2010 UPSTREAM PARCELS MONITORING REPORT

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

Prepared For:
General Motors LLC

FEBRUARY 2011
REF. NO. 017368 (4)
This report is printed on recycled paper.

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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
CETC	Castings Engines Transmissions and Components (formerly Powertrain)
CRA	Conestoga-Rovers & Associates Inc.
Facility	GM CETC Bedford Facility
GM	General Motors LLC
GPS	global positioning system
IDNR	Indiana Department of Natural Resources
IOMMP	Upstream Parcels Interim Operation, Maintenance, and Monitoring Plan
MLC	Motors Liquidation Corporation
N AOI4	Area North of Area of Interest 4
RA	Removal Action
Report	2010 Upstream Parcels Monitoring Report
RCRA	Resource Conservation and Recovery Act
TSCA	Toxic Substances Control Act
Upstream Parcels	Parcels 3, 4, 6, 205, 215, 216 (west of Bailey Scales Road), 401, and the area north of Area of Interest 4
U.S. EPA	United States Environmental Protection Agency

1.0 INTRODUCTION

Conestoga-Rovers and Associates, Inc. (CRA), on behalf of General Motors LLC (GM), has prepared this 2010 Upstream Parcels Monitoring Report (Report) documenting the findings of the 2010 Fall Inspection of the restored channel of Bailey's Branch Creek and adjacent riparian areas within the privately owned and GM owned Upstream Parcels located near the GM Castings Engines Transmissions and Components (CETC) (formerly Powertrain) Bedford Facility (Facility) located in Bedford, Indiana. This Report has been prepared in accordance with the Administrative Order on Consent (AOC, United States Environmental Protection Agency [U.S. EPA] Docket No.: V-W-'03-C-747), effective July 31, 2003, for the Removal Action (RA) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), consistent with the requirements of the Toxic Substances Control Act (TSCA), and consistent with the Resource Conservation and Recovery Act (RCRA) Corrective Action (CA) work conducted under the Performance Based Agreement executed on March 20, 2001, and modified on October 1, 2002, March 29, 2007, and May 9, 2008, for the Facility.

As U.S. EPA is aware, the former General Motors Corporation filed for bankruptcy protection in June of 2009. The former General Motors Corporation is now known as Motors Liquidation Company (MLC). On July 10, 2010, MLC sold a portion of its assets in Bedford, Indiana, including the Bedford Facility and Parcel 3, to General Motors, LLC. At the time the Upstream Parcels Interim Operation, Maintenance, and Monitoring Plan (IOMMP) was developed (CRA, June 13, 2008), the Upstream Parcels consisted of 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). Several of these properties related to the Upstream Parcels were not included in the asset sale and are currently retained by MLC, including Parcels 5, 8, 10, 11, and 12. Those properties owned by MLC will be monitored by MLC, as described in the Master Sales and Purchase Agreement, effective July 10, 2009. The remainder of the Upstream Parcels (3, 4, 6, 205, 215, 216, 401, and N AOI 4), hereinafter collectively referred to as the "Upstream Parcels" are either privately owned or GM LLC owned and have been included in the Fall 2010 Inspection. The location of the Upstream Parcels is presented on Figure 1.1. Portions of Parcels 205, 215, 216, and N AOI 4 are currently under construction as part of the East Plant Area remedy; monitoring activities for these Parcels will be incorporated with the East Plant Area Cover System monitoring requirements.

The 2010 Fall Inspection was completed the week of September 27, 2010.

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 clean 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 condition 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 within 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 in the Fall 2010 Inspection, which included field reconnaissance to assess creek channel stability, extent and nature of vegetative cover, and status of the habitat features. A photographic log, including the location of the photographs using a hand held global positioning system (GPS), was implemented to document conditions along the stream channel. The vegetative assessment was completed and documented using the monitoring form provided in the Upstream Parcels IOMMP (CRA, June 13, 2008).

The photographic log and location map for the Fall 2010 Inspection are provided in Appendix A. The vegetation assessment monitoring forms for the Fall 2010 Inspection are provided in Appendix B.

