESSMENT FIELD FORMS

PARCEL 205

VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Inspectors

S. Jones

Date

September 23, 2008

Parcels/Cover Type

Parcel 205/Grass-Forb Meadow

I. GRASSES AND FORBS

Common Name	Scientific Name	Abundance		Seeded		Volunteer		Invasive	
		Rating	Category	Yes	No	Yes	No	Yes	No
Redtop	<i>Agrostis sp.</i>	4	Common	X			X		X
Orchardgrass	<i>Dactylus glomerata</i>	4	Common		X	X			X
Switchgrass	<i>Panicum virgatum</i>	4	Common		X	X			X
Canada Goldenrod	<i>Solidago canadensis</i>	6	Abundant		X	X			X
Late Purple Aster	<i>Symphyotrichum patens</i>	6	Abundant		X	X			X
Red Clover	<i>Trifolium pratense</i>	6	Abundant		X	X			X
Partridge Pea	<i>Chamaecrista fasciculata</i>	4	Common		X	X			X
Queen Anne's Lace	<i>Daucus carota</i>	4	Common		X	X			X
Wild Bergemot	<i>Monarda fistulosa</i>	4	Common	X			X		X
Common Plantain	<i>Plantago major</i>	4	Common		X	X			X
Prairie Dock	<i>Rumex sp.</i>	4	Common		X	X			X

PARCEL 205

VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

I. GRASSES AND FORBS (continued)

Common Name	Scientific Name	Abundance		Seeded		Volunteer		Invasive	
		Rating	Category	Yes	No	Yes	No	Yes	No
Indian Cup	<i>Silphium perfoliatum</i>	4	Common		X	X			X
Small White Aster	<i>Symphotrichum racemosum</i>	4	Common		X	X			X
Common Dandelion	<i>Taraxacum officinale</i>	4	Common		X	X			X
Crownvetch	<i>Coronilla varia</i>	3	Rare/Common		X	X		X	
Teasel	<i>Dipsacus sylvestris</i>	3	Rare/Common		X	X			X
Sneezeweed	<i>Helenium autumnale</i>	3	Rare/Common	X			X		X
Sunflower	<i>Helianthus sp.</i>	3	Rare/Common		X	X			X
Yellow Wood Sorrel	<i>Oxalis corniculata</i>	3	Rare/Common		X	X			X
Compass Plant	<i>Silphium laciniatum</i>	3	Rare/Common	X			X		X
White Turtlehead	<i>Chelone glabra</i>	2	Rare		X	X			X
White Snakeroot	<i>Eupatorium rugosum</i>	2	Rare		X	X			X
Rabbit Tobacco	<i>Pseudognathaliun obtusifolium</i>	2	Rare		X	X			X
Curly Dock	<i>Rumex crispus</i>	2	Rare		X	X			X
Rosinweed	<i>Silphium sp.</i>	2	Rare	X		X			X
Common Mullein	<i>Verbascum thapsus</i>	2	Rare		X	X			X
Unknown	---	3							

Percent Areal Coverage of Grasses and Forbs

75-85%

PARCEL 205

VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

II. SHRUBS AND TREES

Common Name	Scientific Name	Planted		Volunteer		Invasive	
		Yes	No	Yes	No	Yes	No
Maple	<i>Acer sp.</i>		X	X			X
Bitternut Hickory	<i>Carya cordiformes</i>		X	X			X
Catalpa	<i>Catalp bigionoides</i>		X	X			X
Redbud	<i>Cercis canadensis</i>		X	X			X
Ash	<i>Fraxinus sp.</i>		X	X			X
Sycamore	<i>Platanus occidentalis</i>		X	X			X
Quaking Aspen	<i>Populus tremuloides</i>		X	X			X
Willow	<i>Salix sp.</i>		X	X			X

Survival Class N/A ≤ 25% 26-50% 51-75% > 75%

(Shrubs and Trees)

III. WILDLIFE OBSERVED

Numerous songbirds

IV. NOTES

Vegetation has been removed in the central portion of Parcel 205

Trees and shrubs were not planted on Parcel 205

¹ - Invasive species based on: Nice, G. 2006. Noxious and Invasive Weeds and the Weed Laws in Indiana. Purdue Extension Weed Science. Revised 12/06