3.1 CREEK STABILIZATION

A continuous photographic log was completed along the stream channel to document the stability of the stream channel. 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 and/or moved during the natural stream flow processes.

In general, the creek channel has not moved or shifted significantly since the restoration activities were completed.

A number of rock current deflectors were installed to promote the formation of pool-riffle sequences within the channel. The rock current deflectors have performed as expected, remain largely intact, and are documented within the photo log in Appendix A (see Appendix A Figure 6, 7 and 9).

The banks along the length of the creek channel do not show visible signs of erosion, undercutting or failure. The bank stabilization features (i.e., log deflectors, limestone roughback deflectors) remain intact, showing no visible signs of failure.

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. The selected planting scheme for each parcel was based on its proposed land use (e.g., residential or natural riparian corridor) and environmental conditions (e.g., upland forest versus wet meadow area). Due to the relatively small width 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 Indiana Department of Natural Resources (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.

Vegetative cover was documented for Parcels 3, 4, 6, portions of 205, and 401. Activities for the RA are ongoing for the other Upstream Parcels (portions of 205, 215, 216, and N AOI 4) and monitoring of these parcels will be including in the monitoring requirements for the East Plant Area Cover System. Activities associated with the RA are also ongoing in the southern portion of Parcel 401. The percent aerial coverage of vegetation on the steep banks on the north side of the drainage channel on Parcel 401 is approximately 60 percent. Trees and shrubs were planted on Parcel 401, and are currently present.

Parcel 4 is privately owned. The area restored on Parcel 4 was planted with a lawn seed mix and has been regularly mowed since completion of restoration. Access to Parcel 4 is limited by the presence of a fence at both the upstream and downstream ends of the parcel. Based on observations from the fence lines, vegetative cover on Parcel 4 is

predominantly maintained lawn with an aerial coverage of greater than 90 percent. Survival of the trees planted is greater than 75 percent.

For Parcel 205, interim measures conducted in 2010 required removal of the vegetation that was documented in the last monitoring report. Following completion of those activities, Parcel 205 was re-seeded with a mix of grasses typically used to stabilize landfill covers. The percent areal cover on Parcel 205 is approximately 85 percent and consists of grasses in the seed mix, as well as several species of volunteer grasses and forbs. Trees and shrubs were not planted on Parcel 205. Several species of trees are present through natural colonization.

3.3 HABITAT FEATURES

Habitat features observed during the 2010 Fall Inspection 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 and was intended in the restoration planning. The vernal ponds created in the Upstream Parcels are heavily vegetated and there are no visible signs of erosion.

4.0 RESTORATION MAINTENANCE

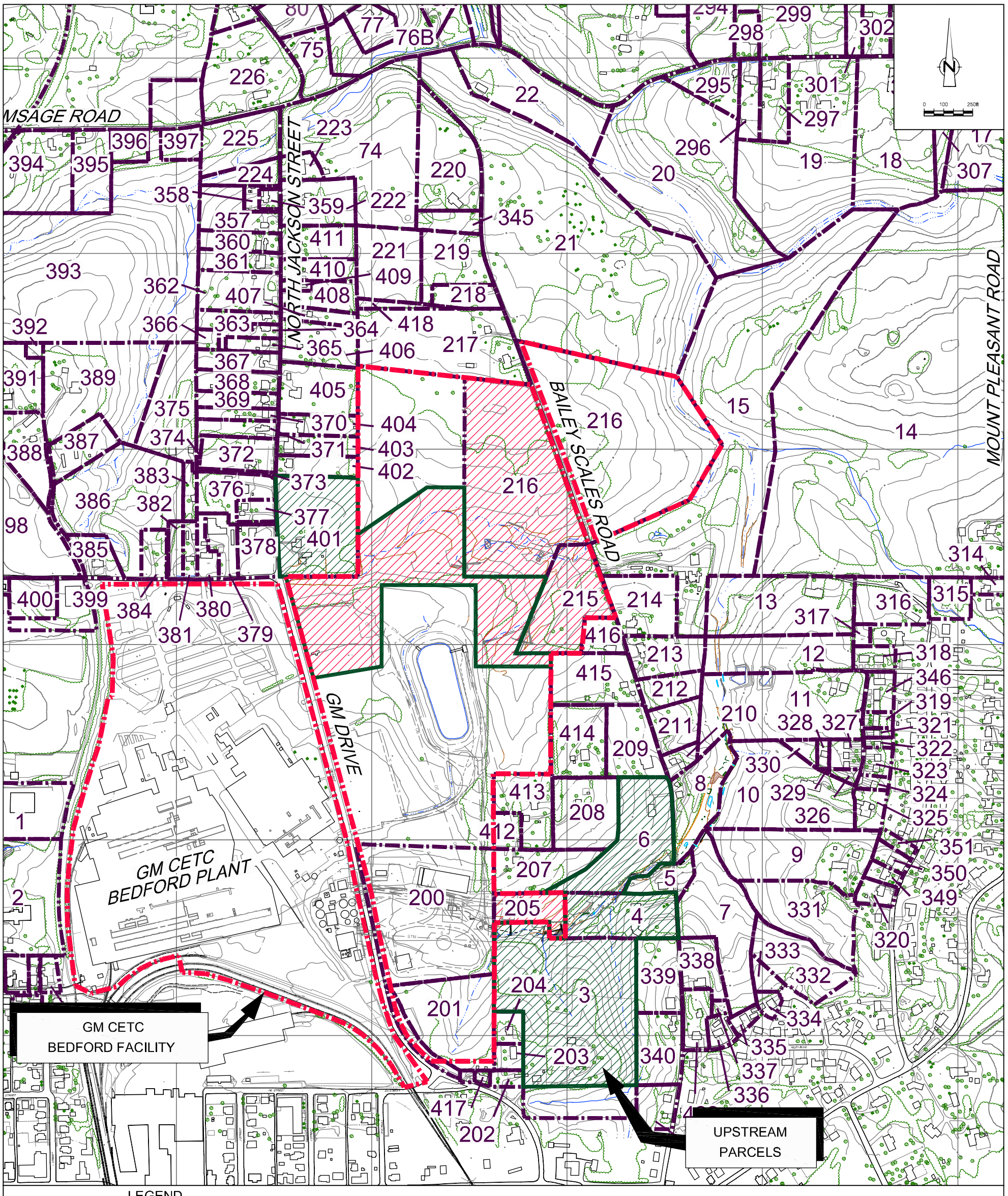
No maintenance activities are recommended at this time.

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) (610)
- 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
- UPSTREAM PARCELS (UNDER CONSTRUCTION)

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

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

Approved

GM CETC
BEDFORD PLANT

2010 UPSTREAM PARCELS MONITORING REPORT

UPSTREAM PARCELS LOCATION

CONESTOGA-ROVERS & ASSOCIATES

Source References:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001
AND CRA SURVEYS 2002 TO 2005

Project Manager:	Reviewed By:	Date:	
J.M.	P.G.	JANUARY 2011	
Scale: AS SHOWN	Project Nº: 17368-20	Report Nº: 004	Drawing Nº: figure 1.1

17368-20(004)GN-WA138 FEB 02/2011

TABLE 2.1

TREE/VEGETATION SUMMARY
2010 UPSTREAM PARCELS MONITORING REPORT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Upstream Parcels	*Number of trees/seedlings installed*	*Number of shrubs installed*	*Other*
3	-	-	grass/wildflower seed mix and slope forest seed mix
4	173	20	slope forest seed mix and riparian forest seed mix
6	8	-	slope forest seed mix and riparian forest seed mix
205	-	-	grass/wildflower seed mix and slope forest seed mix
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
2010 UPSTREAM PARCELS MONITORING REPORT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Abundance Rating	*Abundance Category*	*Description*
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