PARCELS 4-6

VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Inspectors

S. Jones

Date

September 23, 2008

Parcels/Cover Type

Parcels 4-6/Riparian Forest

I. GRASSES AND FORBS

Common Name	Scientific Name	Abundance		Seeded		Volunteer		Invasive	
		Rating	Category	Yes	No	Yes	No	Yes	No
Redtop	<i>Agrostis sp.</i>	6	Abundant	X			X		X
Fescue	<i>Festuca sp.</i>	4	Common	X			X		X
Orchardgrass	<i>Dactylus glomerata</i>	4	Common		X	X			X
Switchgrass	<i>Panicum virgatum</i>	3	Rare/Common	X			X		X
White Snakeroot	<i>Eupatorium rugosum</i>	5	Very Common		X	X			X
Swamp Beggarstick	<i>Bidens connata</i>	4	Common	X			X		X
Partridge Pea	<i>Chamaecrista fasciculata</i>	4	Common		X	X			X
Crownvetch	<i>Coronilla varia</i>	4	Common		X	X		X	
Sunflower	<i>Helianthus sp.</i>	4	Common		X	X			X
Jewelweed	<i>Impatiens capensis</i>	4	Common		X	X			X
Japanese Honeysuckle	<i>Lonicera japonica</i>	4	Common		X	X		X	
Watercress	<i>Nasturtium officinale</i>	4	Common		X	X			X

PARCELS 4-6

VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

I. GRASSES AND FORBS (continued)

Common Name	Scientific Name	Abundance		Seeded		Volunteer		Invasive	
		Rating	Category	Yes	No	Yes	No	Yes	No
Mayapple	<i>Podophyllum peltatum</i>	4	Common		X	X			X
Swamp Smartweed	<i>Polygonum coccineum</i>	4	Common		X	X			X
Small White Aster	<i>Symphyotrichum racemosum</i>	4	Common		X	X			X
Red Clover	<i>Trifolium pratense</i>	4	Common		X	X			X
Milkweed	<i>Asclepias sp.</i>	3	Rare/Common	X			X		X
Prairie Aster	<i>Aster trubinellus</i>	3	Rare/Common		X	X			X
Sedge	<i>Carex sp.</i>	3	Rare/Common		X	X			X
Queen Anne's Lace	<i>Daucus carota</i>	3	Rare/Common		X	X			X
Teasel	<i>Dipsacus sylvestris</i>	3	Rare/Common		X	X			X
Purple Coneflower	<i>Echinacea purpurea</i>	3	Rare/Common	X			X		X
Daisy Fleabane	<i>Erigeron philadelphicus</i>	3	Rare/Common		X	X			X
Common Plantain	<i>Plantago major</i>	3	Rare/Common		X	X			X
Prairie Coneflower	<i>Ratibida pinnata</i>	3	Rare/Common		X	X			X
Compass Plant	<i>Silphium laciniatum</i>	3	Rare/Common	X			X		X
Prairie Dock	<i>Silphium terebinthinaceum</i>	3	Rare/Common	X			X		X
Broadleaf Cattail	<i>Typha latifolia</i>	3	Rare/Common		X	X			X
Wingstem	<i>Verbesina alterniflora</i>	3	Rare/Common		X	X			X
Common Mullein	<i>Verbascum thapsus</i>	3	Rare/Common		X	X			X
Water Hemlock	<i>Cicuta bulbifera</i>	2	Rare		X	X			X

PARCELS 4-6

VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

I. GRASSES AND FORBS (continued)

Common Name	Scientific Name	Abundance		Seeded		Volunteer		Invasive	
		Rating	Category	Yes	No	Yes	No	Yes	No
Spearmint	<i>Mentha spicata</i>	2	Rare		X	X			X
Narrowleaf Goldenrod	<i>Solidago graminifolia</i>	2	Rare		X	X			X
New York Ironweed	<i>Vernonia noveboracensis</i>	2	Rare		X	X			X
Unknown		2	Rare		X	X			X

Percent Areal Coverage of Grasses and Forbs

95-100%

II. SHRUBS AND TREES

Common Name	Scientific Name	Planted		Volunteer		Invasive	
		Yes	No	Yes	No	Yes	No
Box Elder	<i>Acer negundo</i>	X			X		X
Red Maple	<i>Acer rubrum</i>	X			X		X
Silver Maple	<i>Acer saccharinum</i>	X			X		X
Dogwood	<i>Cornus sp.</i>	X			X		X
Black Walnut	<i>Juglans nigra</i>	X			X		X
Black Gum	<i>Nyssa sylvatica</i>	X			X		X