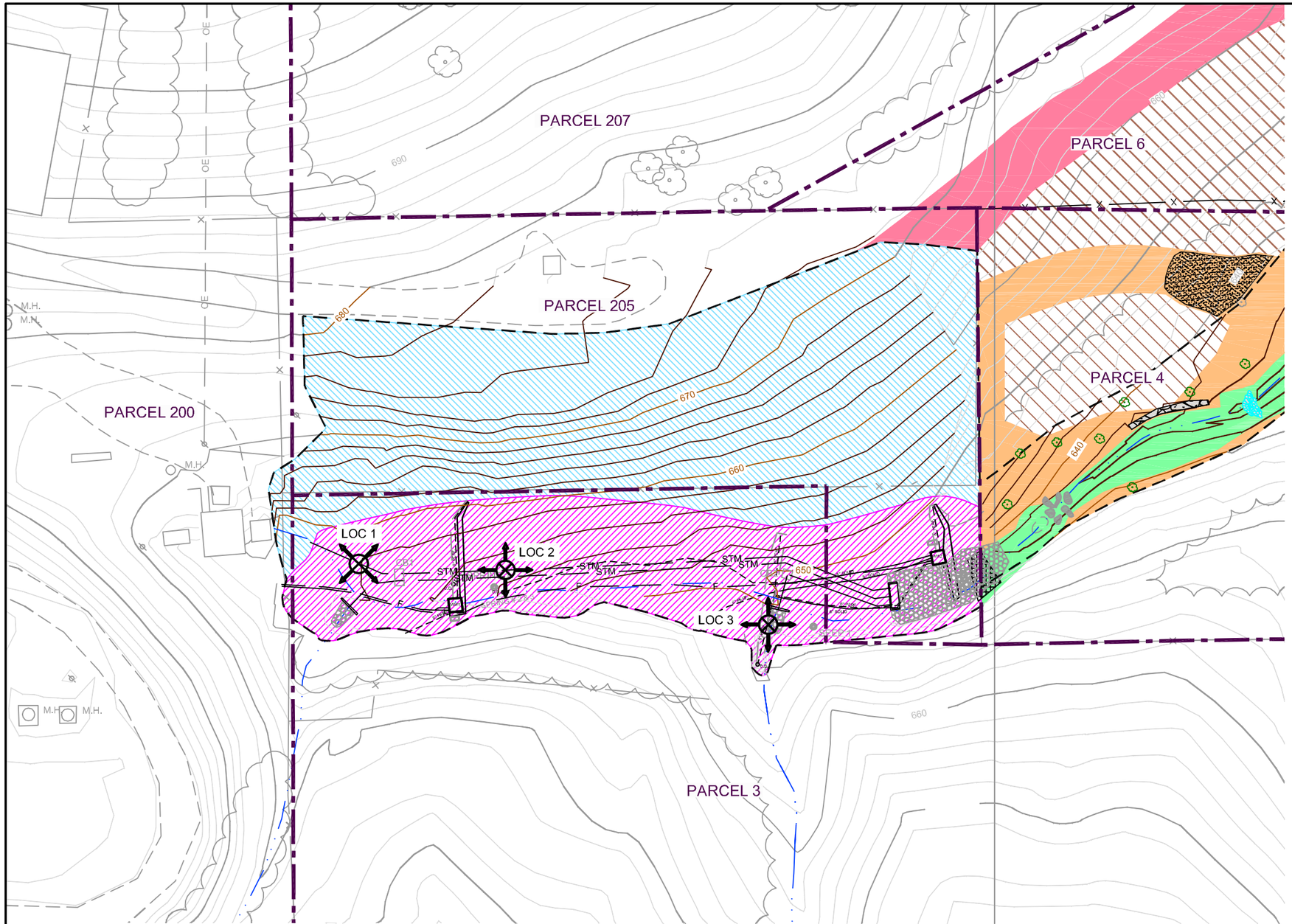
TABLE 3.2

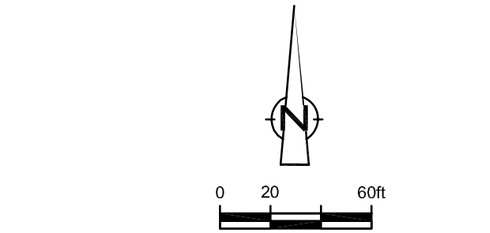
SURVIVAL CLASSES FOR TREES AND SHRUBS
2010 UPSTREAM PARCELS MONITORING REPORT
GM CETC BEDFORD FACILITY
BEDFORD, INDIANA

Survival Class	*Range of Percent Survival*
1	0 – 25%
2	26 – 50%
3	51 – 75%
4	76 – 100%

APPENDIX A

FALL 2010 CREEK CHANNEL PHOTOGRAPHIC LOG



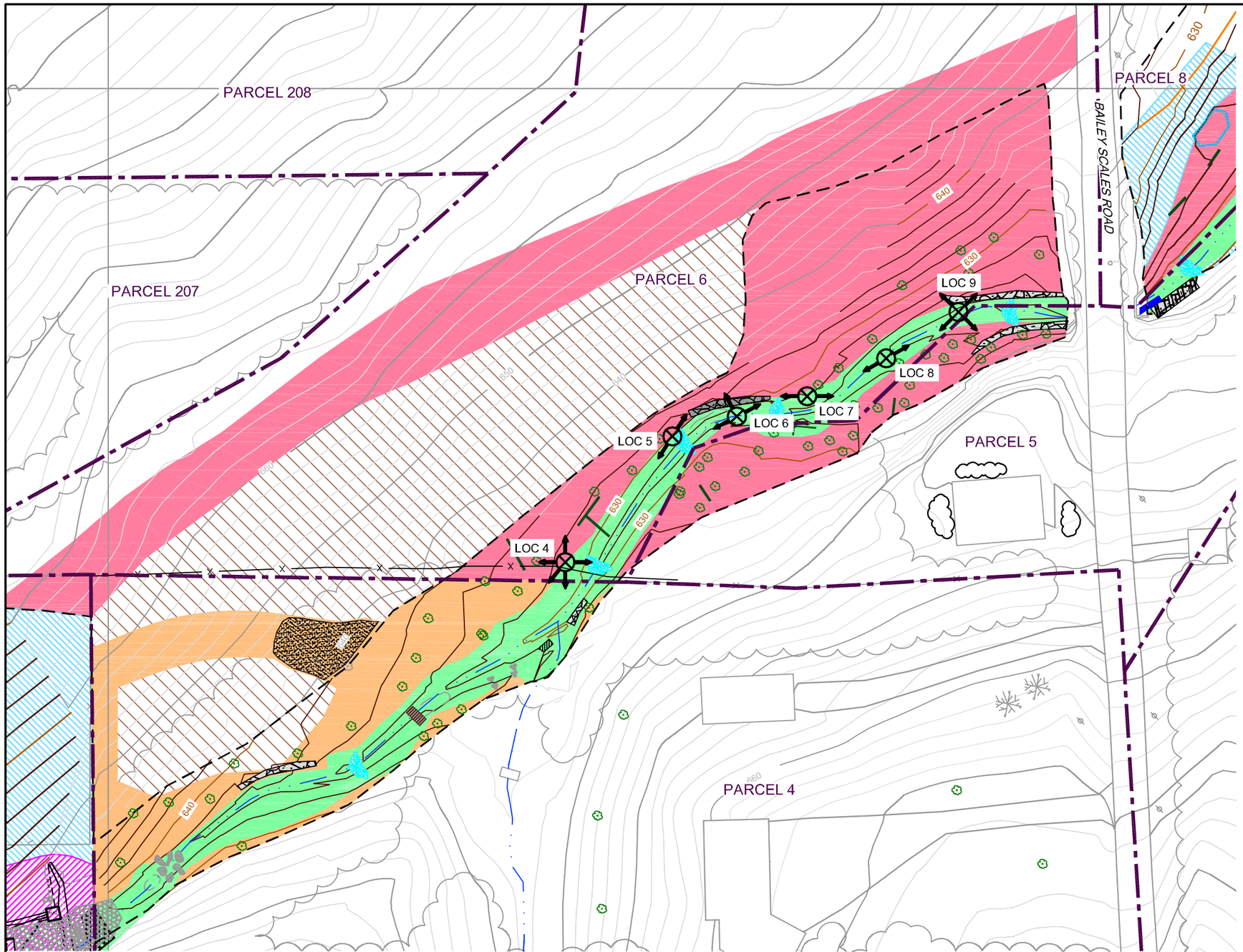


LEGEND

- EXISTING GROUND SURFACE ELEVATION CONTOURS (feet AMSL)
- SITE RESTORATION CONTOURS
- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE SURFACE WATER LOCATION
- LIMIT OF DISTURBANCE
- LIMESTONE BANK STABILIZATION
- ROUGHBACK (POINT BAR)
- ROCK CURRENT DEFLECTOR
- LARGE BOULDERS
- ROOTWAD FEATURE
- FOOTBRIDGE
- TREE AND SHRUB
- LOG HABITAT FEATURE
- VERNAL POND
- BUILDING/STRUCTURE
- LAWN SEED MIX
- GRASSY FORB BENCH SEED MIX
- RIPARIAN FOREST SEED MIX
- SLOPE FOREST SEED MIX
- GRASS/WILDFLOWER SEED MIX
- UNDISTURBED AREA
- BARE ROOT SEEDLING
- LOC 2 — PHOTO LOCATION

figure A

APPENDIX A
FALL 2010 CREEK CHANNEL SITE PHOTO KEY MAP
GM CETC BEDFORD FACILITY
Bedford, Indiana



0 20 60ft

LEGEND

- EXISTING GROUND SURFACE ELEVATION CONTOURS (feet AMSL)
- SITE RESTORATION CONTOURS
- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE SURFACE WATER LOCATION
- LIMIT OF DISTURBANCE
- LIMESTONE BANK STABILIZATION
- ROUGHBACK (POINT BAR)
- ROCK CURRENT DEFLECTOR
- LARGE BOULDERS
- ROOTWAD FEATURE
- FOOTBRIDGE
- TREE AND SHRUB
- LOG HABITAT FEATURE
- VERNAL POND
- BUILDING/STRUCTURE
- LAWN SEED MIX
- GRASSY FORB BENCH SEED MIX
- RIPARIAN FOREST SEED MIX
- SLOPE FOREST SEED MIX
- GRASS/WILDFLOWER SEED MIX
- UNDISTURBED AREA
- BARE ROOT SEEDLING
- LOC 7 PHOTO LOCATION

figure B

APPENDIX A
FALL 2010 CREEK CHANNEL SITE PHOTO KEY MAP
GM CETC BEDFORD FACILITY
Bedford, Indiana