PARCELS 4-6

VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

II. SHRUBS AND TREE S(continued)

Common Name	Scientific Name	Planted		Volunteer		Invasive	
		Yes	No	Yes	No	Yes	No
Sycamore	<i>Platanus occidentalis</i>	X			X		X
Pin Oak	<i>Quercus palustris</i>	X			X		X
Shumard Oak	<i>Quercus shumardii</i>	X			X		X
Oak	<i>Quercus sp.</i>	X			X		X
Wild Raspberry	<i>Rhubus sp.</i>		X	X			X
Wild Rose	<i>Rosa sp.</i>		X	X			X
Elderberry	<i>Sambucus sp.</i>	X			X		X

Survival Class

≤ 25%

26-50%

51-75%

> 75%

(Shrubs and Trees)

III. WILDLIFE OBSERVED

Numerous songbirds

Green frogs

IV. NOTES

Parcels 4 and 6 are litigant parcels. Vegetation observed from Parcel 5. Vegetation on Parcel 4 is maintained as lawn.

Plant species on Parcel 6 is similar to vegetation on Parcel 5. Survival of shrubs and trees are Parcel 6 appears to be > 75%.

¹ - Invasive species based on: Nice, G. 2006. Noxious and Invasive Weeds and the Weed Laws in Indiana. Purdue Extension Weed Science. Revised 12/06

PARCELS 8-12

VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Inspectors

S. Jones

Date

September 24, 2008

Parcels/Cover Type

Parcels 8-12/Riparian Forest

I. GRASSES AND FORBS

Common Name	Scientific Name	Abundance		Seeded		Volunteer		Invasive	
		Rating	Category	Yes	No	Yes	No	Yes	No
Little Bluestem	<i>Schizachyrium scoparium</i>	4	Common	X			X		X
Timothy	<i>Phleum pratense</i>	4	Common		X	X			X
Bluejoint Grass	<i>Calamagrostis canadensis</i>	4	Common	X			X		X
Redtop	<i>Agrostis sp.</i>	4	Common	X			X		X
Switchgrass	<i>Panicum virgatum</i>	3	Rare/Common	X			X		X
Canadian Wild Rye	<i>Elymus canadensis</i>	3	Rare/Common	X			X		X
Orchardgrass	<i>Dactylus glomerata</i>	3	Rare/Common		X	X			X
Blue-Eyed Grass	<i>Sisyrinchium sp.</i>	2	Rare		X	X			X
Kentucky Bluegrass	<i>Poa pratensis</i>	2	Rare		X	X			X
Boneset	<i>Eupatorium perfoliatum</i>	5	Very Common		X	X			X
White Snakeroot	<i>Eupatorium rugosum</i>	5	Very Common		X	X			X
Swamp Beggarstick	<i>Bidens connata</i>	4	Common	X			X		X

PARCELS 8-12

VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

I. GRASSES AND FORBS (continued)

Common Name	Scientific Name	Abundance		Seeded		Volunteer		Invasive	
		Rating	Category	Yes	No	Yes	No	Yes	No
Partridge Pea	<i>Chamaecrista fasciculata</i>	4	Common		X	X			X
Crownvetch	<i>Coronilla varia</i>	4	Common		X	X		X	
Queen Anne's Lace	<i>Daucus carota</i>	4	Common		X	X			X
Sneezeweed	<i>Helenium autumnale</i>	4	Common	X			X		X
Jewelweed	<i>Impatiens capensis</i>	4	Common		X	X			X
Watercress	<i>Nasturtium officinale</i>	4	Common		X	X			X
Swamp Smartweed	<i>Polygonum coccineum</i>	4	Common		X	X			X
Rosinweed	<i>Silphium sp.</i>	4	Common	X		X			X
Canada Goldenrod	<i>Solidago canadensis</i>	4	Common		X	X			X
Small White Aster	<i>Symphyotrichum racemosum</i>	4	Common		X	X			X
Red Clover	<i>Trifolium pratense</i>	4	Common		X	X			X
Ragweed	<i>Ambrosia artemisiifolia</i>	3	Rare/Common		X	X			X
Tickseed Sunflower	<i>Bidens aritosa</i>	3	Rare/Common		X	X			X
Sedge	<i>Carex sp.</i>	3	Rare/Common	X			X		X
Daisy Fleabane	<i>Erigeron philadelphicus</i>	3	Rare/Common		X	X			X
Japanese Honeysuckle	<i>Lonicera japonica</i>	3	Rare/Common		X	X		X	
White Sweet Clover	<i>Melilotus alba</i>	3	Rare/Common		X	X		X	
Yellow Wood Sorrel	<i>Oxalis corniculata</i>	3	Rare/Common		X	X			X
Common Plantain	<i>Plantago major</i>	3	Rare/Common		X	X			X
Rabbit Tobacco	<i>Pseudognathium obtusifolium</i>	3	Rare/Common		X	X			X