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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 A
FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

FIGURE 1.2 - PARCEL 3, LOCATION 1, LOOKING SOUTH, TRIBUTARY FROM PARCEL 201

FIGURE 1.3 - PARCEL 3, LOCATION 1, LOOKING NORTH, RIGHT BANK

APPENDIX A
FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

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

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

APPENDIX A
FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

FIGURE 2.2 - PARCEL 3, LOCATION 2, LEFT BANK

FIGURE 2.3 - PARCEL 3, LOCATION 2, RIGHT BANK

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FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

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

FIGURE 3.1 - PARCEL 3, LOCATION 3, LOOKING EAST

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FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

FIGURE 3.2 - PARCEL 3, LOCATION 3, LOOKING SOUTH, LEFT BANK TRIBUTARY INLET

FIGURE 3.3 - PARCEL 3, LOCATION 3, LOOKING NORTH-WEST

APPENDIX A
FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

FIGURE 3.4 - PARCEL 3, LOCATION 3, SOUTH POND OUTLET

APPENDIX A
FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

FIGURE 4.0 - PARCEL 4, LOCATION 4, LOOKING UPSTREAM (WEST)

FIGURE 4.1 - PARCEL 6, LOCATION 4, LOOKING DOWNSTREAM (EAST)

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FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

FIGURE 4.2 - PARCEL 4, LOCATION 4, NORTH BANK.

FIGURE 4.3 - PARCEL 4, LOCATION 4, SOUTH BANK.