PARCELS 8-12

VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

I. GRASSES AND FORBS (continued)

Common Name	Scientific Name	Abundance		Seeded		Volunteer		Invasive	
		Rating	Category	Yes	No	Yes	No	Yes	No
Compass Plant	<i>Silphium laciniatum</i>	3	Rare/Common	X			X		X
Prairie Dock	<i>Silphium terebinthinaceum</i>	3	Rare/Common	X			X		X
Narrowleaf Goldenrod	<i>Solidago graminifolia</i>	3	Rare/Common		X	X			X
Late Purple Aster	<i>Symphyotrichum patens</i>	3	Rare/Common		X	X			X
Common Dandelion	<i>Taraxacum officinale</i>	3	Rare/Common		X	X			X
Stinging Nettle	<i>Urtica dioica</i>	3	Rare/Common		X	X			X
Wingstem	<i>Verbesina alterniflora</i>	3	Rare/Common		X	X			X
New York Ironweed	<i>Vernonia noveboracensis</i>	3	Rare/Common		X	X			X
Unknown 1	---	2	Rare						
Great Ragweed	<i>Ambrosia trifida</i>	2	Rare		X	X			X
Milkweed	<i>Asclepias sp.</i>	2	Rare	X			X		X
Gill-Over-The-Ground	<i>Glechoma hederacea</i>	2	Rare		X	X			X
Sunflower	<i>Helianthus sp.</i>	2	Rare		X	X			X
Blackeyed Susan	<i>Rudbeckia hirta</i>	2	Rare	X			X		X
Thin-Leaved Coneflower	<i>Rudbeckia triloba</i>	2	Rare		X	X			X
Unknown 2	---	1	Observed						
Common Hop	<i>Humulus lupulus</i>	1	Observed		X	X			X
Carolina Horsesenettle	<i>Solanum carolinense</i>	1	Observed		X	X			X

Percent Areal Coverage of Grasses and Forbs

95-100%

PARCELS 8-12

VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

II. SHRUBS AND TREES

<i>Common Name</i>	<i>Scientific Name</i>	<i>Planted</i>		<i>Volunteer</i>		<i>Invasive</i>	
		<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Boxelder	<i>Acer negundo</i>		X	X			X
Red Maple	<i>Acer rubrum</i>	X			X		X
Silver Maple	<i>Acer saccharinum</i>		X	X			X
Ohio Buckeye	<i>Aesculus glabra</i>		X	X			X
Alder	<i>Alnus sp.</i>		X	X			X
Indigobush	<i>Amorpha fruticosa</i>	X			X		X
Bitternut Hickory	<i>Carya cordiformes</i>	X			X		X
Shellbark Hickory	<i>Carya laciniosa</i>	X			X		X
Gray Dogwood	<i>Cornus racemosa</i>	X			X		X
Bush Honeysuckle	<i>Diervilla lonicera</i>		X	X			X
Ash	<i>Fraxinus sp.</i>		X	X			X
Honey Locust	<i>Gleditsia triacanthos</i>		X	X			X
Black Walnut	<i>Juglans nigra</i>	X			X		X
Spicebush	<i>Lindera benzoin</i>	X			X		X
Tulip Poplar	<i>Liriodendron tulipifera</i>		X	X			X
Mulberry	<i>Morus sp.</i>		X	X			X
Sycamore	<i>Platanus occidentalis</i>		X	X			X
Aspen	<i>Populus sp.</i>		X	X			X
Black Cherry	<i>Prunus serotina</i>	X			X		X
Shingle Oak	<i>Quercus imbricaria</i>	X			X		X