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FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

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

FIGURE 5.1 - PARCEL 6, LOCATION 5, LOOKING DOWNSTREAM (NORTHEAST)

APPENDIX A
FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

FIGURE 6.0 - PARCEL 6, LOCATION 6, LOOKING UPSTREAM, ROCK CURRENT DEFLECTOR

FIGURE 6.1 - PARCEL 6, LOCATION 6, LOOKING DOWNSTREAM

APPENDIX A
FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

FIGURE 6.2 - PARCEL 6, LOCATION 6, LOOKING DOWNSTREAM ROUGHBACK WALL (STABLE - NO MOVEMENT)

FIGURE 6.3 - PARCEL 6, LOCATION 6, CREEK SUBSTRATE

APPENDIX A
FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

FIGURE 6.4 - PARCEL 6, LOCATION 6, POOL

APPENDIX A
FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

FIGURE 7.0 - PARCEL 6, LOCATION 7, LOOKING UPSTREAM (ROCK WEIR)

FIGURE 7.1 - PARCEL 6, LOCATION 7, LOOKING DOWNSTREAM

APPENDIX A
FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

FIGURE 7.2 - PARCEL 6, LOCATION 7, SOUTH BANK

FIGURE 7.3 - PARCEL 6, LOCATION 7, NORTH BANK

APPENDIX A
FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

FIGURE 7.4 - PARCEL 6, LOCATION 7, LOG DEFLECTOR

FIGURE 7.5 - PARCEL 6, LOCATION 7, SUBSTRATE IS GONE, BEDROCK, NO SIGNIFICANT BANK EROSION

APPENDIX A
FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

FIGURE 8.0 - PARCEL 6, LOCATION 8, LOOKING UPSTREAM

FIGURE 8.1 - PARCEL 6, LOCATION 8, LOOKING DOWNSTREAM

APPENDIX A
FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

FIGURE 8.2 - PARCEL 6, LOCATION 8, SOUTH BANK

FIGURE 8.3 - PARCEL 6, LOCATION 8, NORTH BANK

APPENDIX A
FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

FIGURE 9.0 - PARCEL 6, LOCATION 9, LOOKING UPSTREAM

FIGURE 9.1 - PARCEL 6, LOCATION 9, LOOKING DOWNSTREAM

APPENDIX A
FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

FIGURE 9.2 - PARCEL 6, LOCATION 9, SOUTH BANK

FIGURE 9.3 - PARCEL 6, LOCATION 9, NORTH BANK

APPENDIX A
FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

FIGURE 9.4 - PARCEL 6, LOCATION 9, LOOKING UPSTREAM

APPENDIX A
FALL 2010 CREEK CHANNEL PHOTO LOG
GM CETC BEDFORD FACILITY
Bedford, Indiana

APPENDIX B

FALL 2010 VEGETATIVE ASSESSMENT FIELD FORMS

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

Inspectors	S. Jones/P. Farquharson
Date	September 28, 2010
Parcels/Cover Type	Parcel 6/Riparian Forest

I. GRASSES AND FORBS

Common Name	Scientific Name	Abundance		Seeded		Volunteer		Invasive	
		Rating	Category	Yes	No	Yes	No	Yes	No
Redtop	*Agrostis sp.*	4	Common	X			X		X
Big Bluestem	*Andropogon gerardii*	3	Rare/Common	X			X		X
Orchardgrass	*Dactylus glomerata*	2	Rare		X	X			X
Switchgrass	*Panicum virgatum*	3	Rare/Common	X			X		X
Canada Wild Rye	*Elymus canadensis*	3	Rare/Common	X			X		X
White Snakeroot	*Eupatorium rugosum*	2	Rare		X	X			X
Swamp Beggarstick	*Bidens connata*	3	Rare/Common	X			X		X
Rough Bugleweed	*Lycopus asper*	2	Rare		X	X			X
Crownvetch	*Coronilla varia*	3	Rare/Common		X	X		X	
Sunflower	*Helianthus sp.*	2	Rare		X	X			X
Thoroughwart	*Eupatorium serotinum*	2	Rare		X	X			X
Japanese Honeysuckle	*Lonicera japonica*	3	Rare/Common		X	X		X	