PARCELS 8-12

VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

II. SHRUBS AND TREES (continued)

<i>Common Name</i>	<i>Scientific Name</i>	<i>Planted</i>		<i>Volunteer</i>		<i>Invasive</i>	
		<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Chinkapin Oak	<i>Quercus muehlenbergii</i>		X	X			X
Pin Oak	<i>Quercus palustris</i>	X			X		X
Shumard Oak	<i>Quercus shumardii</i>	X			X		X
Sumac	<i>Rhus glabra</i>		X	X			X
Multiflora Rose	<i>Rosa multiflora</i>		X	X			X
Wild Raspberry	<i>Rubus sp.</i>		X	X			X
Willow	<i>Salix sp.</i>		X	X			X
Elderberry	<i>Sambucus canadensis</i>	X			X		X
Cat Briar	<i>Smilax tamnoides</i>		X	X			X
Elm	<i>Ulmus sp.</i>		X	X			X
Arrowwood	<i>Viburnum dentatum</i>		X	X			X
Blackhaw	<i>Viburnum prunifolium</i>	X			X		X

Survival Class
(Shrubs and Trees)

≤ 25%

26-50%

51-75%

> 75%

PARCELS 8-12

III. WILDLIFE OBSERVED

Numerous songbirds

Painted turtle

Green frogs

Deer tracks and scat

IV. NOTES

¹ - Invasive species based on: Nice, G. 2006. Noxious and Invasive Weeds and the Weed Laws in Indiana. Purdue Extension Weed Science. Revised 12/06

PARCEL 401

VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Inspectors

S. Jones

Date

September 24, 2008

Parcels/Cover Type

Parcel 401/Grass-Forb Cover Adjacent to Conveyance Channel

I. GRASSES AND FORBS

Common Name	Scientific Name	Abundance		Seeded		Volunteer		Invasive	
		Rating	Category	Yes	No	Yes	No	Yes	No
Grass sp.	Gramminae	4	Very Common	X			X		
White Snakeroot	<i>Eupatorium rugosum</i>	4	Common		X	X			X
Small White Aster	<i>Symphyotrichum racemosum</i>	4	Common		X	X			X
Canada Goldenrod	<i>Solidago canadensis</i>	4	Very Common		X	X			X
Partridge Pea	<i>Chamaecrista fasciculata</i>	4	Very Common		X	X			X
Rosinweed	<i>Silphium sp.</i>	4	Very Common	X		X			X
Queen Anne's Lace	<i>Daucus carota</i>	3	Common		X	X			X
Sunflower	<i>Helianthus sp.</i>	2	Rare		X	X			X

Percent Areal Coverage of Grasses and Forbs

Banks of Water Course - 90-95%/Channel - No Vegetation

PARCEL 401

VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

II. SHRUBS AND TREES

Common Name	Scientific Name	Planted		Volunteer		Invasive	
		Yes	No	Yes	No	Yes	No
Box Elder	<i>Acer negundo</i>		X	X			X
Catalpa	<i>Catalp bignonoides</i>		X	X			X
Multiflora Rose	<i>Rosa multiflora</i>		X	X			X
Tulip Poplar	<i>Liriodendron tulipifera</i>		X	X			X
Sassafras	<i>Sassafras albidum</i>		X	X			X

Survival Class N/A ≤ 25% 26-50% 51-75% > 75%

(Shrubs and Trees)

III. WILDLIFE OBSERVED

None

IV. NOTES

Vegetation assessed from GM Drive.

Trees and shrubs were not planted on Parcel 401.

¹ - Invasive species based on: Nice, G. 2006. Noxious and Invasive Weeds and the Weed Laws in Indiana. Purdue Extension Weed Science. Revised 12/06

APPENDIX E

VEGETATION ASSESSMENT PHOTOGRAPHIC LOG



FIGURE 1 - REDTOP GRASS, PARCELS 4-6, 5/21/2008



FIGURE 2 - FESCUE GRASS AND CLOVER, PARCELS 4-6, 5/21/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 3 - ORCHARDGRASS, PARCELS 4-6, 5/21/2008



FIGURE 4 - CONEFLOWER, PARCELS 4-6, 5/21/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
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FIGURE 5 - COMMON MULLEIN, PARCELS 4-6, 5/21/2008



FIGURE 6 - DAISEY FLEABANE, PARCELS 4-6, 5/21/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 7 - WHITE SNAKEROOT, PARCELS 4-6, 5/21/2008



FIGURE 8 - MEADOW PARSNIP, PARCELS 4-6, 5/21/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 9 - COMPASS PLANT, PARCELS 4-6, 5/21/2008



FIGURE 10 - PRAIRIE DOCK, PARCELS 4-6, 5/21/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 11 - MILKWEED, PARCELS 4-6, 5/21/2008



FIGURE 12 - STINGING NETTLE, PARCELS 8-12, 5/21/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 13 - TIMOTHY, PARCELS 8-12, 5/21/2008



FIGURE 14 - TUMBLE MUSTARD, PARCELS 8-12, 5/21/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 15 - WHITE SWEET CLOVER, PARCELS 8-12, 5/21/2008



FIGURE 16 - COMMON GROUNDSEL, PARCELS 8-12, 5/21/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 17 - CUTLEAF CONEFLOWER, PARCELS 8-12, 5/21/2008



FIGURE 18 - YELLOW WOOD SORREL, PARCELS 8-12, 5/21/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 19 - LEAFY SPURGE, PARCELS 8-12, 5/21/2008



FIGURE 20 - SNEEZEWEED, PARCELS 8-12, 5/21/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 21 - STAR CHICKWEED, PARCELS 8-12, 5/21/2008



FIGURE 22 - CRANESBILL, PARCELS 8-12, 5/21/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 23 - ROUGH-FRUITED CINQUEFOIL, PARCELS 8-12, 5/21/2008



FIGURE 24 - FOX SEDGE, PARCELS 8-12, 5/21/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 25 - VETCH, PARCELS 8-12, 5/21/2008



FIGURE 26 - INDIAN CUP, PARCELS 8-12, 5/21/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 27 - ASPEN SEEDLING, PARCEL 205, 5/21/2008



FIGURE 28 - UNIDENTIFIED PLANT, PARCEL 205, 5/21/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 29 - WILD BERGAMOT, PARCEL 205, 5/21/2008



FIGURE 30 - PRAIRIE DOCK, PARCEL 205, 5/21/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 31 - SNEEZEWEED, PARCEL 205, 5/21/2008



FIGURE 32 - WHITE SWEET CLOVER, PARCEL 205, 5/21/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
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FIGURE 33 - CONEFLOWER, PARCEL 205, 5/22/2008