VEGETATION MONITORING FORM
UPSTREAM PARCELS IOMMP
GM CETC 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
Swamp Smartweed	*Polygonum coccineum*	3	Rare/Common		X	X			X
Small White Aster	*Symphyotrichum racemosum*	4	Common		X	X			X
Milkweed	*Asclepias sp.*	2	Rare	X			X		X
Prairie Aster	*Aster trubinellus*	3	Rare/Common		X	X			X
Sedge	*Carex sp.*	2	Rare		X	X			X
Queen Anne's Lace	*Daucus carota*	4	Common		X	X			X
Teasel	*Dipsacus sylvestris*	2	Rare		X	X			X
Purple Coneflower	*Echinacea purpurea*	3	Rare/Common	X			X		X
Spearmint	*Mentha spicata*	2	Rare		X	X			X
Narrowleaf Goldenrod	*Solidago graminifolia*	2	Rare		X	X			X
Prairie Coneflower	*Ratibida pinnata*	3	Rare/Common		X	X			X
Compass Plant	*Silphium laciniatum*	1	Observed	X			X		X
Prairie Dock	*Silphium terebinthinaceum*	2	Rare	X			X		X
Broadleaf Cattail	*Typha latifolia*	2	Rare		X	X			X
Wingstem	*Verbesina alterniflora*	2	Rare		X	X			X
Bushclover	*Cuscuta pentagona*	2	Rare		X	X			X
Cat Briar	*Smilax glauca*	2	Rare		X	X			X

Percent Areal Coverage of Grasses and Forbs 95%

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

II. SHRUBS AND TREES

Common Name	Scientific Name			Planted		Volunteer		Invasive	
				Yes	No	Yes	No	Yes	No
Box Elder	*Acer negundo*			X		X			X
Chinkapin Oak	*Quercus pumila*				X	X			X
Sycamore	*Platanus occidentalis*			X			X		X
Pin Oak	*Quercus palustris*			X			X		X
Shumard Oak	*Quercus shumardii*			X			X		X
Sumac	*Rhubus sp.*				X	X			X

Survival Class (Shrubs and Trees	≤ 25%	26-50%	**51-75%**	> 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

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

Inspectors	S. Jones/P. Farquharson
Date	September 28, 2010
Parcels/Cover Type	Parcel 3, 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	*Agrostis sp.*	5	Very Common	X			X		X
Orchardgrass	*Dactylus glomerata*	3	Rare/Common		X	X			X
Switchgrass	*Panicum virgatum*	3	Rare/Common		X	X			X
Canadian Wild Rye	*Elymus canadensis*	5	Very Common	X			X		X
Tall Fescue	*Schedonorus phoenix*	3	Rare/Common	X			X		X
Side Oats Gramma	*Bouteloua curtipendula*	3	Rare/Common	X			X		X
Lurid Sedege	*Carex lurida*	3	Rare/Common		X	X			X
Wood Aster	*Symphyotrichum cordifolium*	3	Rare/Common		X	X			X
Swamp Smartweed	*Polygonum coccineum*	1	Observed		X	X			X
Swamp Beggarstick	*Bidens connata*	1	Observed		X	X			X
Burdock	*Arctium sp.*	2	Rare		X	X			X

Percent Areal Coverage of Grasses and Forbs 85%

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

II. SHRUBS AND TREES

Common Name	Scientific Name	Planted		Volunteer		Invasive	
		Yes	No	Yes	No	Yes	No
Sycamore	*Platanus occidentalis*		X	X			X
Shumard Oak	*Quercus shumardii*		X	X			X
Sumac	*Rhus sp.*		X	X			X

Survival Class (Shrubs and Trees n/a ≤ 25% 26-50% 51-75% > 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

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Inspectors	S. Jones/P. Farquharson
Date	September 29, 2010
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
Great Ragweed	*Ambrosia trifida*	4	Common		X	X			X
Queen Anne's Lace	*Daucus carota*	4	Common		X	X			X
Canada Goldenrod	*Solidago canadensis*	2	Rare		X	X			X

Percent Areal Coverage of Grasses and Forbs Banks of Water Course - 60%/Channel - No Vegetation

[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