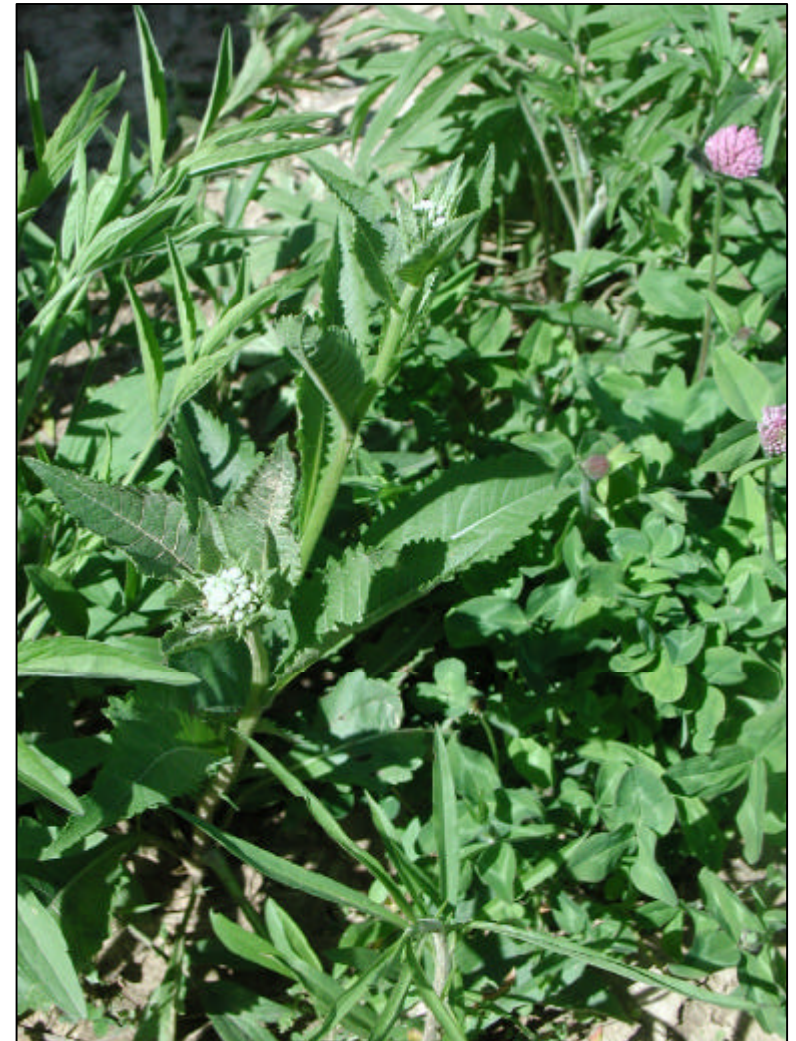


FIGURE 34 - TURTLEHEAD, PARCEL 205, 5/22/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
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FIGURE 35 - COMPASS PLANT, PARCEL 205, 5/22/2008



FIGURE 36 - SPIDERWORT, PARCEL 205, 5/22/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 37 - SPIDERWORT, PARCEL 205, 5/22/2008



FIGURE 38 - MEADOW PARSNIP, PARCEL 205, 5/22/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 39 - ESTABLISHED LAWN, PARCEL 401, 5/22/2008



FIGURE 40 - SLEEPYDICK, PARCELS 4-6, 5/22/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 41 - WILD GINGER, PARCELS 4-6, 5/22/2008



FIGURE 42 - ASH, PARCELS 8-12, 5/22/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 43 - ASH, PARCELS 8-12, 5/22/2008



FIGURE 44 - GRAY DOGWOOD, PARCELS 8-12, 5/22/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 45 - LOCUST, PARCELS 8-12, 5/22/2008



FIGURE 46 - BUSH HONEYSUCKLE, PARCELS 8-12, 5/22/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 47 - ASH AND SYCAMORE, PARCELS 8-12, 5/22/2008



FIGURE 48 - SYCAMOR IN BEDROCK, PARCELS 8-12, 5/22/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 49 - BUSH HONEYSUCKLE, PARCELS 8-12, 5/22/2008



FIGURE 50 - LOOKING EAST FROM GM DRIVE, PARCEL 401, 5/22/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 51 - INDIAN CUP, PARCEL 205, 7/9/2008



FIGURE 52 - PRAIRIE DOCK, PARCEL 205, 7/9/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 53 - CROWN VETCH, PARCEL 205, 7/9/2008



FIGURE 54 - COMPASS PLANT, PARCEL 205, 7/9/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 55 - WHORLED ROSINWEED, PARCEL 205, 7/9/2008



FIGURE 56 - PANICLED TREFOIL, PARCEL 205, 7/9/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 57 - BEE BALM, PARCEL 205, 7/9/2008



FIGURE 58 - CLEARED VEGETATION, PARCEL 205, 9/23/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 59 - LOOKING TOWARD GM DRIVE, PARCEL 205, 9/23/2008



FIGURE 60 - LOOKING UPSTREAM - LAWN, PARCEL 401, 9/23/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 61 - BONESET, PARCELS 8-12, 9/24/2008



FIGURE 62 - JEWELWEED, PARCELS 8-12, 9/24/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 63 - SNEEZEWEED, PARCELS 8-12, 9/24/2008



FIGURE 64 - SMALL WHITE ASTER, PARCELS 8-12, 9/24/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 65 - WHITE OLD FIELD ASTER, PARCELS 8-12, 9/24/2008



FIGURE 66 - THIN LEAVED CONEFLOWER, PARCELS 8-12, 9/24/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 67 - REPRESENTATIVE VEGETATIVE COVER, PARCELS 8-12, 9/24/2008



FIGURE 68 - SOUTH SIDE OF STREAM, LOOKING DOWNSTREAM, PARCEL 5, 9/25/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 69 - NORTH SIDE OF STREAM, LOOKING DOWNSTREAM, PARCEL 5, 9/25/2008



FIGURE 70 - LOOKING UPSTREAM - LAWN, PARCEL 4, 9/25/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





FIGURE 71 - LOOKING DOWNSTREAM FROM GM DRIVE, PARCEL 401, 9/25/2008

APPENDIX E
VEGETATION ASSESSMENT PHOTO LOG
GM POWERTRAIN BEDFORD FACILITY
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